

## ABBREVIATIONS

### Literature Citations

Check List HK Plants, 2002	<i>Check List of Hong Kong Plants (English Version)</i> (Wu Te-lin, ed. September 2002. Hong Kong: Agriculture, Fisheries and Conservation Department). [Note: Despite the Chinese version published in January 2002, page citations in this <i>Flora</i> refer to the English version.]
Check List HK Plants, 2004	<i>Check List of Hong Kong Plants (Hong Kong Herbarium, ed. 2004. Hong Kong: Hong Kong: Agriculture, Fisheries and Conservation Department).</i>
FFJ	<i>Flora Fujianica</i> , toms 1–6. (The Editorial Committee, 1980–1991. Fuzhou: Fujian Science and Technology Press)
FGD	<i>Flora of Guangdong</i> , vol. 1–7. (Chen Feng-hwai & Wu Te-lin, eds. 1987–2006. Guangzhou: Guangdong Science and Technology Press)
FGX	<i>Flora of Guangxi</i> , vol. 1–2. (Guangxi Institute of Botany, ed. 1991–2005. Nanning: Guangxi Science and Technology Press)
FGZ	<i>Flora of Gunagzhou</i> . (How Foon-chew, ed. 1956. Beijing: Science Press)
FHN	<i>Flora Hainanica</i> , toms 1–4. (Chun Woon-yong, ed. 1964–1977. Beijing: Science Press)
FHK	<i>Flora Hongkongensis</i> . (Bentham, G., 1861. London: L. Reeves)
FKH	<i>Flora of Kwangtung and Hongkong (China)</i> . (Dunn, S. T. & W. J. Tutcher, 1912. Kew Bulletin of Miscellaneous Information, Additional Series, 10: 1–370. London: HMSO)
FOC	<i>Flora of China</i> , various volumes. (Wu Zheng-yi & P. H. Raven, eds. 1994–present. Beijing: Science Press; Saint Louis: Missouri Botanical Garden Press)
FRPS	<i>Flora Reipublicae Popularis Sinicae</i> , vols. 1–80. (The Editorial Committee, 1959–2004. Beijing: Science Press)
FTW, ed. 2	<i>Flora of Taiwan, second edition</i> , vols. 1–6. (Huang Tseng-chieng, ed. 1994–2003. Taipei: Editorial Committee of the Flora of Taiwan)
FYN	<i>Flora Yunnanica</i> , vol. 1–21. (Kunming Institute of Botany, ed. 1977–2005. Beijing: Science Press)
rev. ed.	<i>Revised edition</i>
ed. 2	<i>Second edition</i>
pl.	<i>Plate</i>
fig.	<i>figure</i>

### Nomenclature

<i>nom. cons.</i>	<i>nomen conservandum</i> ; conserved name
<i>nom. nud.</i>	<i>nomen nudum</i> ; naked name
var.	variety
subsp.	subspecies
auct. non	Author(s) not; refers to the quoted name being a misapplied one.
cv.	cultivar

### Geographical

N	North / northern
E	East / eastern
EC	East Central
NC	North Central
NW	Northwest
S	South / southern
W	West / western
SE	Southeast / southeastern
C	Central
SC	South Central
SW	Southwest
W	West
WC	West Central

*Others*

±	more or less, nearly so
µm	micrometer(s)
×	times, between length and width measurements
ca.	circa, about, approximately
cm	centimeter(s)
cv.	Cultivar; cultivated variety
d.b.h.	diameter at breast height
diam.	diameter
ed.	edition
e.g.	for example
et al.	and others
fig.	figure
figs.	figures
fl.	flowering
fr.	fruiting
i.e.	that is
m	meter(s)
mm	millimeter(s)
p.	page
pp.	pages
<i>p.p.</i>	<i>pro parte</i> ; in part
pl.	plate
<i>s.n.</i>	without a collection number
<i>s.l.</i>	<i>sensu lato</i> ; used in broad sense
<i>s.s.</i>	<i>sensu stricto</i> ; used in strict sense
sp.	species
spp.	several species
subfam.	subfamily
subsp.	subspecies
subsp.	several subspecies
t.	table
var.	variety
vol.	volume
Rd.	Road
1st	first
2nd	Second
3rd	Third
4th	Forth

## CLASSIFICATION SYSTEMS ADOPTED FOR THE *FLORA OF HONG KONG*

### Gymnosperms

(Kubitzki 1990)

#### CONIFEROPHYTINA

##### Ginkgoatae

1. Ginkgoaceae

##### PINATAE

##### Pinales

2. Araucariaceae
3. Pinaceae
4. Sciadopityaceae
5. Taxodiaceae
6. Cupressaceae
7. Phyllocladaceae
8. Podocarpaceae

##### Taxales

9. Cephalotaxaceae
10. Taxaceae

#### CYCADOPHYTINA

##### Cycadatae

##### Cycadales

11. Boweniaceae
12. Cycadaceae
13. Stangeriaceae
14. Zamiaceae

#### GNETATAE

##### Gnetales

15. Ephedraceae
16. Welwitschiaceae
17. Gnetaceae

### Angiosperms

(Cronquist 1988)

#### MAGNOLIOPSIDA (DICOTYLEDONS)

##### SUBCLASS MAGNOLIIDAE

##### Magnoliales

1. Winteraceae
2. Degeneriaceae
3. Himantandraceae
4. Eupomatiaceae
5. Austrobaileyaceae
6. Magnoliaceae
7. Lactoridaceae
8. Annonaceae
9. Myristicaceae
10. Canellaceae

##### Laurales

11. Amborellaceae
12. Trimeniaceae
13. Monimiaceae
14. Gomortegaceae
15. Calycanthaceae
16. Idiopermaceae
17. Lauraceae
18. Hernandiaceae

##### Piperales

19. Chloranthaceae
20. Saururaceae
21. Piperaceae

##### Aristolochiales

22. Aristolochiaceae

##### Illiciales

23. Illiciaceae
24. Schisandraceae

##### Nymphaeales

25. Nelumbonaceae
26. Nymphaeaceae
27. Barclayaceae
28. Cabombaceae
29. Ceratophyllaceae

##### Ranunculales

30. Ranunculaceae
31. Circaeasteraceae
32. Berberidaceae
33. Sargentodoxaceae

34. Lardizabalaceae
35. Menispermaceae
36. Coriariaceae
37. Sabiaceae

##### Papaverales

38. Papaveraceae
39. Fumariaceae

##### SUBCLASS HAMAMELIDAE

##### Trochodendrales

40. Tetracentraceae
41. Trochodendraceae

##### Hamamelidales

42. Cercidiphyllaceae
43. Eupteleaceae
44. Platanaceae
45. Hamamelidaceae
46. Myrothamnaceae

##### Daphniphyllales

47. Daphniphyllaceae

##### Didymelales

48. Didymelaceae

##### Eucommiales

49. Eucommiaceae

##### Urticales

50. Barbeyaceae
51. Ulmaceae
52. Cannabaceae
53. Moraceae
54. Cecropiaceae
55. Urticaceae
56. Physenaceae

##### Leitneriales

57. Leitneriaceae

##### Juglandales

58. Rhoipteleaceae
59. Juglandaceae

##### Myricales

60. Myricaceae

**Fagales**

- 61. Balanopaceae
- 62. Ticodendraceae
- 63. Fagaceae
- 64. Nothofagaceae
- 65. Betulaceae

**Casuarinales**

- 66. Casuarinaceae

**SUBCLASS****CARYOPHYLLIDAE****Caryophyllales**

- 67. Phytolaccaceae
- 68. Achatocarpaceae
- 69. Nyctaginaceae
- 70. Aizoaceae
- 71. Didiereaceae
- 72. Cactaceae
- 73. Chenopodiaceae
- 74. Amaranthaceae
- 75. Portulacaceae
- 76. Basellaceae
- 77. Molluginaceae
- 78. Caryophyllaceae

**Polygonales**

- 79. Polygonaceae

**Plumbaginales**

- 80. Plumbaginaceae

**SUBCLASS DILLENIIDAE****Dilleniales**

- 81. Dilleniaceae
- 82. Paeoniaceae

**Theales**

- 83. Ochnaceae
- 84. Sphaerosepalaceae
- 85. Sarcolaenaceae
- 86. Diptercarpaceae
- 87. Caryocaraceae
- 88. Theaceae
- 89. Actinidiaceae
- 90. Scytopetalaceae
- 91. Pentaphylacaceae
- 92. Tetrameristaceae
- 93. Pellicieraceae
- 94. Oncothecaceae
- 95. Marcgraviaceae
- 96. Quiinaceae
- 97. Elatinaceae
- 98. Paracryphiaceae
- 99. Medusagynaceae
- 100. Clusiaceae (Guttiferae)  
(incl. Hypericaceae)

**Malvales**

- 101. Elaeocarpaceae
- 102. Tiliaceae
- 103. Sterculiaceae
- 104. Bombacaceae
- 105. Malvaceae

**Lecythidales**

- 106. Lecythidaceae

**Nepenthales**

- 107. Sarraceniaceae
- 108. Nepenthaceae
- 109. Droseraceae

**Violales**

- 110. Flacourtiaceae
- 111. Peridiscaceae
- 112. Bixaceae
- 113. Cistaceae
- 114. Huaceae
- 115. Lacistemataceae
- 116. Scyphostegiaceae
- 117. Stachyuraceae
- 118. Violaceae
- 119. Tamaricaceae
- 120. Frankeniaceae
- 121. Dioncophyllaceae
- 122. Ancistrocladaceae
- 123. Turneraceae
- 124. Malesherbiaceae
- 125. Passifloraceae
- 126. Achariaceae
- 127. Caricaceae
- 128. Fouquieriaceae
- 129. Hoplostigmataceae
- 130. Cucurbitaceae
- 131. Datisceae
- 132. Begoniaceae
- 133. Loasaceae

**Salicales**

- 134. Salicaceae

**Capparales**

- 135. Tovariaceae
- 136. Capparaceae
- 137. Brassicaceae (Cruciferae)
- 138. Moringaceae
- 139. Resedaceae

**Batales**

- 140. Gyrostemonaceae
- 141. Bataceae

**Ericales**

- 142. Cyrillaceae
- 143. Clethraceae
- 144. Grubbiaceae
- 145. Empetraceae
- 146. Epacridaceae

- 147. Ericaceae

- 148. Pyrolaceae

- 149. Monotropaceae

**Diapensiales**

- 150. Diapensiaceae

**Ebenales**

- 151. Sapotaceae

- 152. Ebenaceae

- 153. Styracaceae

- 154. Lissocarpaceae

- 155. Symplocaceae

**Primulales**

- 156. Theophrastaceae

- 157. Myrsinaceae

- 158. Primulaceae

**SUBCLASS ROSIDAE****Rosales**

- 159. Brunelliaceae

- 160. Connaraceae

- 161. Eucryphiaceae

- 162. Cunoniaceae

- 163. Davidsoniaceae

- 164. Dialypetalanthaceae

- 165. Pittosporaceae

- 166. Byblidaceae

- 167. Hydrangeaceae

(incl. Philadelphaceae)

- 168. Columelliaceae

- 169. Grossulariaceae

- 170. Greyiaceae

- 171. Bruniaceae

- 172. Anisophylleaceae

- 173. Alseuosmiaceae

- 174. Crassulaceae

- 175. Cephalotaceae

- 176. Saxifragaceae

- 177. Rosaceae

- 178. Neuradaceae

- 179. Crossosomataceae

- 180. Chrysobalanaceae

- 181. Surianaceae

- 182. Rhabdodendraceae

**Fabales**

- 183. Mimosaceae

- 184. Caesalpinaceae

- 185. Fabaceae (Papilionaceae)

**Proteales**

- 186. Elaeagnaceae

- 187. Proteaceae

**Podestemales**

- 188. Podostemaceae

**Haloragales**

189. Haloragaceae  
190. Gunneraceae

**Myrtales**

191. Sonneratiaceae  
192. Lythraceae  
193. Rhynchoalycaceae  
194. Alzateaceae  
195. Penaeaceae  
196. Crypteroniaceae  
197. Thymelaeaceae  
198. Trapaceae  
199. Myrtaceae  
200. Punicaceae  
201. Onagraceae  
202. Oliniaceae  
203. Melastomataceae  
204. Combretaceae

**Rhizophorales**

205. Rhizophoraceae

**Cornales**

206. Alangiaceae  
207. Cornaceae  
(incl. Nyssaceae)  
208. Garryaceae

**Santalales**

209. Medusandraceae  
210. Dipentodontaceae  
211. Olacaceae  
212. Opiliaceae  
213. Santalaceae  
214. Misodendraceae  
215. Loranthaceae  
216. Viscaceae  
217. Eremolepidaceae  
218. Balanophoraceae

**Rafflesiales**

219. Hydnoraceae  
220. Mitrastemonaceae  
221. Rafflesiaceae

**Celastrales**

222. Geissolomataceae  
223. Celastraceae  
224. Hippocrateaceae  
225. Stackhousiaceae  
226. Salvadoraceae  
227. Tepuianthaceae  
228. Aquifoliaceae  
229. Icacinaceae  
230. Aextoxicaceae  
231. Cardiopteridaceae  
232. Corynocarpaceae  
233. Dichapetalaceae

**Euphorbiales**

234. Buxaceae  
235. Simmondsiaceae  
236. Pandaceae  
237. Euphorbiaceae

**Rhamnales**

238. Rhamnaceae  
239. Leeaceae  
240. Vitaceae

**Linales**

241. Erythroxylaceae  
242. Humiriaceae  
243. Ixonanthaceae  
244. Hugoniaceae  
245. Linaceae

**Polygalales**

246. Malpighiaceae  
247. Vochysiaceae  
248. Trigoniaceae  
249. Tremandraceae  
250. Polygalaceae  
251. Xanthophyllaceae  
252. Krameriaceae

**Sapindales**

253. Staphyleaceae  
254. Melianthaceae  
255. Bretschneideraceae  
256. Akaniaceae  
257. Sapindaceae  
258. Hippocastanaceae  
259. Aceraceae  
260. Burseraceae  
261. Anacardiaceae  
262. Julianiaceae  
263. Simaroubaceae  
264. Cneoraceae  
265. Meliaceae  
266. Rutaceae  
267. Zygophyllaceae

**Geraniales**

268. Oxalidaceae  
269. Geraniaceae  
270. Limnanthaceae  
271. Tropaeolaceae  
272. Balsaminaceae

**Apiales**

273. Araliaceae  
274. Apiaceae (Umbelliferae)

**SUBCLASS ASTERIDAE****Gentianales**

275. Loganiaceae  
[incl. Strychnaceae (Spigeliaceae)]  
276. Gentianaceae  
277. Saccifoliaceae  
278. Apocynaceae  
279. Asclepiadaceae

**Solanales**

280. Duckeodendraceae  
281. Nolanaceae  
282. Solanaceae  
283. Convolvulaceae  
284. Cuscutaceae  
285. Retziaceae  
286. Menyanthaceae  
287. Polemoniaceae  
288. Hydrophyllaceae

**Lamiales**

289. Lennoaceae  
290. Boraginaceae  
291. Verbenaceae  
292. Lamiaceae (Labiatae)

**Callitrichales**

293. Hippuridaceae  
294. Callitrichaceae  
295. Hydrostachyaceae

**Plantaginales**

296. Plantaginaceae

**Scrophulariales**

297. Buddlejaceae  
298. Oleaceae  
299. Scrophulariaceae  
300. Globulariaceae  
301. Myoporaceae  
302. Orobanchaceae  
303. Gesneriaceae  
304. Acanthaceae  
305. Pedaliaceae  
306. Bignoniaceae  
307. Mendonciaceae  
308. Lentibulariaceae

**Campanulales**

309. Pentaphragmataceae  
310. Sphenocleaceae  
311. Campanulaceae  
312. Stylidiaceae  
313. Donatiaceae  
314. Brunoniaceae  
315. Goodeniaceae

**Rubiales**

316. Rubiaceae  
317. Theligonaceae

**Dipsacales**

318. Caprifoliaceae  
319. Adoxaceae  
320. Valerianaceae  
321. Dipsacaceae

**Calycerales**

322. Calyceraceae

**Asterales**

323. Asteraceae (Compositae)

**LILIOPSIDA****(MONOCOTYLEDONS)****SUBCLASS ALISMATIDAE****Alismatales**

324. Butomaceae  
325. Limncharitaceae  
326. Alismataceae

**Hydrocharitales**

327. Hydrocharitaceae

**Najadales**

328. Aponogetonaceae  
329. Scheuchzeriaceae  
330. Juncaginaceae  
331. Potamogetonaceae  
332. Ruppiaceae  
333. Najadaceae  
334. Zannichelliaceae  
335. Posidoniaceae  
336. Cymodoceaceae  
337. Zosteraceae

**Triuridales**

338. Petrosaviaceae  
339. Triuridaceae

**SUBCLASS ARECIDAE****Arecales**

340. Arecaceae (Palmae)

**Cyclanthales**

341. Cyclanthaceae

**Pandanales**

342. Pandanaceae

**Arales**

343. Acoraceae  
344. Araceae  
345. Lemnaceae

**SUBCLASS COMMELINIDAE****Commelinidales**

346. Rapateaceae  
347. Xyridaceae  
348. Mayacaceae  
349. Commelinaceae

**Eriocaulales**

350. Eriocaulaceae

**Restionales**

351. Flagellariaceae  
352. Joinvilleaceae  
353. Restionaceae  
354. Centrolepidaceae

**Juncales**

355. Juncaceae  
356. Thurniaceae

**Cyperales**

357. Cyperaceae  
358. Poaceae (Gramineae)

**Hydatellales**

359. Hydatellaceae

**Typhales**

360. Sparganiaceae  
361. Typhaceae

**SUBCLASS ZINGIBERIDAE****Bromeliales**

362. Bromeliaceae

**Zingiberales**

363. Strelitziaceae  
364. Heliconiaceae  
365. Musaceae  
366. Lowiaceae  
367. Zingiberaceae  
368. Costaceae  
369. Cannaceae  
370. Marantaceae

**SUBCLASS LILIIDAE****Liliales**

371. Philydraceae  
372. Pontederiaceae  
373. Haemodoraceae  
374. Cyanastraceae  
375. Liliaceae  
(incl. Amaryllidaceae)  
376. Iridaceae  
377. Velloziaceae  
378. Aloeaceae  
379. Agavaceae  
380. Xanthorrhoeaceae  
381. Hanguanaceae  
382. Taccaceae  
383. Stemonaceae  
384. Smilacaceae  
385. Dioscoreaceae

**Orchidales**

386. Geosiridaceae  
387. Burmanniaceae  
388. Corsiaceae  
389. Orchidaceae

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Cronquist, A., 1981. *An Integrated System of Classification of Flowering Plants*. Columbia University Press, New York.  
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# VEGETATION OF HONG KONG: THE PAST, PRESENT AND FUTURE

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## Introduction

The Hong Kong Special Administrative Region (HKSAR) lies on the southeast coast of China between latitudes 22°9'N and 22°37'N, and longitudes 113°52'E and 114°30'E, 130 km south of the Tropic of Cancer. Located along the northern fringe of the tropics and bordered on to the Pacific Ocean, Hong Kong experiences seasonal variations in weather conditions. The summer monsoon blows from the south or southwest and may occur from mid-April until September. Summer is the rainy season and the weather is hot and humid. From May to September, tropical cyclones (typhoons) may occur, bringing heavy rainfall and gales to Hong Kong. The winter monsoon, which blows from the north or northeast, begins in September and prevails from October until mid-March. During these months the weather is cool and dry. Coastal fog and drizzle occur from time to time in early spring when the southeasterly wind interacts with the north-easterlies. According to the meteorological data between the years 1971 and 2000, the mean daily temperature at sea level is 23.1°C, ranging from 16.1°C in January to over 28.7°C in July. At higher elevations the temperature may be a few degrees lower and frost may occur in the winter. The mean annual precipitation is 2 382.7 mm, 75% of which is recorded between May and September. Although Hong Kong is located within the tropical zone, its climate is not too typical of the tropics as a whole. Plant geographers have placed Hong Kong in the subtropics or an intermediate "transitional tropics' zone" (Dudgeon & Corlett, 2004). Indeed, several strictly tropical and low land families (e.g. Dipterocarpaceae and

Myristicaceae) are not naturally occurring in Hong Kong while a number of non-tropical families (e.g. Ericaceae, Theaceae and Fagaceae) are well represented here. Moreover, the evergreen habit probably predominates in Hong Kong, but they are accompanied by considerable number of deciduous trees which are characteristic of sub-tropical and temperate zones. Examples of deciduous and evergreen habit can often be found within one genus (e.g. *Litsea*) (Thrower, 1975). Some climatologists even classify Hong Kong's climate as subtropical owing to the relatively large annual temperature range, cool winter and low absolute minimum temperature (Dudgeon & Corlett, 2004).

The HKSAR comprises a small part of the Chinese mainland (the New Territories and Kowloon Peninsula), Hong Kong Island, Lantau Island and over 200 small outlying islands. Although the HKSAR is densely populated with a population of about seven million in a total land area of just over 1 100 km<sup>2</sup>, only about 15% of the land is built-up areas. About three quarters of the land area is hilly and such rugged topography has protected a relatively large expanse of countryside. The highest hills of Hong Kong, in descending order, are: Tai Mo Shan (958 m), Lantau Peak (934 m) and Sunset Peak (869 m) on Lantau Island, and Ma On Shan (703 m). In contrast, an extensive flat land occurs in the northwest part which is a floodplain area of major lowland rivers, although smaller pockets of flat land can be found in the lower parts of various valleys and at the heads of sea-inlets. The rugged terrain contributes to the diverse landscape and vegetation types in Hong Kong. In addition, the soils which can be principally divided into granite-derived and volcanic-derived soils, slope aspects and water availability are other major factors shaping the vegetation of a particular site. In general, granitic areas are badly eroded with sparse vegetation while most volcanic areas have a continuous vegetation cover. Most hill tops and coastal sites exposed to wind are grassy while valleys and deep ravines with higher water moisture content nurture rich plant diversity and harbour dense vegetation cover.

According to the geographic location and climatic condition as described above, ecologists considered that the climax vegetation of Hong Kong is subtropical evergreen broad-leaved monsoon forest. However, the original forest cover is largely lost due to long-term human influence such as cutting trees for firewood in the old days, agriculture activities, land development, human



Victoria Peak in 1868 (Botanical Gardens in foreground).

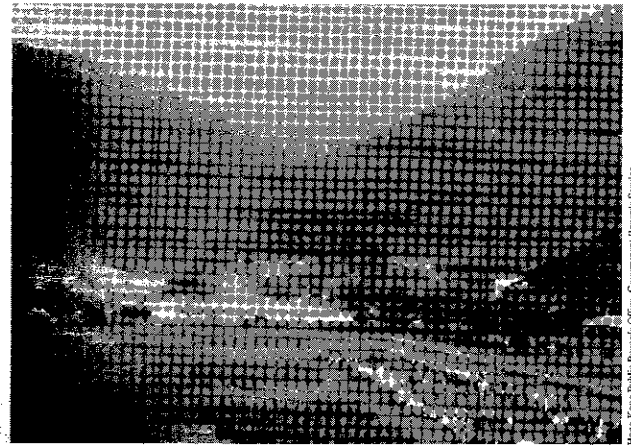
induced hill fires, etc. Remnants of the original forest cover can only be found in steep ravines or behind traditional villages in rural areas. The former survived destructive human influences and hill fires through their location in precipitous topography and the moist micro-climate whereas the latter escaped from deforestation for cultural and *fung shui* reasons.

### *The Vegetation observed during the Early Days*

In early literature, Hong Kong was often described by such phrases as “a barren rock” owing to the obvious boulders, grasses and scrubs on the slopes and peaks within the hilly relief, as compared to the forest areas in other temperate areas. In the book *The Nemesis in China*, Bernard (1847) described a visit to a stream course in Hong Kong Island in 1816 and recorded a dozen of species including *Baeckea frutescens* (崗松), *Rhodomyrtus tomentosa* (桃金娘), *Melastoma candidum* (野牡丹) and *M. sanguineum* (毛蕊), several orchideous plants and a great number of ferns. Dr. Berthold Seemann, a naturalist on board the *H.M.S. Herald* who visited Hong Kong in 1850, made the following description: “To a stranger landing, or regarding the island from the sea, the aspect of Hongkong is very unpromising, conveying the idea of almost absolute sterility. The hills are covered by a mantle of coarse grass, amidst which rise masses of bare, blackened rocks; while the monotonous scene seems only varied by a few bushes, or a solitary tree, studded here and there, and by scattered groves of the *Pinus sinensis* (*Pinus massoniana* 馬尾松)” (Seemann, 1857). Admittedly, the vegetation of Hong Kong in such early days might not be as spectacular as one would like. However, such descriptions might tell only part of the story as many peculiar species and plant communities were discovered in later explorations of Hong Kong Island and other parts of the territory.

An early explorer of Hong Kong, H. F. Hance (1853) gave a detailed account on the vegetation of Hong Kong. Hance spent his initial days in Hong Kong (1844 to 1851) where he lived continuously for almost a decade in or near Hong Kong and hiked extensively on the island with many other residents to the summit of hills, ravines, streams, seashores and many other plant habitats. From the writings of Hance and other early plant collectors (Hinds, 1842; Fortune, 1847), one would notice that, even though the hillslopes were described as barren, the diversity of plants was much higher at higher elevations and at sheltered habitats (ravines and valleys) where the supply of water was abundant and perhaps the rugged topography which protected them from firewood collection. The kind of barren and hilly relief of Hong Kong Island as illustrated in early paintings and photographs mostly focused on Peak Victoria behind the then new city of Victoria might have given an impression of “typical” vegetation cover of Hong Kong. However, the species near the summit of Victoria Peak, the valley of Wong Nei Chung (now Wong Nai Chung), the Happy Valley Woods and the Little Hong Kong (approximately Shouson Hill 壽臣山 nowadays), for example, were frequently cited for their richness of peculiar plant species (e.g. Fortune, 1847; Hance, 1853).

Observations made by Hance (1853) would perhaps let us feel the plant diversity at the time of opening of Hong Kong as a trading base. He mentioned that the forest flora of Hong Kong Island consisted of around eight species of oaks, *Liquidambar* (楓香屬), *Lithocarpus corneus* (煙斗柯), *Styrax* (安



Happy Valley around 1880s with Wong Nei Chung village at the far end.

息香屬), *Acer* (槭樹屬), three species of *Camellia* (山茶屬), *Vaccinium* (烏飯樹屬), *Acronychia pedunculata* (山油柑), about six species of *Euonymus* (衛矛屬), *Aquilaria sinensis* (土沉香), *Memecylon* (谷木屬), *Castanea* (栗屬), *Rhodoleia championii* (紅花荷), *Magnolia coco* (夜香木蘭), *Artabotrys* (鷹爪花屬), *Scolopia saeva* (廣東刺柃) and *Scolopia chinensis* (刺柃), *Piper hongkongense* (毛茛), two species of *Elaeocarpus* (杜英屬), *Rhapis excelsa* (棕竹), *Hiptage benghalensis* var. *benghalensis* (風箏果), *Schoepfia chinensis* (華南青皮木), etc. At the foot of the hills where such woods occurred on slopes are ravines. Hance noticed that in some places the ravines were bordered by steep rocks, and the humid, shady ledges were covered by *Chirita sinensis* (唇柱苣苔), an *Cypripedium* (杓蘭屬), *Renanthera coccinea* (火焰蘭), *Pholidota imbricata* (宿苞石仙桃), and others. Higher up the hills, and in sheltered localities, Hance observed that some parts of these woods became much denser, and assumed a far more tropical aspect. This is reflected by the abundant *Lycopodium* (石松屬), *Cibotium barometz* (金毛狗), *Neottopteris nidus* (巢蕨), and *Psilotum nudum* (松葉蕨) and the trunks of the trees were clothed by the climber *Anthrrium* (花燭屬), and the epiphyte *Pyrrosia adnascens* (貼生石韋). Such species-rich “hot-spots”, though likely small in extent of coverage, are indeed the best proof of the false impression on the early vegetation of Hong Kong.

Besides such plant havens hiding on the “barren rock”, the *fung shui* woods behind villages also preserved various species. The woodland behind the village “Little Hong Kong” (i.e. Hong Kong Wai 香港圍 in Shouson Hill 壽臣山) has been recorded in some details by early authors. Lieutenant Thomas Bernard Collinson, who conducted the first contour survey (1843—1845) on Hong Kong Island, made the following description in his letters (Hayes, 1988):

“The valley between Shuckpyewan and Hong Kong bay (called Little Hong Kong in the map) is the proper Hong Kong of the Island and is the largest and best cultivated and prettiest in the island. It is almost a dead flat and according to the people’s account has 100 acres of these little fields in it, with the village on an artificial level at the head and a thick wood of evergreens around and behind it and steep rocky hills rising above the wood.”

“The evergreens behind the town [sic, village] are most luxuriant and reminded me of the oak woods in Wicklow, and the tall bamboo would make a graceful ornament to any garden.”



In Bentham's *Flora Hongkongensis* (1861), this locality was frequently cited. Almost half a century later in 1912, the botanical workers of the Botanical and Forestry Department, recorded the wood in further details (Dunn & Tutchter, 1912). The tree species with the largest number of individuals found were the *Aquilaria sinensis* (土沉香), followed by *Sterculia lanceolata* (假蘋婆), *Aporosa dioca* (銀柴) and *Choerospondias axillaries* (南酸棗). The ground in such woods was covered with *Liliaceae* (百合科) and *Piperaceae* (胡椒科), and various grasses and ferns, while huge lianas climbed over the trees and hung in "weird festoons" into the semi-darkness of the underwood. The lianas comprised various species of *Derris* (魚藤屬) and *Dalbergia* (黃檀屬), besides numerous *Apocynaceae* (夾竹桃科) and *Asclepiadaceae* (蘿藦科). On the higher ground the woods were formed of species of Oak, Holly, Pine, *Symplocos* (山欖屬), *Cordia* (破布木屬), *Ficus* (榕屬) and various *Araliaceae* (五加科), *Hamamelidaceae* (金縷梅科) and *Lauraceae* (樟科). This woodland is represented nowadays by the Nam Fung Road Fung Shui Woods, which has been listed as a Site of Special Scientific Interest (SSSI) in 1993.

There was also an early description of the village of "Wong Nei Chung" in literature. The woods behind the village was the "Happy Valley Woods" mentioned in early botanical literature, from which J. G. Champion recorded 48 species (Gardner & Champion 1849; Bentham, 1851—1857) including several rare woody species such as *Dendrobenthamia hongkongensis* (香港四照花), *Rhodoleia championii* (紅花荷) and *Schoepfia chinensis* (華南青皮木). The aforementioned woodlands, as well as the various habitats in the major hills of the Island, were the localities frequently visited by the early botanists, and thus the type localities of many species described from Hong Kong.

### Afforestation before the Second World War

Afforestation in Hong Kong began in the early 1870s with the arrival of Charles Ford as the head in charge of the botanical gardens and afforestation department in Hong Kong. A large-scale afforestation on Hong Kong Island started in the mid-1870s and in the following years. More than 100 000 trees were planted, mostly Chinese Red Pines (*Pinus massoniana*). Efforts of Ford's afforestation changed the general landscape of Hong Kong. Although he experimented many species collected in Hong Kong, *P. massoniana* was the best performed species on barren lands and hillslopes. He had scaled up the afforestation programme during his tenure as the head of the Botanical and Forestry Department till 1903. By 1904, the planting of Chinese Red

Pine had reached 2 300 hectares (ha). Based on Tutchter's (1905) description, the New Territories was rich in native species, and many peculiar plants found earlier on Hong Kong Island were also collected in this countryside in the north. The afforestation using *P. massoniana* had extended to the New Territories until the outbreak of the Second World War. A report published in 1934 by the Botanical Institute of Agriculture and Forestry, National Sun Yat-sen University in Canton remarked, "owing to the management and protection by the forestry officials, the natural woodlands in Hong Kong were growing well." The natural vegetation in the whole territory, especially the woodlands, was well preserved by the Botanical and Forestry Department before the War. However, during the period of Japanese occupation (25 December 1941 to 15 August 1945), the demands for firewood increased greatly. Many trees were felled, thus wiping out 70 years of afforestation work.

### Deforestation during the Japanese Occupation of Hong Kong

Forests on government land suffered heavily owing to illicit tree cutting between 1936 and 1941 to provide fuel to meet social needs. Between December 1941 and February 1942, there was no prevention of tree felling, resulting in losing about one third of the growing stock. Although the Japanese imposed rigid restrictions on all unauthorised tree felling and was successful, they then felled trees suitable for industrial purposes or for firewood in all localities except those trees of high amenity value. After the War, further felling was necessary because of the acute shortage of firewood supplies during early 1946. The following is a general review of the formerly afforested areas made in the government report for the year 1946/47:

#### a. Hong Kong Island.

The South side of the Island is still well covered with shrub vegetation though there is generally a marked absence of large trees as a result of the fellings mentioned above. . . . . The remainder of the Island except for a small area between the Peak and Mount Nicholson is very bare having at the best only a sparse scrub or bamboo covering, (*Arundinaria Hindsii*, Munro), and in many localities nothing more than grass. In a few places erosion has set in, and here special steps are being put in hand to get the vegetation re-established.

#### b. Kowloon.

A large area of hillside stretching from Lai Chi Kok in the West to Kai Tak in the East has been completely deforested, at the best only scattered regeneration now appearing. Serious erosion is manifesting itself in these areas not only in the form of bare hilltops but also deep gullies. Streams previously perennial are now dry for 3 or 4 months in the year. Protection and re-afforestation of large areas in this section has been undertaken.

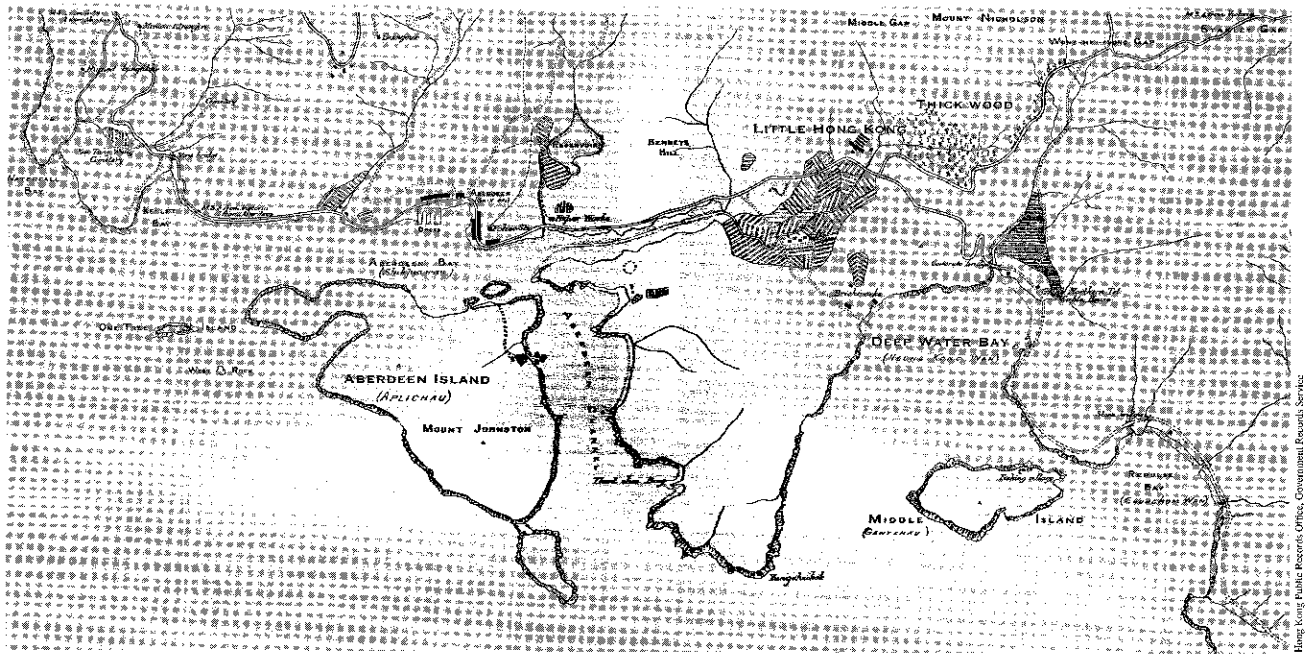
#### c. New Territories

##### 1. Shing Mun Catchment area.

Afforestation work done in this area in 1940/41 was largely destroyed by woodcutters in the early part of 1946. However vigorous coppice shoots have arisen from the old stumps of many of the broadleaved species previously planted, and these shoots have been thinned down to one or two per



Chinese Red Pine



Map of 1845 showing Little Hong Kong

stool. Some of the areas planted with broadleaved species have been burnt over and the plantations destroyed.

### 2. Taipo Kau Forestry Reserve.

All trees of an exploitable size or suitable for firewood were felled during the first half of 1945 and extraction was still in progress at the time of the surrender of the Japanese. This wood together with supplies from the Fanling area were taken over by the Controller of Firewood soon after the re-occupation of the Colony. ....

### 3. Fanling Plantations.

The golf course pine plantations have been completely cleared and only a few scattered groups of broadleaved trees have been left standing. However adequate natural regeneration has established itself to ensure the return of these areas to a forest covering.

Areas clear felled and planted with broadleaved species in 1941 have made good progress. ....”

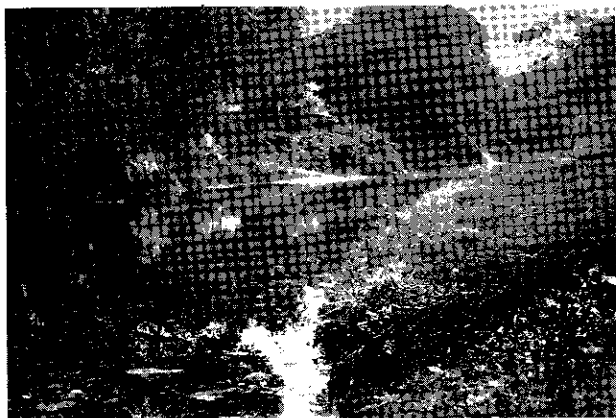
### **Afforestation after the Second World War and the establishment of Country Parks**

After the War, the government offered funds and technical help to restore the landscape of the hillsides and provided villagers with firewood. The government forestry officer's annual report for the year 1948/49 began with a forest policy, which stated (1) protecting all vegetation on hillsides, (2) replacing the forest covering removed between 1939 and 1946, (3) encouraging sound forestry operations by villagers, and (4) carrying out scenic and roadside tree planting. In 1953, the government started a new territory-wide afforestation programme with large-scale tree planting (405 ha per year). Chinese Red Pine was the major plantation tree suitable for growing in sites of poor soil whereas selected hardy board-leaved species of Australian origin, particularly *Lophostemon confertus* (紅膠木), *Eucalyptus robusta* (大葉桉), *Casuarina equisetifolia* (木麻黃) and *Melaleuca cajuputi* subsp. *cumingiana* (白千層; this species was mainly planted in abandoned paddy fields and other swampy areas) were also in use (Corlett, 1999). By 1959, afforested area was 4 800 ha.

In 1965, the Agriculture and Fisheries Department recommended a new forest policy (Daley, 1965). The new policy statement was to pay particular attention to the prevention or repair of soil erosion and to the protection of natural vegetation and wildlife as well as to the care and management of forests in such a way that it could contribute to the cultural needs of the community through open-air recreation, educational field studies and scientific research. In the same year, the Government invited two scientists of the International Commission on National Parks to conduct a study with a view to establish a system of protected areas in Hong Kong. A report prepared by Talbot and Talbot (1965) marked a turning point for the Hong Kong countryside. Taking up the recommendations of Talbot's report and after some years of pre-policy studies and planning, the Country Parks programme was formally initiated with the enactment of the Country Parks Ordinance in 1976 (Jim & Wong, 2006). By 2007, 41 644 ha of land had been designated as Country Parks or Special Areas under the Ordinance which covers slightly over 40% of the total land area of the territory. The government efforts in law enforcement of illegal tree cutting, afforestation and fire fighting after the war and the continuation of such efforts after establishment of Country Parks were fundamental in shaping the present vegetation cover of Hong Kong.

### **Emergence of Pinewood Nematode**

Since 1978, Chinese Red Pine (*Pinus massoniana* 馬尾松) suffered a marked decline with many thousands dying in various parts of Hong Kong. The cause for the “sudden death” of pines was confirmed in 1982 when samples of nematodes extracted from a characteristically dead tree were sent to the Commonwealth Institute of Parasitology and determined as *Bursaphelenchus xylophilus* (the Pinewood Nematode) (Winney, 1982). The needles of the trees began to wilt, turn pale green and yellow, then bright orange-red and finally dull brown with the needles mostly retained on the tree. It took a few months for the trees to die but by the time the symptoms appeared, the trees were usually heavily infested with the nematodes and no recovery was possible.



River-banks forest



Lowland forests

The nematodes were spread by the vector Pine Longhorn Beetle, which first fed on the barks and penetrated into the trunk to lay eggs. At the same time, the nematodes which were carried in the tracheae of the beetles migrated into the pine and penetrated into the tissue damaged by the feeding beetles. Subsequently, the larvae of the beetles hatched from the eggs fed on the woods and soon turned into pupae. In parallel, the nematodes reproduced very rapidly and invaded the adult beetles just after they emerged from pupae. When the adult beetles had their dispersal flights, more pine trees were infested. The problem spread so quickly owing to the short life cycles of the vectors and more importantly the abundance of the host plant, the Chinese Red Pine which was the single most important species used for afforestation during the post-war period. Attempts were made to control the problem by cutting and burning the infested trees in Country Parks throughout Hong Kong but in vain. The Pinewood Nematode had virtually eliminated all the Chinese Red Pines and the vast mortality of mature trees had significantly transformed the upland landscape. The Pinewood Nematode was considered as the most damaging invertebrate introduction in Hong Kong (Dudgeon & Corlett, 2004).

On the face of this incident, it appeared to be an ecological disaster. The lessons learned are the significance of damage that can be done by accidental introduction of one single alien species. Moreover, to heavily rely on one single species for afforestation would result in a plant community extremely vulnerable to any outbreak of plant pests. Nevertheless, the Chinese Red Pine might have acted as a nurse species encouraging the recruitment and establishment of native broad-leaved trees. Looking from another perspective, the death of the Chinese Red Pine might be timely when there were sufficient quantities of native tree species (e.g. *Schefflera heptaphylla* 鵝掌柴 and *Machilus* spp. 潤楠屬.) already established under the pine trees. The "sudden death" of pine trees might have created an opportunity for spontaneous ecological succession and resulted in the present broad-leaved secondary forests which cover over 10% of Hong Kong today.

### *The present vegetation of Hong Kong*

The original vegetation of Hong Kong no longer exists after centuries of human disturbance through his fire and axe. It was known to the early explorers of Hong Kong and south China that

**Table 1. Areas of each habitat type and their percentage cover**

(Source: <http://www.susdev.gov.hk/html/en/su/2006habmapfinrep.pdf>).

Habitat Type	Area (ha)	% Cover
Grassland	15439.9	13.8
Lowland Forest	12621.7	11.3
Mixed Shrubland	27941.4	25.0
Shrubby Grassland	22305.3	20.0
Intertidal Mudflat	745.7	0.7
Freshwater/Brackish Wetland	897.4	0.8
Natural Watercourses	860.6	0.8
Mangrove	456.8	0.4
Plantation or Plantation/Mixed Forest	926.0	0.8
Artificial Rocky/Hard Shoreline	230.9	0.2
Fung Shui Forest	211.2	0.2
Sandy Shore	211.0	0.2
Montane Forest	109.4	0.1
Rocky Shore	90.6	0.08
Seagrass Bed	6.6	0.01
Others	27837.5	25.6

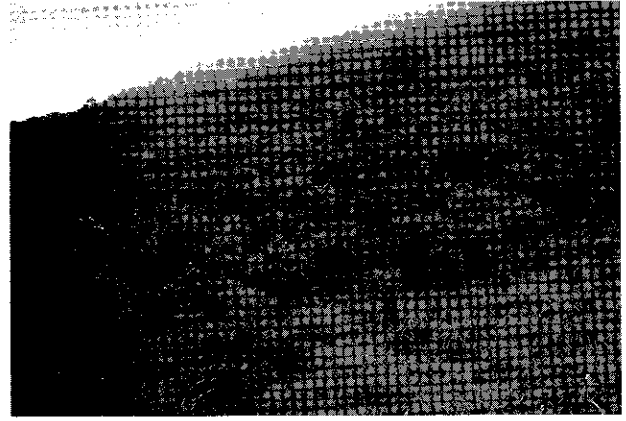


Low-hill forest

“the larger portions of forests have been cut down for fuel, and the destruction is still going on among the woody shrubs and brush-wood” (Westland, 1894). The existing vegetation we see today is the product of the continued efforts in afforestation after the Second World War, the establishment of the Country Parks in late 1970s and natural successions resulting in the development of secondary forests. On the other hand, our vegetation is also influenced by the disturbance from human activities such as land development, agricultural use and hill fire.

Hong Kong is located within the tropical monsoon forest and rain forest region, which is the southern neighbouring region of the subtropical evergreen broad-leaved forest region separated by the line of  $\sim 22^{\circ} 30' N$  latitude (Zhu et al., 2007). Evergreen broad-leaved forest is theoretically the climax vegetation in Hong Kong. However, the major types of terrestrial vegetation in Hong Kong comprise woodland, shrubland and grassland in a dynamic situation. While natural succession may have been arrested in the grassland and shrubland habitats in such harsh sites as hill tops and off-shore islands owing to environmental factors (e.g. extreme exposure to wind, shallow soils and low soil moisture, etc.), much fire-maintained grassland and shrubland in the hillside of the New Territories are of potential to form a forest habitat. Minor formations occur in special habitats in relation to the freshwater and coastal environments, such as mangroves, sandy shores vegetation and marshes (Thrower, 1975; Chang et al., 1989). Patches of agricultural land still exist in the New Territories in the vicinity of traditional villages, although some of them have long been abandoned.

There have been several publications describing the vegetation of Hong Kong and the more classical ones include Thrower (1975) and Hill et al. (1975). Chang et al. (1989) reported the results of a comprehensive study on the vegetation of Hong Kong based on sample plots of various plant community types whereas Zhuang (1993) gave a detailed account on the forest succession of Hong Kong. More recently, Corlett and Dudgeon (2004) gives an overview of our terrestrial habitats including various vegetation types. The percentage land cover by various vegetation types have been given by Ashworth (1993) and the land utilization map published by Planning Department of HKSAR government. The latest figure is shown in **Table 1** based on a study in 2006, entitled “Terrestrial Habitat Mapping and Ranking Based on Conservation Value”. Different vegetation types of Hong Kong are briefly described in the following paragraphs and the typical



Montane forest

species composition are given based on previous studies and unpublished data of the Hong Kong Herbarium.

Four types of forests can be classified by the characteristics of eco-physiognomy and species composition (Chang et al., 1989): (1) river-banks forest, (2) lowland forest, (3) low-hill forest, and (4) montane forest.

(1) River-banks forests are commonly seen along rivers and low-lying areas, with *Cleistocalyx operculatus* (水翁), *Syzygium jambos* (蒲桃), *Bischofia javanica* (秋楓), and *Glochidion zeylanicum* (香港算盤子) being the dominant species.

(2) Lowland forests are mainly distributed in the hilly areas and valleys below 300–400 m, where the Euphorbiaceae (大戟科), Moraceae (桑科), Sapotaceae (山欖科), and Myrtaceae (桃金娘科) are the dominant families and *Ficus microcarpa* (榕樹), *Endospermum chinense* (黃桐), *Acronychia pedunculata* (山油柑), *Schefflera heptaphylla* (鵝掌柴), *Sacroserma laurinum* (肉實樹), *Sterculia lanceolata* (假蘋婆), *Syzygium levinei* (山蒲桃), *Antidesma bunius* (五月茶), *Psychotria asiatica* (九節), and *Aquilaria sinensis* (土沉香) are some examples of the dominant species.

(3) Low-hill forests are mainly distributed on uplands between 300 and 800 m, where the Lauraceae (樟科), Fagaceae (殼斗科) and Theaceae (山茶科) are dominant families and *Machilus thunbergii* (紅楠), *Machilus breviflora* (短序潤楠), *Machilus chekiangensis* (浙江潤楠), *Cinnamomum parthenoxylon* (黃樟), *Schima superba* (木荷), and *Castanopsis fabri* (羅浮錐) are some examples of the dominant species.

(4) Montane forests are found on the hilly relief at 700–1000 m such as Tai Mo Shan, Sunset Peak and Lantau Peak, where the Fagaceae (殼斗科), Theaceae (山茶科), Magnoliaceae (木蘭科), and Hamamelidaceae (金縷梅科) are the dominant families and *Elaeocarpus* (杜英屬) spp., *Camellia kissii* (落瓣油茶), *Ternstroemia gymnanthera* (厚皮香), *Manglietia fordiana* (木蓮), and *Pentaphylax euryoides* (五列木) are some examples of the dominant species.

There are also small but well-developed woodlands associated with many of the older villages and temples. These are the “Fung Shui Woods” (風水林; Sacred or Lucky Groves), which owe their existence to the protection afforded by the villagers in accordance

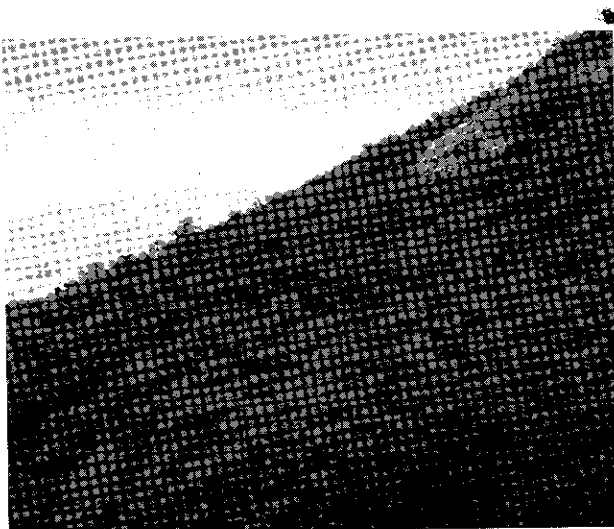
with ancient traditions (Yip et al., 2004). These woodlands are similar floristically with the lowland forests but often enriched by the planting of *Aquilaria sinensis* (土沉香), *Cinnamomum camphora* (樟), and fruit trees such as *Dimocarpus longan* (龍眼), *Litchi chinensis* (荔枝), *Syzygium jambos* (蒲桃) and clumps of large bamboos. According to a study of local fung shui woods conducted by AFCD (Yip et al., 2006), the most common tree species are *Sterculia lanceolata* (假蘋婆), *Dimocarpus longan* (龍眼), *Aporosa dioica* (銀柴), *Aquilaria sinensis* (土沉香) and *Ficus variegata* var. *chlorocarpa* (青果榕). The most common under-storey plants are *Psychotria asiatica* (九節), *Ardisia quinquegona* (羅傘樹) and *Mikania micrantha* (薇甘菊). These are all widely distributed and relatively abundant in the sites where they have been recorded. Other species that are fairly common (recorded in over half of the sites surveyed) and abundant include: *Schefflera heptaphylla* (鵝掌柴), *Cinnamomum camphora* (樟), *Syzygium hancei* (韓氏蒲桃), *Syzygium levinei* (山蒲桃) and *Alocasia odora* (海芋), *Desmos chinensis* (假鷹爪), *Pteris semipinnata* (半邊旗), *Syzygium jambos* (蒲桃), *Uvaria macrophylla* (紫玉盤), *Litchi chinensis* (荔枝), *Ficus hirta* (粗葉榕), *Ficus hispida* (對葉榕) and *Tetracera asiatica* (錫葉藤). Three species were dominant in the overstorey in certain sites but they are not widely distributed: *Schima superba* (木荷), *Endospermum chinense* (黃桐) and *Cinnamomum parthenoxylon* (黃樟).

Plantation areas with *Acacia confusa* (台灣相思), *Eucalyptus* (桉屬) species, *Lophostemon confertus* (紅膠木) and *Melaleuca cajuputi* Roxb. subsp. *cumingiana* (白千層) can be found in our countryside and they can be easily distinguished from other forest types by the monoculture of exotic species and their regular planting pattern. They were established within the last 50 years. They have been originally planted for controlling soil erosion and improving water supplies in the water catchment areas. In general, the plantations have lower species diversity and simpler structure than secondary forests of similar age. The absence of a dense understorey could be attributed to the shade of the canopy or slowly-decomposing leaf litter particularly for the case of *Acacia*. Whether there are allelopathy effects from the exotic species requires further research. Depending on the site conditions, age of the plantation and the dominant species, different levels of natural recruitment in the understorey can be

observed in the plantations nowadays. More native tree species such as *Machilus chekiangensis* (浙江潤楠), *Castanopsis fissa* (鰲蒴錐), *Liquidambar formosana* (楓香) and *Schima superba* (木荷) have now been used in afforestation scheme to enrich the local biodiversity.

Shrubland and grassland are widely distributed in Hong Kong, occupying most of the hillslopes, hill tops and coastal regions. They often exist in a transition between pure grassland, scattered shrubs amongst the grassland to dense shrubland. The most common shrub species are *Baeckea frutescens* (崗松), *Rhodomyrtus tomentosa* (桃金娘), *Polyspora axillaris* (大頭茶), *Eurya* (柃屬), *Ilex* (冬青屬) spp., *Melastoma* (野牡丹屬) spp., *Rhaphiolepis indica* (石斑木), *Rhus* (漆樹屬) spp., *Litsea rotundifolia* var. *oblongifolia* (豺皮樟) while the grasses include *Arundinella setosa* (刺芒野古草), *Cymbopogon caesius* (青香茅), *Miscanthus sinensis* (芒), *Ischaemum indicum* (細毛鴨嘴草) as well as a fern *Dicranopteris pedata* (芒萁). These species share similar ecological characteristics, especially their ability to regenerate after hill fire and their drought tolerance. Grasses and some ferns store food in their underground rhizomes and can tolerate repeated burning by re-growth from the protected base of the leaf. In addition, they can adapt to shallow soil by a wide spreading system of fine fibrous roots. Similarly, the fire-tolerant shrub species such as *Rhodomyrtus tomentosa* (桃金娘) can regenerate from the woody stem base after fire. In particular, *Baeckea frutescens* (崗松) with its needle-like leaves could be extremely drought tolerant at very windy site. Once fire is under control, ecological succession should take place at the more sheltered sites and the grassland and shrubland would be invaded by the pioneer tree species such as *Mallotus paniculatus* (白楸), *Sapium discolor* (山烏柏), *Machilus chekiangensis* (浙江潤楠), *Schefflera heptaphylla* (鵝掌柴), *Aporosa dioica* (銀柴), *Archidendron lucidum* (亮葉猴耳環) and *Itea chinensis* (老鼠刺).

Certain plants tolerant of coastal conditions can be found on the long and irregular coastline of Hong Kong. They usually possess special adaptations to the harsh environment. On sandy beaches, sand particles are constantly stirred and moved by tides, waves and wind and not many species can establish on the substratum. In addition, owing to the strong wave action, plant life is usually



Shrubland

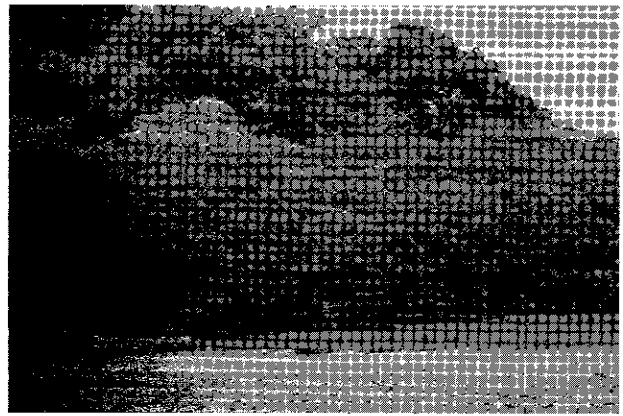


Sandy shore vegetation

absent at the inter-tidal zone of sandy beaches but present at the back shore. The sandy shores support distinctive vegetation characterized by the dominance of herbaceous perennials, mostly with creeping habit and many with stiff and spinose or succulent leaves (Hu, 1974). Pioneers and sand-binding plants, such as *Gynura divaricata* (白子菜), *Ipomoea pes-caprae* (厚藤), *Sporobolus virginicus* (鹽地鼠尾粟), *Panicum repens* (鋪地黍), *Vitex rotundifolia* (單葉蔓荊), *Spinifex littoreus* (飄刺) and *Wedelia* (蟛蜞菊屬) spp., frequently occur on the seaward side of the beach. These are followed by the shrubby *Clerodendrum inerme* (苦郎樹), *Crinum asiaticum* var. *sinicum* (文殊蘭), *Scaevola taccada* (草海桐), *Caesalpinia crista* (華南雲實), *Canavalia gladiata* (刀豆) and the larger shrubs or trees of *Pandanus tectorius* (露兜樹), *Phoenix hanceana* (刺葵), *Hibiscus tiliaceus* (黃槿), *Macaranga tanarius* (血桐), and *Cerbera manghas* (海杧果) and towards the back of the beach. Most of the natural sandy beaches in Hong Kong have been affected by human activities for recreational and agricultural uses. Tai Long Wan in Sai Kung is by far the largest and most well-preserved sandy beach in Hong Kong and presents the most representative sandy shore vegetation. The site has been listed as a SSSI since 1979.

The muddy shore is associated with the estuary of rivers. The substratum is fine in texture and rich in organic matter, supporting two different vegetation types namely salt marshes and mangrove. Salt marshes are usually found closer to rivers with constant freshwater supply and dominated by grasses (e.g. *Phragmites australis* 蘆葦) and sedges (*Cyperus* spp. 莎草屬, *Scirpus* spp. 蕁草屬). The mangroves grow at the inter-tidal region of muddy shores and are always immersed at trunk level or even up to the foliage by high tides. Such growing conditions impose several constraints including anaerobic condition, unstable substratum, high salinity, difficult establishment and desiccation. Mangrove plants, however, have special adaptations to cope with these problems, for instance, pneumatophores, knee joints and prop roots, salt glands, viviparous reproduction, and xerophytic features of leaves. There are altogether seven true mangrove species namely *Aegiceras corniculatum* (蠟燭果), *Avicennia marina* (海欖雌), *Bruguiera gymnorhiza* (木欖), *Excoecaria agallocha* (海漆), *Kandelia obovata* (秋茄樹), *Lumnitzera racemosa* (欖李) and *Heritiera littoralis* (銀葉樹) whereas *Acrostichum aureum* (鹵蕨) and *Acanthus ilicifolius* (老鼠箭) are considered as true mangrove or mangrove associates by different authors (Tam & Wong, 2000; Lee, 2003). The largest and most representative muddy shore in Hong Kong is the Mai Po Marshes which has been listed as a SSSI since 1976.

On abandoned agricultural land and wetlands, dominant species include *Isachne globosa* (柳葉箬), *Lindernia anagallis* (長蒴母草), *Cyclosorus interruptus* (間斷毛蕨), *Cyperus pilosus* (毛軸莎草), *Ludwigia perennis* (細花丁香蓼), *Melastoma candidum* (野牡丹), *Commelina diffusa* (節節草), *Ludwigia octovalvis* (毛草龍), *Panicum repens* (鋪地黍), *Pycreus polystachyos* (多穗扁莎), *Glochidion zeylanicum* (香港算盤子), *Paspalum orbiculare* (圓果雀稗), *Sacciolepis indica* (囊穎草), *Floscopa scandens* (聚花草), *Kyllinga brevifolia* (短葉水蜈蚣), *Ceratopteris thalictroides* (水蕨), *Cyperus haspan* (畦畔莎草), *Hygrophila salicifolia* (水蓑衣), *Pogostemon auricularius* (水珍珠菜), *Pycreus flavidus* (球穗扁莎), *Sapium sebiferum* (烏柏) and *Eleocharis dulcis* (荸薺) (based on data from a recent survey conducted by AFCD).



Mangroves on muddy shore

### Looking forward

The percentage of forest cover in Hong Kong has been increasing since the post war period. This trend demonstrates our previous efforts in afforestation, tree preservation and hill-fire control, especially in the Country Parks, are promising. Most of the exotic species planted in past afforestation schemes such as *Acacia* spp., *Eucalyptus* spp., *Lophostemon confertus*, and *Melaleuca cajuputi* subsp. *cumingiana* are unable to reproduce by themselves in the plantations. Hence, with the aging and declining of such exotic plantations, native species would gradually colonise such sites and replace the exotic species, resulting in more diverse forest habitats. In addition, more grassland and shrubland would be transformed into secondary forests through natural succession on areas where hill fires could be effectively controlled and environmental conditions are suitable. Our future effort in afforestation would focus more on creating forests with diverse native species for biodiversity enhancement and ecological sustainability. Another focal point would be on creating ecological linkages among existing established forests. In conclusion, our protected area system, including Country and Marine Parks, Restricted Areas as well as Sites of Special Scientific Interest, has preserved the best representative examples of various vegetation types and plant communities in Hong Kong. On-going monitoring is being carried out to identify threats such as human disturbance or potential impacts of invasive species at early stages. Further efforts would also be attempted to maintain the long-term viability of some valuable plant populations and communities.



Abandoned agricultural land and wetland

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# ANGIOSPERMS

## 被子植物

HU Qi-ming 胡啟明

Herbs, shrubs or trees, usually with roots, stems and leaves. Secondary xylem almost all with vessels, rarely with tracheids. Flowers usually consisting of sepals, petals, androecium and gynoecium. Perianth undifferentiated or differentiated into calyx and corolla. Ovules enclosed by one or more carpels. Fruit dehiscent or indehiscent, containing one or more seeds.

### A. Magnoliopsida

#### 木蘭亞綱

Leaves usually with net-veined. Vascular bundles of the stem open or less often closed, typically arranged in concentric rings, with cambium. Flowers often 4- or 5-merous, rarely 3-merous. Cotyledons 2, rarely 1, 3 or 4.

##### Key to the Families

- 1a. Petals free at the base, or petals absent.
  - 2a. Flowers always unisexual and apetalous, at least the male flowers in deciduous catkins. Plants woody ..... Key 9
  - 2b. Flowers unisexual or bisexual, polypetalous or apetalous, not in catkins or, if so, plants herbaceous.
    - 3a. Gynoecium of 2 or more free carpels ..... Key 1
    - 3b. Gynoecium of 1 carpel or syncarpous (if subapocarpous then carpels united near the base, or by a common style).
      - 4a. Perianth of 2 or more whorls, calyx and corolla both present (calyx rarely obsolete; excluding aquatic plants with minute, quickly caducous petals, and branch parasites with opposite, leathery leaves).
        - 5a. Stamens more than 2 × the number of petals (petals never more than 10) ..... Key 2
        - 5b. Stamens 2 × the number of petals or fewer.
          - 6a. Stamens and perianth perigynous, or ovary fully or partly inferior ..... Key 5
          - 6b. At least one whorl of the perianth hypogynous, or stamens hypogynous or inserted on the top of a hypogynous disc in which the ovary may be immersed.
            - 7a. Placentation axile, apical, basal or free-central ..... Key 3
            - 7b. Placentation parietal or marginal ..... Key 4
        - 4b. Perianth of 1 whorl, sometimes petaloid or 0; if perianth of 2 or more whorls then the segments of each whorl ± indistinguishable in flower.
          - 8b. Stamens apparently borne on the perianth, or ovary partly or fully inferior (female flowers sometimes without a perianth) ..... Key 8
          - 8a. Stamens not borne on the perianth or ovary naked.
            - 9a. Flowers unisexual ..... Key 6
            - 9b. Flowers bisexual ..... Key 7
  - 1b. Petals present, united at the base, at least shortly so.
    - 10a. Ovary partly or fully inferior ..... Key 12
    - 10b. Ovary superior.
      - 11a. Corolla actinomorphic ..... Key 10
      - 11b. Corolla zygomorphic ..... Key 11

##### Key 1

- 1a. Trees with exfoliating bark, palmately lobed leaves and unisexual flowers in pendulous, globose heads ..... 44. **Platanaceae**
- 1b. Combination of characters not as above.
  - 2a. Perianth and stamens perigynous.
    - 3a. Perianth polymerous; leaves opposite ..... 15. **Calycanthaceae**



- 3b. Perianth 4–5-merous; leaves alternate or basal..... 177. **Rosaceae**
- 2b. Perianth and stamens hypogynous.
- 4a. Aquatic plants with peltate leaves; carpels sunk in an obconical receptacle..... 25. **Nelumbonaceae**
- 4b. Combination of characters not as above.
- 5a. Herbs and succulent shrubs, if climbers then with bisexual flowers and opposite leaves.
- 6a. Perianth absent..... 20. **Saururaceae**
- 6b. Perianth present.
- 7a. Stout herbs; Flowers in racemes; fruit a berry; leaves simple, entire, alternate.....67. **Phytolaccaceae**
- 7b. Combination of characters not as above.
- 8a. Leaves succulent; stamens in 1 or 2 whorls ..... 174. **Crassulaceae**
- 8b. Leaves not succulent; stamens spirally arranged, numerous and indefinite...30. **Ranunculaceae**
- 5b. Trees, shrubs, or if climbers then with unisexual flowers and alternate leaves.
- 9a. Leaves simple.
- 10a. Sepals 5, persistent; petals 3–5; anthers extrose or latrose..... 81. **Dilleniaceae**
- 10b. Combination of characters not as above.
- 11a. Unisexual climbers.
- 12a. Carpels many; seeds not U-shaped..... 24. **Schisandraceae**
- 12b. Carpels 3 or 6; seeds often U-shaped .....35. **Menispermaceae**
- 11b. Erect trees or shrubs, if climbers then flowers bisexual.
- 13a. Leaves with large caducous stipules..... 6. **Magnoliaceae**
- 13b. Leaves without stipules.
- 14a. Perianth parts imbricate; fruit capsular..... 23. **Illiciaceae**
- 14b. Perianth parts valvete; fruit berry-like ..... 8. **Annonaceae**
- 9b. Leaves compound.
- 15a. Trees, erect shrubs or perennial herbs; leaves punctate with pellucid, aromatic glands; fruit a follicle ..... 266. **Rutaceae**
- 15b. Woody climbers.
- 16a. Leaves pinnately compound; flowers bisexual; fruit a 1-seeded follicle ..... 160. **Connaraceae**
- 16b. Leaves ternate or palmately compound; flowers unisexual; fruit berry-like.
- 17a. Carpels 3–9, in 1–2 whorls; ovules many in each carpel..... 34. **Lardizabalaceae**
- 17b. Carpels many, spirally arranged on an elongate receptacle; ovules 1 in each carpel..... 33. **Sargentodoxaceae**

### Key 2

- 1a. Perianth and stamens hypogynous.
- 2a. Placentation axile or free-central.
- 3a. Placentation free-central; sepals usually 2 .....75. **Portulacaceae**
- 3b. Placentation axile; sepals usually 5, rarely fewer.
- 4a. Leaves opposite, exstipulate ..... 100. **Guttiferae**
- 4b. Leaves alternate.
- 5a. Anthers opening by terminal pores.
- 6a. Shrubs or woody climbers; fruit a berry; seeds numerous..... 89. **Actinidiaceae**
- 6b. Trees; fruit a drupe or a capsule, 1–many-seeded ..... 101. **Elaeocarpaceae**
- 5b. Anthers opening lengthwise.
- 7a. Leaves punctate with pellucid, aromatic glands ..... 266. **Rutaceae**
- 7b. Leaves not punctate, nor aromatic.
- 8a. Stipules absent; leaves evergreen ..... 88. **Theaceae**
- 8b. Stipules present; leaves usually deciduous.
- 9a. Filaments free; anthers 2-celled ..... 102. **Tiliaceae**
- 9b. Filaments united into a tube, at least around the ovary, often also around the styles; anthers often 1-celled.
- 10a. Style divided, several; pollen grains spiny; stipules often persistent; carpels 5 or more ..... 105. **Malvaceae**
- 10b. Style 1, capitate or lobed, stigmas 1–several; pollen grains not spiny; stipules usually deciduous; carpels 2–5.
- 11a. Stamens in 2 whorls, those of the outer whorl usually staminodial; trunks or stems relatively slender..... 103. **Sterculiaceae**
- 11b. Stamens in several whorls, staminodes absent; trunks often swollen, spiny ..... 104. **Bombacaceae**
- 2b. Placentation marginal or parietal.
- 12a. Carpel 1, with marginal placentation; fruit a legume.

- 13a. Adaxial petal interior (ascending imbrication) or petal 1 or absent; seed usually with a straight radicle..... 184. **Caesalpiniaceae**
- 13b. Adaxial petal exterior (descending imbrication); seed usually with an incurved radicle..... 185. **Fabaceae**
- 12b. Combination of characters not as above.
- 14a. Leaves opposite, with pellucid glands ..... 100. **Guttiferae**
- 14b. Leaves alternate or basal, without pellucid glands.
- 15a. Herbs; leaves mostly basal..... 38. **Papaveraceae**
- 15b. Trees or shrubs; leaves alternate.
- 16a. Anthers horseshoe-shaped, opening by pore-like slits; fruit covered with prickles ..... 112. **Bixaceae**
- 16b. Anthers not horseshoe-shaped, opening lengthwise; fruit without prickles ..... 136. **Capparaceae**
- 1b. Perianth and stamens perigynous or epigynous.
- 17a. Flowers unisexual; leaf base oblique..... 133. **Begoniaceae**
- 17b. Flowers bisexual; leaf base not oblique.
- 18a. Placentation free-central; ovary partly inferior ..... 75. **Portulacaceae**
- 18b. Placentation not free-central; ovary superior or inferior.
- 19a. Aquatic plants with cordate leaves ..... 26. **Nymphaeaceae**
- 19b. Terrestrial plants; leaves various.
- 20a. Carpels 8–12, superposed..... 200. **Punicaceae**
- 20b. Carpels fewer  $\pm$  side by side.
- 21a. Leaves stipulate.
- 22a. Leaves opposite; petals lacerate or deeply bilobed ..... 205. **Rhizophoraceae**
- 22b. Leaves alternate; petals entire or emarginated ..... 177. **Rosaceae**
- 21b. Leaves exstipulate.
- 23a. Style more than 1 or stigma 4-6-lobed ..... 167. **Hydrangeaceae**
- 23b. Style 1, stigma simple.
- 24a. Leaves without pellucid aromatic glands; ovary superior, only the very base sometimes adnate to the hypanthium ..... 191. **Sonneratiaceae**
- 24b. Leaves with pellucid aromatic glands; ovary half to fully inferior ..... 199. **Myrtaceae**

### Key 3

- 1a. Resinous trees or shrubs; leaves simple or pinnate, alternate; flowers with a hypogynous disc, mostly unisexual; stamens 4–5 or 8–10; fruit 1-seeded, drupe-like..... 261. **Anacardiaceae**
- 1b. Combination of characters not as above.
- 2a. Placentation free-central or basal.
- 3a. Stamens antipetalous.
- 4a. Anthers opening by valves; stigma 1; shrubs ..... 32. **Berberidaceae**
- 4b. Anthers opening by slits; stigmas more than 1; fleshy herbs..... 75. **Portulacaceae**
- 3b. Stamens not antipetalous ..... 78. **Caryophyllaceae**
- 2b. Placentation axile or apical.
- 5a. Anthers opening by terminal pores; stamens not antipetalous
- 6a. Flowers strongly zygomorphic, papilionaceous.
- 7a. Perennial herbs or subshrubs; fruit a capsule..... 250. **Polygalaceae**
- 7b. Evergreen trees; fruit a drupe..... 251. **Xanthophyllaceae**
- 6b. Flowers actinomorphic, not papilionaceous ..... 91. **Pentaphylacaceae**
- 5b. Anthers opening by longitudinal slits or stamens antipetalous.
- 8a. Herbs.
- 9a. Leaves aromatic, glandular-punctate ..... 266. **Rutaceae**
- 9b. Leaves neither aromatic nor glandular-punctate.
- 10a. Perianth actinomorphic; leaves trifoliolate ..... 268. **Oxalidaceae**
- 10b. Perianth zygomorphic, spurred; leaves simple..... 272. **Balsaminaceae**
- 8b. Trees, shrubs, or climbers.
- 11a. Flowers with a well developed hypogynous glandular disc below or around the ovary.
- 12a. Stamens antipetalous.
- 13a. Inflorescence leaf-opposed; usually climbers with leaf opposed tendrils..... 240. **Vitaceae**
- 13b. Inflorescence not leaf-opposed; trees or shrubs without tendrils ..... 37. **Sabiaceae**
- 12b. Stamens not antipetalous.
- 14a. Leaves with pellucid aromatic glands ..... 266. **Rutaceae**
- 14b. Leaves without pellucid aromatic glands.
- 15a. Resinous trees; style 1; fruit a 1-seeded drupe ..... 260. **Burseraceae**
- 15b. Combination of characters not as above.
- 16a. Corolla zygomorphic ..... 257. **Sapindaceae**
- 16b. Corolla actinomorphic.

- 17a. Flowers functionally unisexual or polygamous.
- 18a. Leaves opposite; fruit a schizocarp of 2 samaras..... 259. **Aceraceae**
- 18b. Leaves alternate; fruit otherwise.
- 19a. Disc extra-staminal; leaves usually paripinnate, sometimes imparipinnate (*Koelreuteria*) or simple (*Dodonaea*) ..... 257. **Sapindaceae**
- 19b. Disc intra-staminal; leaves usually imparipinnate ..... 263. **Simaroubaceae**
- 17b. Flowers all bisexual.
- 20a. Leaves entire or toothed; stamens 4–5, emerging from the fleshy disc ..... 223. **Celastraceae**
- 20b. Combination of characters not as above.
- 21a. Leaves compound; filaments usually connate into a tube ..... 265. **Meliaceae**
- 21b. Leaves simple; filaments free ..... 243. **Ixonanthaceae**
- 11b. Flowers without hypogynous glandular disc.
- 22a. Petals long-clawed, fringed; sepals with abaxial nectaries ..... 246. **Malpigiaceae**
- 22b. Combination of characters not as above.
- 23a. Filaments united below ..... 103. **Sterculiaceae**
- 23b. Filaments free.
- 24a. Stamens 2, anther cells back to back ..... 298. **Oleaceae**
- 24b. Stamens 3–10, anther cells not back to back.
- 25a. Ovules numerous on each placenta; fruit a capsule ..... 165. **Pittosporaceae**
- 25b. Ovules 1–2 on each placenta; fruit otherwise.
- 26a. Flowers usually 4-merous; fruit a berry-like drupe ..... 228. **Aquifoliaceae**
- 26b. Flowers 5-merous; fruit drupaceous, not berry-like ..... 236. **Pandaceae**

#### Key 4

- 1a. Flowers zygomorphic.
- 2a. Ovary of 1 carpel with marginal placentation; fruit a legume.
- 3a. Adaxial petal interior (ascending imbrication) ..... 183. **Caesalpiaceae**
- 3b. Adaxial petal exterior (descending imbrication) ..... 185. **Fabaceae**
- 2b. Ovary of 2 or more carpel; fruit various, never a legume.
- 4a. Stamens and petals 5; carpels 3 ..... 118. **Violaceae**
- 4b. Stamens and petals 4 or 6; carpels 2.
- 5a. Ovary borne on a gynophore; stamens usually exserted ..... 136. **Capparaceae**
- 5b. Ovary usually sessile; stamens not exserted ..... 39. **Fumariaceae**
- 1b. Flowers actinomorphic.
- 6a. Petals and stamens numerous.
- 7a. Trees or shrubs; leaves not succulent ..... 110. **Flacourtiaceae**
- 7b. Herbs or subshrubs; leaves succulent ..... 70. **Aizoaceae**
- 6b. Petals and stamens definite.
- 8a. Petals 5; stamens 10; leaves imparipinnate ..... 160. **Connaraceae**
- 8b. Combination of characters not as above.
- 9a. Trees or shrubs; leaves scaly ..... 119. **Tamaricaceae**
- 9b. Herbs or climbers; leaves not scaly.
- 10a. Leaves insectivorous by means of glandular hairs ..... 109. **Droseraceae**
- 10b. Leaves not insectivorous.
- 11a. Climbers with tendrils; stamens 5; corona present; fruit a berry ..... 125. **Passifloraceae**
- 11b. Herbs; stamens 2+4; corona absent; fruit a silique ..... 137. **Brassicaceae**

#### Key 5

- 1a. Petals and stamens numerous; plants succulent.
- 2a. Stem succulents; spiny and with much reduced or obsolete leaves; placentation parietal ..... 72. **Cactaceae**
- 2b. Leaf succulents, without spines; placentation axile or parietal ..... 70. **Aizoaceae**
- 1b. Petals and stamens definite, usually less than 10; plants usually not succulent.
- 3a. Anthers opening by a single (rarely 2) pore; stamens geniculate; leaves with 3 parallel main veins ..... 203. **Melastomataceae**
- 3b. Anthers opening by slits or valves; stamens not geniculate; leaves with reticulate venation.
- 4a. Placentation marginal; fruit a legume.
- 5a. Adaxial petal interior (ascending imbrication) or petal 1 or absent; seed usually with a straight radicle ..... 184. **Caesalpiaceae**

- 5b. Adaxial petal exterior (descending imbrication); seed usually with a incurved radicle.....185. **Fabaceae**
- 4b. Placentation not marginal; fruit never a legume.
- 6a. Placentation prietal, placentae sometime intrusive.
- 7a. Herbaceous climbers with tendrils; flowers unisexual.....130. **Cucurbitaceae**
- 7b. Herbs, shrubs or woody climbers, without tendrils; flowers usually bisexual.
- 8a. Leaves digitately 3–5-foliolate; carpel 1 with 1 pendulous ovule ..... 18. **Hernandiaceae**
- 8b. Leaves simple; carpels more than 1, each with many ovules.
- 9a. Perennial herbs; leaves radical ..... 176. **Saxifragaceae**
- 9b. Shrubs; leaves opposite or alternate.
- 10a. Stamens 8 or more; leaves opposite ..... 167. **Hydrangeaceae**
- 10b. Stamens 5; leaves alternate..... 169. **Grossulariaceae**
- 6b. Placentation axile, basal, apical or free-central.
- 11a. Placentation free-central; fruit a capsule ..... 78. **Caryophyllaceae**
- 11b. Placentation axile, basal or apical.
- 12a. Stamens antipetalous; trees or shrubs with simple leaves.....238. **Rhamnaceae**
- 12b. Stamens antisepalous or 2 × as many as petals; herbaceous or woody, leaves simple to compound.
- 13a. Flowers in umbels, sometimes condensed into heads; leaves usually compound; ovary inferior.
- 14a. Fruit a schizocarp, splitting into 2 mericarps; flowers usually bisexual; petals imbricate; herbs without stellate hairs.....274. **Umbelliferae**
- 14b. Fruit a berry; flowers often unisexual; petals valvate; plants woody, often with stellate hairs ..... 273. **Araliaceae**
- 13b. Flowers not in umbels; leaves usually simple; ovary superior or inferior.
- 15a. Style 1.
- 16a. Ovary 1-locular with 2–5 ovules; fruit leathery or drupe-like, 1-seeded ..... 204. **Combretaceae**
- 16b. Ovary (1–)2–5-locular, ovules various ; fruit not as above.
- 17a. Ovules solitary in each locule.
- 18a. Stamens with swollen, villous filaments; petals recurved ..... 206. **Alangiaceae**
- 18b. Stamens without swollen, villous filaments; petals not recurved..... 207. **Cornaceae**
- 17b. Ovules 2–numerous in each locule.
- 19a. Ovary inferior ..... 201. **Onagraceae**
- 19b. Ovary superior.
- 20a. Calyx tube not prominently ribbed; seeds arillate; mostly trees, shrubs or climbers..... 223. **Celastraceae**
- 20b. Calyx tube prominently ribbed; seeds not arillate; mostly herbaceous ..... 192. **Lythraceae**
- 15b. Style more than 1, often 2 divergent.
- 21a. Fruit a group of samaras; trees or shrubs with opposite lobed or compound leaves.....259. **Aceraceae**
- 21b. Combination of characters not as above.
- 22a. Trees or small trees, flowers in heads or short, condensed spikes..... 45. **Hamamelidaceae**
- 22b. Shrubs or herbs, flowers in corymbs or panicles.
- 23a. Stoloniferous herbs; leaves radical ..... 176. **Saxifragaceae**
- 23b. Shrubs; leaves opposite or alternate.
- 24a. Leaves opposite, rarely whorled ..... 167. **Hydrangeaceae**
- 24b. Leaves alternate ..... 169. **Grossulariaceae**

### Key 6

- 1a. Root parasites, lacking chlorophyll..... 218. **Balanophoraceae**
- 1b. Free-living plants.
- 2a. Ovary 3-locular; styles 3.
- 3a. Leaves with sheathing, membranous stipules; perianth segments 6; fruit a nut .....79. **Polygonaceae**
- 3b. Combination of characters not as above.
- 4a. Fruit schizocarpic; sap often milky; styles usually divided; seeds usually carunculate ..... 237. **Euphorbiaceae**
- 4b. Fruit a loculicidal capsule; sap not milky; styles undivided; seeds not carunculate..... 234. **Buxaceae**
- 2b. Ovary 1, 2- or 4-locular; styles 1–2.
- 5a. Stamens 2, anther cells back to back ..... 298. **Oleaceae**
- 5b. Stamens more than 2, anther cells not back to back.
- 6a. Leaves forming insectivorous pitcher ..... 108. **Nepenthaceae**
- 6b. Leaves neither insectivorous nor pitcher-like.
- 7a. Placentation parietal; stamens numerous; fruit a berry or capsule ..... 110. **Flacourtiaceae**
- 7b. Combination of characters not as above.
- 8a. Trees, shrubs or climbers; ovules apical.

- 9a. Ovules 4, of which only 1 develops; flowers in axillary racemes ..... 47. **Daphniphyllaceae**
- 9b. Ovule 1, flowers not in axillary racemes.
  - 10a. Sap watery; fruit a drupe ..... 51. **Ulmaceae**
  - 10b. Sap milky; fruit a syncarp ..... 53. **Moraceae**
- 8b. Herbs or shrubs; ovules not apical.
  - 11a. Plants usually with cystoliths; leaves often 3-veined; stamens incurved in bud ..... 55. **Urticaceae**
  - 11b. Plants without cystoliths; leaves not 3-veined; stamens erect in bud.
    - 12a. Perianth scarious; stamens often connate below ..... 74. **Amaranthaceae**
    - 12b. Perianth greenish or absent; stamens free.
      - 13a. Leaves all opposite; fruit splitting into 2 mericarps ..... 237. **Euphorbiaceae**
      - 13b. Leaves alternate, at least above; fruit not as above.
        - 14a. Ovary septate, 4-ovuled; leaves leathery ..... 234. **Buxaceae**
        - 14b. Ovary unilocular, 1-ovuled; leaves not leathery.
          - 15a. Leaves stipulate; ovule apical ..... 52. **Cannabaceae**
          - 15b. Leaves exstipulate; ovule basal ..... 73. **Chenopodiaceae**

**Key 7**

- 1a. Trees or aromatic shrubs.
  - 2a. Leaves with pellucid, aromatic glands; anthers opening by valves ..... 17. **Lauraceae**
  - 2b. Leaves without pellucid, aromatic glands; anthers opening by slits.
    - 3a. Calyx lobes usually 5; stamens 10–numerous; ovary 2–5-locular, with 2–many ovules in each locule .. 102. **Tiliaceae**
    - 3b. Calyx lobes 4–5; stamens as many; ovary 1-locular with 1 ovule ..... 51. **Ulmaceae**
- 1b. Herbs, climbers or non-aromatic shrubs.
  - 4a. Perianth absent; flowers borne in a continuous fleshy spike ..... 21. **Piperaceae**
  - 4b. Combination of characters not as above.
    - 5a. Very tiny aquatics of running water, resembling algae, mosses or hepatics ..... 188. **Podostemaceae**
    - 5b. Combination of characters not as above.
      - 6a. Leaves with sheathing, membranous stipules; fruit often a 3-sided nut ..... 79. **Polygonaceae**
      - 6b. Leaves exstipules; fruit not as above.
        - 7a. Ovary of 1 carpel, 1-seeded; perianth usually petaloid, bracts often calyx-like ..... 69. **Nyctaginaceae**
        - 7b. Ovary of 2 or more carpels, 1–many-seeded; perianth not petaloid.
          - 8a. Ovules numerous on axile placenta; leaves opposite or whorled ..... 77. **Molluginaceae**
          - 8b. Ovules solitary, basal; leaves often alternate.
            - 9a. Perianth green, membranous or 0; stamens free ..... 73. **Chenopodiaceae**
            - 9b. Perianth scarious; stamens often connate below ..... 74. **Amaranthaceae**

**Key 8**

- 1a. Stem-parasitic shrubs.
  - 2a. Flowers bisexual; calycul present; perianth petaloid ..... 215. **Loranthaceae**
  - 2b. Flowers unisexual; calycul absent; perianth greenish, inconspicuous ..... 216. **Viscaceae**
- 1b. Terrestrial free-living plants.
  - 3a. Perianth absent; flowers in spikes.
    - 4a. Ovary inferior, 1-locular with 1 ovule; leaves opposite, petioles connate at the base ..... 19. **Chloranthaceae**
    - 4b. Ovary superior, 3 carpellate with 3–8 ovules; leaves alternate, petioles not connate at the base ..... 20. **Saururaceae**
  - 3b. Perianth present; flowers usually not in spikes.
    - 5a. Plants covered with silvery scurfy scales; fruit enclosed in a fleshy perianth tube ..... 186. **Elaeagnaceae**
    - 5b. Plants without silvery scurfy scales; fruit not as above.
      - 6a. Perianth tube cylindric, gibbous at the base; stamens 4, inserted on the perianth-segments ..... 187. **Proteaceae**
      - 6b. Combination characters not as above.
        - 7a. Stamens 4–5, opposite to the perianth-segments; ovules suspended from a central placental column; scandent shrubs or herbs with trinerved or linear leaves ..... 213. **Santalaceae**
        - 7b. Combination of characters not as above.
          - 8a. Flowers zygomorphic or 3-lobed.
            - 9a. Perianth-segments free; ovary 3-locular; leaf base oblique ..... 133. **Begoniaceae**
            - 9b. Perianth tubular or united at base; ovary usually 6-locular; leaf base symmetrical ..... 22. **Aristolochiaceae**
          - 8b. Flowers actinomorphic.
            - 10a. Herbaceous climbers; stems and leaves ± fleshy ..... 76. **Basellaceae**
            - 10b. Trees, shrubs or herbs; stems and leaves not fleshy.
              - 11a. Ovary inferior.
                - 12a. Leaves alternate; perianth-segments thickening in fruit; ovary 1-locular with 1 ovule ..... 73. **Chenopodiaceae**

- 12b. Leaves opposite or whorled; perianth-segments not thickened in fruit; ovary usually 4-locular, each locule with 1 ovule..... 189. **Haloragaceae**
- 11b. Ovary superior.
- 13a. Leaves aromatic, dotted with pellucid glands; anthers opening by valves..... 17. **Lauraceae**
- 13b. Leaves neither aromatic nor gland-dotted; anthers not opening by valves.
- 14a. Perianth of 1 whorl or petals reduced to scales; stamens 8–10 borne at different levels in the perianth-tube..... 197. **Thymelaeaceae**
- 14b. Perianth of 2 whorls; petals conspicuous, inserted at calyx-tube; stamens not as above..... 192. **Lythraceae**

**Key 9**

- 1a. Branchlets jointed; leaves reduced to whorls of scales..... 66. **Casuarinaceae**
- 1b. Branchlets not jointed; leaves expanded.
- 2a. Leaves pinnate..... 59. **Juglandaceae**
- 2b. Leaves simple or lobed.
- 3a. Ovules many, parietal; seeds many, woolly; male catkins erect with the stamens exerted beyond the bracts, or pendulous with deciduous, lacinate bracts..... 134. **Salicaceae**
- 3b. Ovules solitary or few; seeds few, glabrous; male catkins not as above.
- 4a. Leaves exstipulate, with golden, aromatic glands..... 60. **Myricaceae**
- 4b. Leaves neither gland-dotted nor aromatic, stipulate or not.
- 5a. Styles 3, often divided; fruit schizocarpic; seeds carunculate..... 237. **Euphorbiaceae**
- 5b. Style 1–6, simple; fruit not schizocarpic; seeds not carunculate.
- 6a. Plants without milky sap; fruit a nut surrounded or enclosed by a scaly cupule..... 63. **Fagaceae**
- 6b. Plants with milky sap; fruit not as above..... 53. **Moraceae**

**Key 10**

- 1a. Stamens 2, anther cells back to back; plants woody..... 298. **Oleaceae**
- 1b. Combination of characters not as above.
- 2a. Carpels several,  $\pm$  free; plants always succulent..... 174. **Crassulaceae**
- 2b. Ovary syncarpous, or at least with the styles united; rarely 1-carpellate; plants seldom succulent.
- 3a. Parasites, without chlorophyll..... 284. **Cuscutaceae**
- 3b. Terrestrial free-living plants, with chlorophyll.
- 4a. Corolla scarious, 4-lobed; stamens 4, exerted; leaves basal with parallel veins..... 296. **Plantaginaceae**
- 4b. Combination of characters not as above.
- 5a. Sap milky; leaves alternate; stamens antipetalous or at least  $2 \times$  the number of corolla lobes.
- 6a. Flowers bisexual; leaves entire; fruit a hard, few-seeded berry..... 151. **Sapotaceae**
- 6b. Flowers mostly unisexual; leaves palmately lobed; fruit a pepo-like berry..... 127. **Caricaceae**
- 5b. Combination of characters not as above.
- 7a. Stamens antipetalous; placentation axile, free-central or basal.
- 8a. Plants usually with leaf-opposed tendrils; petals calyprate; placentation axile..... 240. **Vitaceae**
- 8b. plants without tendrils; petals not calyprate; placentation free-central or basal.
- 9a. Placentation basal; ovule 1, pendulous on long, curved funicle; fruit 1-seeded..... 80. **Plumbaginaceae**
- 9b. Placentation free-central; ovules usually many though fruit often 1-seeded.
- 10a. Shrubs or small trees; fruit a 1-seeded drupe or a many-seeded berry..... 157. **Myrsinaceae**
- 10b. Herbs, rarely subshrubs; fruit a many-seeded capsule..... 158. **Primulaceae**
- 7b. Stamens antisepalous or more numerous or fewer than corolla lobes; placentation various, never free-central.
- 11a. Leaves bipinnate or phyllodic; fruit a legume..... 183. **Mimosaceae**
- 11b. Combination of characters not as above.
- 12a. Anthers opening by pores.
- 13a. Stamens numerous..... 89. **Actinidiaceae**
- 13b. Stamens 5, 8 or 10.
- 14a. Stamens hypogynous, often  $2 \times$  the number of corolla lobes..... 147. **Ericaceae**
- 14b. Stamens epipetalous, usually 5, alternating with the corolla lobes..... 282. **Solanaceae**
- 12b. Anthers opening lengthwise.
- 15a. Stamens at least  $2 \times$  the number of corolla lobes.
- 16a. Leaves stipulate; stamens united, forming a long tube around the style..... 105. **Malvaceae**

- 16b. Leaves exstipulate; stamens free or shortly united.  
 17a. Flowers unisexual; fruit fleshy ..... 152. **Ebenaceae**  
 17b. Flowers bisexual; fruit a capsule ..... 88. **Theaceae**
- 15b. Stamens as many as corolla lobes or fewer.  
 18a. Leaves alternate or all basal; carpels never 2 and almost free with single terminal style.  
 19a. Woody, often evergreen; stigma sessile or nearly so.  
 20a. Flowers usually 4-merous; ovary 2-several-locular, with 1-2 ovule in each locule ..... 228. **Aquifoliaceae**  
 20b. Woody climbers (in ours); flowers 5-merous; ovary unilocular with 1 ovule ..... 229. **Icacinaeae**
- 19b. Combination of characters not as above.  
 21a. Flowers in scorpioid cymes; style usually gynobasic; fruit of 4 nutlets, rarely a 1-4-seeded drupe ..... 290. **Boraginaceae**  
 21b. Flowers not in scorpioid cymes; style terminal; fruit not as above.  
 22a. Aquatic plants with peltate leaves ..... 286. **Menyanthaceae**  
 22b. Combination of characters not as above.  
 23a. Ovules 1-2 per locule.  
 24a. Sepals free; corolla lobes contorted and infolded, rarely imbricate; herbaceous twiners ..... 283. **Convolvulaceae**  
 24b. Sepals connate; corolla lobes imbricate; trees or shrubs ..... 290. **Boraginaceae**
- 23b. Ovules 3-numerous per locule.  
 25a. Corolla lobes usually folded, contorted or valvate; septum often oblique; internal phloem present ..... 282. **Solanaceae**  
 25b. Corolla lobes imbricate; septum horizontal; internal phloem absent ..... 299. **Scrophulariaceae**
- 18b. Leaves opposite or whorled, alternate only when carpels 2 and almost free with single terminal style.  
 26a. Milky sap usually present; fruit often of 2 'follicles' and seeds with silky appendages.  
 27a. Pollen granular, transferred directly from anthers; corona absent; corolla lobes contorted in bud ..... 278. **Apocynaceae**  
 27b. Pollen often in pollinia, transferred by means of special translator; corona usually present; corolla lobes contorted or valvate in bud ..... 279. **Asclepiadaceae**
- 26b. Milky sap absent; fruit a capsule or fleshy; seeds without silky appendages.  
 28a. Placentation parietal; carpels 2 ..... 276. **Gentianaceae**  
 28b. Placentation axile; carpels 2-3.  
 29a. Stamens fewer than corolla lobes ..... 291. **Verbenaceae**  
 29b. Stamens as many as corolla lobes.  
 30a. Corolla (4-)5-lobed; stellate and/or glandular hairs absent; internal phloem present ..... 275. **Loganiaceae**  
 30b. Corolla 4-lobed; stellate and/or glandular hairs present; internal phloem absent ..... 297. **Buddlejaceae**

### Key 11

- 1a. Stamens more numerous than the corolla lobes, or anthers opening by pores.  
 2a. Anthers opening by pores; leaves undivided; ovary syncarpous.  
 3a. Two lateral sepals petaloid; filaments united ..... 250. **Polygalaceae**  
 3b. No sepals petaloid; filaments free ..... 147. **Ericaceae**
- 2b. Anthers opening by slits; leaves dissected or compound; ovary a legume.  
 4a. Adaxial petal interior (ascending imbrication) or petal 1 or absent ..... 184. **Caesalpinaceae**  
 4b. Adaxial petal exterior (descending imbrication) ..... 185. **Fabaceae**
- 1b. Stamens as many as corolla lobes or fewer, anthers not opening by pores.  
 5a. Stamens as many as corolla lobes.  
 6a. Corolla contorted; stamens 5, equal; leaves opposite; climbers ..... 275. **Loganiaceae**  
 6b. Corolla imbricate; stamens 4 or unequal; not climbers ..... 299. **Scrophulariaceae**

- 5b. Stamens 4 or 2, fewer than corolla lobes.
- 7a. Placentation axile; ovules 4 or many.
- 8a. Ovules numerous but not superposed (not in a vertical row in each locule).
- 9a. Seeds winged; trees, shrubs or climbers with opposite, compound leaves ..... 306. **Bignoniaceae**
- 9b. Seeds usually wingless; mainly herbs or shrubs with simple leaves.
- 10a. Corolla lobes variously imbricate in bud; septum horizontal; leaves opposite or alternate; internal phloem absent ..... 299. **Scrophulariaceae**
- 10b. Corolla lobes usually folded, contorted or valvate in bud; septum usually oblique; leaves alternate; internal phloem present ..... 282. **Solanaceae**
- 8b. Ovules 4, or more numerous and superposed.
- 11a. Leaves all alternate, often studded with resinous glands; woody ..... 301. **Myoporaceae**
- 11b. At least the lower leaves opposite or whorled; herbaceous or woody.
- 12a. Fruit a capsule; ovules 4–many, usually superposed.
- 13a. Leaves all opposite, often with cystoliths; pedicels without swollen glands at the base; capsule opening elastically, seeds usually on hooked funicles ..... 304. **Acanthaceae**
- 13b. At least upper leaves alternate, without cystoliths; pedicels with swollen glands at the base; capsule not elastic, seeds not on hooked funicles ..... 305. **Pedaliaceae**
- 12b. Fruit not a capsule; ovules 4, side by side.
- 14a. Style gynobasic, or if terminal then corolla with a reduced upper lip; fruit usually of 4 one-seeded nutlets; corolla often strongly bilabiate; calyx often 2-lipped ..... 292. **Labiatae**
- 14b. Style terminal; upper lip of corolla well-developed; fruit usually a berry or drupe; corolla often less strongly zygomorphic; calyx  $\pm$  actinomorphic ..... 291. **Verbenaceae**
- 7b. Placentation parietal, free-central, basal or apical; ovules many or 1–2.
- 15a. Ovules 4, side by side ..... 291. **Verbenaceae**
- 15b. Ovules many.
- 16a. Placentation free-central; corolla spurred ..... 308. **Lentibulariaceae**
- 16b. Placentation parietal; corolla not spurred, rarely saccate.
- 17a. Leaves scale-like, never green; root parasites ..... 302. **Orobanchaceae**
- 17b. Leaves green, expanded; free-living plants.
- 18a. Seeds winged; mainly climbers with opposite, compound leaves ..... 306. **Bignoniaceae**
- 18b. Seeds not winged; herbs or subshrubs with simple leaves ..... 303. **Gesneriaceae**

### Key 12

- 1a. Inflorescence an involucrate capitulum; ovules solitary ..... 323. **Compositae**
- 1b. Inflorescence and ovules not as above.
- 2a. Stamens 2 united with the style into a sensitive column; leaves linear ..... 312. **Stylidiaceae**
- 2b. Combination of characters not as above.
- 3a. Leaves alternate or all basal.
- 4a. Anthers opening by pores; fruit a berry or drupe ..... 147. **Ericaceae**
- 4b. Anthers opening by slits; fruit various.
- 5a. Tendrillar climbers with unisexual flowers; stamens 1–5; placentation parietal; fruit berry-like ..... 130. **Cucurbitaceae**
- 5b. Combination of character not as above.
- 6a. Stamens 10–many,  $\pm$  united at the base; trees or shrubs.
- 7a. Leaves gland-dotted, smelling of eucalyptus; corolla calyptrate ..... 199. **Myrtaceae**
- 7b. Combination of characters not as above.
- 8a. Plant with stellate hairs or peltate scales; stamens 1-seriate; anthers linear ..... 153. **Styracaceae**
- 8b. Plants glabrous or pubescent; stamens in more than one series; anthers broadly ovate or rounded ..... 155. **Symplocaceae**
- 6b. Stamens 4–5(–8), epipetalous; herbs or shrubs.
- 9a. Stigma surrounded by a sheath ..... 315. **Goodeniaceae**
- 9b. Stigma not surrounded by a sheath.
- 10a. Stamens epipetalous; fruit a drupe; woody ..... 211. **Olacaceae**
- 10b. Stamens  $\pm$  free from corolla; fruit a capsule; herbs ..... 311. **Campanulaceae**
- 3b. Leaves opposite or appearing whorled.
- 11a. Placentation parietal; stamens 2 or 4 and paired ..... 303. **Gesneriaceae**
- 11b. Placentation axile or apical; stamens 1 or more, not paired.
- 12a. Stipules conspicuous, sometimes leafy; ovary usually 2-locular; flowers usually actinomorphic; fruit capsular, fleshy or schizocarpic ..... 316. **Rubiaceae**
- 12b. Stipules usually absent, when present not as above; ovary (2–)3(–5)-locular, sometimes only 1 locule fertile; flowers often zygomorphic, sometimes twinned; fruit a berry or drupe ..... 318. **Caprifoliaceae**



## 160. CONNARACEAE 牛栓藤科

XIA Nian-he 夏念和

Evergreen or deciduous small trees, shrubs, or vines. Leaves alternate, estipulate, odd-pinnate, sometimes (1–)3-foliolate; leaflets subopposite or alternate, margin entire, rarely lobed. Inflorescence a terminal, pseudoterminal, or axillary panicle or raceme. Flowers bisexual, rarely unisexual, actinomorphic. Sepals (4–)5, distinct or connate at base, imbricate or valvate, persistent. Petals (4–)5, distinct, rarely connate at middle, imbricate or valvate, rarely circinate. Stamens (8–)10, in 2 whorls, inner ones usually shorter and abortive; filaments free or connate at base; anthers 2-celled, introrse, dehiscing longitudinally. Disk small or absent. Carpels (3–)5 or 1, free. Ovary superior, 1-locular; style subulate or filiform; stigma subcapitate, simple or 2-lobed; ovules 2 in each carpel (one smaller or sterile), collateral, erect. Fruit usually a follicle, sessile or stipitate, dehiscing along ventral suture, sometimes along dorsal suture, very rarely circumscissile at base, sometimes indehiscent. Seed 1 (or 2), erect, usually with fleshy aril.

About 20 genera and 380 species, mainly distributed in tropical regions of Africa and Asia, some species in the subtropics, only a few species in the New World; six genera and nine species (one endemic) in China; one genus and two species in Hong Kong.

1. *Rourea* Aubl. 紅葉藤屬

Vines or shrubs, rarely small trees. Leaves odd-pinnate, rarely 1-foliolate; leaflets subopposite or alternate. Inflorescences an axillary or pseudoterminal panicle; bracts ovate-lanceolate; bracteoles lanceolate. Flowers 5-merous, small. Sepals imbricate, persistent, enlarged after anthesis, closely clasping the base of follicle. Petals longer than sepals, glabrous. Stamens 10, those opposite sepals longer than those opposite petals; filaments connate at base, glabrous. Carpels 5, free, usually only 1 developed, hairy or glabrous; style slender; stigma capitate, inconspicuously 2-lobed. Follicle solitary, sessile, glabrous, smooth or longitudinally fine sulcate, dehiscing along ventral suture, rarely dehiscing irregularly at base. Seed 1, flattened; testa glossy, glabrous, with a cupular, fleshy aril adnate at base; endosperm absent.

About 90 species distributed in tropical regions of the world; three species in China; two species in Hong Kong.

- 1a. Leaflets 7–17(–27) ..... 1. *R. microphylla*  
 1b. Leaflets 3–7 ..... 2. *R. minor*

1. *Rourea microphylla* (Hook. & Arn.) Planch. 小葉紅葉藤(紅葉藤)

(Photo 1)

Linnaea 23: 421. 1850; FHK 71. 1861; FKH 70. 1912; FHN 3: 112, fig. 608. 1974; FFJ 2: 338, fig. 184. 1984; FRPS 38: 140, pl. 25: 1–8. 1986; FGD 4: 280. 2000; FOC 9: 437. 2003.

*Connarus microphyllus* Hook. & Arn., Bot. Beech. Voy. 179. 1833.

*Santaloides microphyllum* G. Schellenb., Pflanzenz. 103: 130. 1938.

*Rourea minor* subsp. *microphylla* (Hook. & Arn.) Vidal, Fl. Cambodge, Laos & Vietnam 2: 28. 1962.

Climbing shrub, 1–4 m, many-branched. Branchlets glabrous or sparsely pubescent when young. Petioles, rachis, and petiolules glabrous; leaflets 7–17(–27), papery to thinly leathery, ovate or lanceolate to oblong-lanceolate, 1.2–5.5 × 0.5–2 cm, base cuneate to rounded, often oblique, apex obtuse and acuminate, glabrous on both surfaces, slightly glaucous abaxially; petiolule 2 mm. Inflorescences in axillary clusters, usually 3–6 cm, central one often longer, many-flowered; peduncles and pedicels slender. Flowers 4–5 mm in diam., fragrant. Sepals ovate, 2.5 × 2 mm, ciliolate. Petals elliptic, white, pale yellow or pink, 5 × 1.5 mm. Stamens 10, unequal, longer ones to 6 mm, shorter ones ca. 4 mm. Carpels free, 3–5 mm. Follicle red when mature, cylindrical or obliquely obovoid-cylindric, slightly curved or straight, 1–1.5 × 0.5 cm, longitudinally striate. Seed orange, oblong, ca. 1 cm, with membranous aril at base.

Locality: Common in Hong Kong. *P. S. Choi* 283; *Y. S. Lau* 1273.

Distribution: Yunnan, Guangxi, Hainan, Guangdong, Fujian; India, Sri Lanka, Vietnam, Indonesia.

Ecology: Hillslopes or forests. Flowering: Mar.–Sep.; fruiting: May–Mar. of following year.

Uses: Medicinal (folklore).



Figure 1. *Rourea minor* (Gaertn.) Alston

1. flowering branch; 2. fruiting branch; 3. flower; 4. fruit (ventral view showing seed); 5. seeds. (drawn by H. P. Yu)

**2. *Rourea minor*** (Gaertn.) Alston 大葉紅葉藤(牛栓藤)

(Fig. 1; Photo 2)

Fl. Ceylon 6(2): 67. 1931; Li., Woody Fl. Taiwan 329, fig. 114. 1963; FRPS 38: 142, pl. 26: 4–6. 1986; FGD 4: 281, fig. 166. 2000; FOC 9: 437. 2003.

*Aegiceras minus* Gaertn., Fruct. 1: 216, fig. 46. 1788.

*Rourea santaloides* Wight & Arn., Prodr. Fl. Ind. Orient. 1: 144. 1834; FHK 71. 1861; FHN 3: 112. 1974.

*Rourea millettii* Planch., Linnaea 23: 420. 1850; FKH 70. 1912.

Vine or climbing shrub, to 25 m long. Branchlets, terete, glabrous or sparsely pubescent when young. Petioles, rachis, and petiolules glabrous; leaflets 3–7, usually 3, papery, ovate or elliptic to lanceolate, 3–15 × 2–6 cm, base broadly cuneate to rounded, equilateral or slightly oblique, apex acute to shortly acuminate, glabrous on both surfaces; petiolules 5 mm. Inflorescences in axillary clusters, 3–9 cm, many-flowered, central one much longer than others; peduncles 3–9 cm, glabrous. Flowers ca. 1 cm in diam., fragrant. Sepals ovate, 2–3 × 1.2–2 mm, ciliate at apex. Petals white or yellow, oblong, 4–6 × 1–1.5 mm, striate, glabrous. Stamens 2–6 mm. Carpels free, ca. 4 mm, glabrous. Follicle dark green, turning black when dry, obliquely ellipsoidal, slightly curved, 1.5–2.5 × 0.6–1.5 cm, striate. Seed red, ellipsoidal, 1.5 × 0.6 cm, completely covered by membranous aril.

Locality: Aberdeen, Hoi Ha, Chek Keng, Lantau Island. *Y. W. Lam* 27; *P. S. Choi* 164.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; India, Sri Lanka, Laos, Vietnam, Cambodia, Philippines, Australia (Queensland).

Ecology: Thickets or forests. Flowering: Apr.–Oct.; fruiting: May–Mar. of following year.

**165. PITTOSPORACEAE 海桐花科**

XIA Nian-he 夏念和

Evergreen trees or shrubs, sometimes spiny. Leaves alternate, rarely opposite, estipulate, margin entire or serrate. Inflorescences umbellate, corymbose, paniculate, or a solitary flower, bracteate and bracteolate. Flowers bisexual or polygamous, actinomorphic, rarely zygomorphic, usually 5-merous. Sepals often distinct or slightly connate. Petals free or connate. Stamens opposite to sepals; filament filiform; anther basifixed or dorsifixed, 2-celled, dehiscent longitudinally or by pores. Ovary superior, short stipitate, 2–3(–5)-carpellate, usually 1-locular or incompletely 2–5-locular; ovules many, anatropous; placentation parietal, axile, or basal; style short, persistent or deciduous. Fruit a capsule or a berry. Seeds many; testa thin; endosperm copious; embryo small.

Nine genera and ca. 250 species distributed in tropical and subtropical regions of Africa, Asia, Australia, and Pacific Islands; one genus and 46 species in China; one genus, two species and one variety in Hong Kong.

**1. *Pittosporum* Banks ex Sol. 海桐花屬**

Trees or shrubs. Leaves alternate or pseudovercillate, usually clustered at branchlet apex, margin entire, undulate-dentate, or rugose. Inflorescences terminal or axillary, umbellate, corymbose, paniculate, or a solitary flower. Flowers bisexual, rarely polygamous. Sepals free, usually short and small. Petals free or connate at base. Stamens shorter than petals; filament glabrous; anther dorsifixed, longitudinally dehiscent. Ovary shortly stipitate, 2– or 3(–5)-carpellate, 1-locular or incompletely 2–5-locular; ovules many, sometimes 1–4; placentas parietal or basal; style usually persistent. Capsule ellipsoid or globose, sometimes compressed, dehiscent by 2–5 valves; pericarp woody or leathery, usually with horizontal striae adaxially. Seeds usually covered by viscid pulp.

About 150 species distributed in tropical Asia, tropical and S Africa, Atlantic Islands, Australia, Indian Ocean Islands and Pacific Islands; 46 species in China; two species and one variety in Hong Kong.

- 1a. Plant glabrous except pedicels; indigenous plants.  
 2a. Leaf blades narrowly oblong or oblanceolate, 5–10 × 2–3.5 cm ..... 1. *P. glabratum*  
 2b. Leaf blades narrowly lanceolate, 8–18 × 1–2 cm .....  
 ..... 1a. *P. glabratum* var. *neriifolium*  
 1b. Young branches, young leaves, inflorescences hairy; cultivated ..... 2. *P. tobira*

**1. *Pittosporum glabratum* Lindl.**

光葉海桐(崖花子)

(Fig. 2; Photo 3)

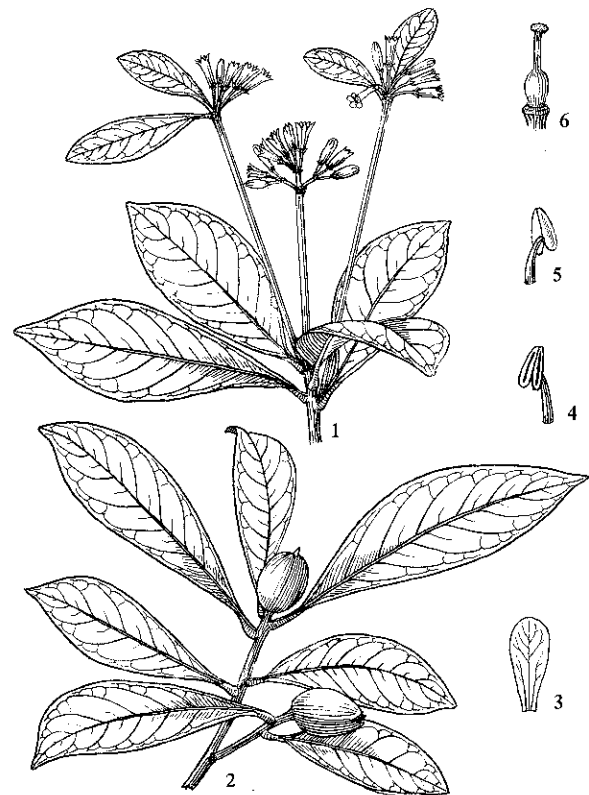


Figure 2. *Pittosporum glabratum* Lindl.

1. flowering branch; 2. fruiting branch; 3. petal; 4. stamen (ventral view); 5. stamen (dorsal view); 6. ovary. (drawn by H. P. Yu)

J. Hort. Soc. London 1: 230. 1846; FHK 19. 1861; FKH 37. 1912; FRPS 35(2): 11. 1979; FFJ 2: 241. 1984; FGD 1: 102, fig. 111: 2. 1987; FOC 9: 6. 2003.

*Pittosporum fortunei* Turcz., Bull. Soc. Imp. Naturalistes Moscou 236: 562. 1863.

Shrub or small tree, 2–3 m tall, glabrous except pedicels. Petioles 6–14 mm; leaf blade narrowly oblong or oblanceolate, 5–10 × 2–3.5 cm, thinly leathery, base cuneate, apex obtuse or acute, margin slightly rugose. Inflorescences 1–4 in leaf axils at branchlet apex, umbellate or corymbose; pedicels 4–12 mm, puberulous. Sepals ovate, ca. 2 mm. Petals oblanceolate, 0.8–1.2 cm. Stamens 4–7 mm. Ovary long ovoid, 3-carpellate; placentae 3; ovules ca. 6 in each placenta; style ca. 3 mm. Capsule ellipsoidal, 2–2.5 cm, dehiscent by 3 valves; pericarp thinly leathery. Seeds red, subglobose, 5–7 × 4–5 mm.

Locality: Common in Hong Kong. *H. C. Tang 2195; L. T. Lo 3.*

Distribution: Guangdong, Hainan, Guangxi, Hunan, Guizhou, Hubei, Fujian.

Ecology: Thin forests and shrublands on slopes. Flowering: Mar.–Aug.; fruiting: Jun.–Dec.

Uses: Medicinal (folklore).

**1a. *Pittosporum glabratum* Lindl. var. *neriifolium* Rehder & E. H. Wilson 狭葉海桐 (Photos 4–5)**

Pl. Wilson. 3(2): 328. 1916; FRPS 35(2): 12. 1979; FGD 1: 103. 1987; FOC 9: 6. 2003.

*Pittosporum cavaleriei* Levl., Fedde, Rep. Spec. Nov. 11: 492. 1913.

Leaf blade narrowly lanceolate, 8–18 × 1–2 cm.

Locality: Aberdeen, Tai Mo Shan, Ma On Shan. *Y. W. Lam 1439; HK sheet 271, 40905.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Hubei, Jiangxi, Yunnan; India.

Ecology: Forests or thickets. Flowering: Mar.–May; fruiting: Jun.–Nov.

**2. *Pittosporum tobira* (Thunb.) Aiton 海桐 (Photo 6)**

Hort. Kew. (ed. 2) 2: 37. 1811; FKH 37. 1912; FHN 1: 449. 1964; FRPS 35(2): 6. 1979; FFJ 2: 240, fig. 202. 1984; FGD 1: 103, pl. 112, fig. 1. 1987; FOC 9: 4. 2003.

*Euonymus tobira* Thunb., Nova Acta Regiae Soc. Sci. Upsal. 3: 208. 1780.

Shrub or small tree, to 3 m tall. Young branchlets lenticellate, brown hairy. Petioles ca. 2 cm; leaf blade obovate or obovate-lanceolate, 4–9 × 2–4 cm, leathery, base narrowly cuneate, apex rounded or obtuse, usually emarginate, margin revolute. Inflorescences terminal or near so, umbellate or corymbose; pedicels 1–2 cm. Sepals lanceolate, 3–4 mm. Petals oblanceolate, 1–1.2 cm. Stamens 5–6 mm, sometimes sterile. Ovary long ovoid, densely pubescent, 3-carpellate; placentas 3; ovules many per locule. Capsule globose, angular, ca. 1–1.2 cm in diam., dehiscent by 3 valves, ± pubescent; pericarp ca. 1.5 mm thick. Seeds red, ca. 4 mm.

Locality: Ninepin Group, Sung Kong and Ng Fan Chau; also cultivated in parks and gardens. *S. P. Lau 137; F. W. Xing 9708.*

Distribution: Areas S of Changjiang River; Japan, Korea.

Ecology: Seashore hillslopes. Flowering: Mar.–May; fruiting: May–Oct.

Uses: Ornamental.

## 167. HYDRANGEACEAE (INCL. PHILADELPHACEAE) 繡球花科

XIA Nian-he 夏念和

Deciduous or evergreen herbs, shrubs or woody vines. Leaves simple, often opposite, rarely whorled or alternate, estipulate. Inflorescences cymose, corymbose, or in thyrses or panicles. Flowers bisexual or unisexual, rarely dioecious; sterile flowers with enlarged, showy sepals; fertile ones small. Calyx 4–12-lobed, lobes imbricate or valvate. Petals 4–12, imbricate, valvate, or convolute; basally fused, usually caducous. Stamens 4–many; filaments free or basally united, flat and linear, subulate or filiform; anthers basifixed. Ovary partially to completely inferior, 3–6-carpellate; placentation axile or parietal; ovules 2–many, anatropous; styles as many as carpels, distinct or fused; stigmas capitate or lobed, usually papillate. Fruit a capsule or berry. Seeds many, tiny, winged or not.

About 17 genera and ca. 220 species distributed in temperate and subtropical regions of America, Pacific Islands, Asia and Europe; ten genera and about 100 species in China; three genera and four species in Hong Kong.

- 1a. Evergreen woody vines; style 1, short ..... 1. *Pileostegia*  
 1b. Deciduous or evergreen shrubs or subshrubs; styles 2–6, slender.  
 2a. Fruit a berry; flowers larger; indigenous plants ..... 2. *Dichroa*  
 2b. Fruit a capsule; flowers small; cultivated ..... 3. *Hydrangea*

### 1. *Pileostegia* Hook. f. & Thomson 冠蓋藤屬

Evergreen woody vines, with aerial rootlets. Leaves opposite, petiolate, leathery, margin entire or dentate. Inflorescence terminal, a corymbose panicle. Flowers bisexual, small, white. Calyx tube adnate to ovary, conical; lobes 4–5, imbricate. Petals 4–5, valvate,

connate at upper part and forming a calyptra, caducous. Stamens 8–10, inserted at margin of disk; filaments slender; anthers subglobose, 2-celled, dehiscent longitudinally. Ovary inferior, 4–5-locular; ovules many; style 1, short, robust; stigma 4–6-lobed. Fruit a capsule, turbinate, 4–5-valved, dehiscent irregularly along ribs. Seeds many, oblong, with membranous wings at both ends.

Three species distributed in SE Asia; two species in China; both of them occur in Hong Kong.

- 1a. Leaves cordate at base, densely rusty stellate hairy abaxially ..... 1. *P. tomentella*  
 1b. Leaves cuneate at base, glabrous or very sparsely stellate hairy abaxially ..... 2. *P. viburnoides*

**1. *Pileostegia tomentella* Hand.-Mazz. 星毛冠蓋藤**

(Photo 7)

Anz. Akad. Wiss. Wien. Math.-Nat. 59: 55. 1922; FFJ 2: 230. 1984; FRPS 35(1): 175, pl. 35: 4–7. 1995; FGD 2: 212, fig. 135. 1991; FOC 8: 404. 2001.

Branchlets, petioles, inflorescences and abaxial surface of leaves densely rusty stellate hairy. Petioles 0.5–1.5 cm; leaf blade leathery, oblong to obovate-oblong, 5–10(–18) × 2.5–5(–8) cm, base shallowly cordate, apex acute, margin entire and slightly revolute, irregularly undulate or sparsely serrate at upper part. Inflorescences 5–25 × 10–25 cm; pedicels ca. 2 mm. Calyx tube turbinate, ca. 2 mm; lobes triangular, sparsely stellate hairy. Petals white, broadly triangular, ca. 2 mm, glabrous. Stamens 10; filaments 3–6 mm; anthers globose, ca. 0.7 mm in diam. Ovary truncate at apex; style ca. 1.5 mm; stigma conical, 4–6-lobed. Capsule dark brown, turbinate, ca. 4 mm in diam., 5–10-ribbed, apex truncate, sparsely stellate hairy. Seeds ca. 2 mm.

Locality: Tai Mo Shan, Ho Pui Reservoir. *F. W. Xing 10094; HK sheet 10543.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian.

Ecology: Margins of forests in valleys. Flowering: Mar.–Aug.; fruiting: Sep.–Dec.

Uses: Ornamental.

**2. *Pileostegia viburnoides* Hook. f. & Thomson**

冠蓋藤

(Fig. 3; Photo 8)

J. Linn. Soc., Bot. 2: 76, fig. 2. 1857; FKH 98. 1912; FHN 2: 190. 1965; FFJ 2: 230, fig. 195. 1984; FGD 2: 212. 1991; FTW ed. 2, 3: 57, pl. 32. 1993; FRPS 35(1): 173, pl. 35: 1–3. 1995; FOC 8: 404. 2001.

*Pileostegia viburnoides* Hook. f. & Thomson var. *parviflora* Oliv. & Maxim., Mem. Acad. Sci. St. Petersburg. ser. 7, 10(16): 18. 1867.

Branchlets decussate, glabrous or sparsely stellate pubescent. Petioles 1–3 cm; leaf blade thinly leathery, elliptic-lanceolate to oblong-obovate, 7–18 × 2–6 cm, base cuneate, apex acute, margin entire, abaxially glabrous or sparsely stellate pubescent. Inflorescences 7–25 × 15–25 cm, glabrous or pubescent; pedicel 3–5 mm. Flowers small. Calyx tube ca. 1.5 mm; lobes 4–5, triangular, glabrous. Petals 4–5, white, ca. 2.5 mm. Stamens 8–10; filaments 3–6 mm, usually coiled; anthers compressed subglobose. Ovary inferior, truncate at apex; style ca. 1 mm; stigma 4–6-lobed. Capsule turbinate, ca. 4 × 2–3 mm. Seeds ca. 2 mm.

Locality: Mount Parker, Tai Mo Shan, Lantau Peak. *D. P. M. Guile s.n. (HK sheet 30346); L. T. Lo 360; P. S. Choi 544.*

Distribution: Areas S of Changjiang River; India, Vietnam, Japan.

Ecology: Valleys. Flowering: Jul.–Aug.; fruiting: Sep.–Dec.

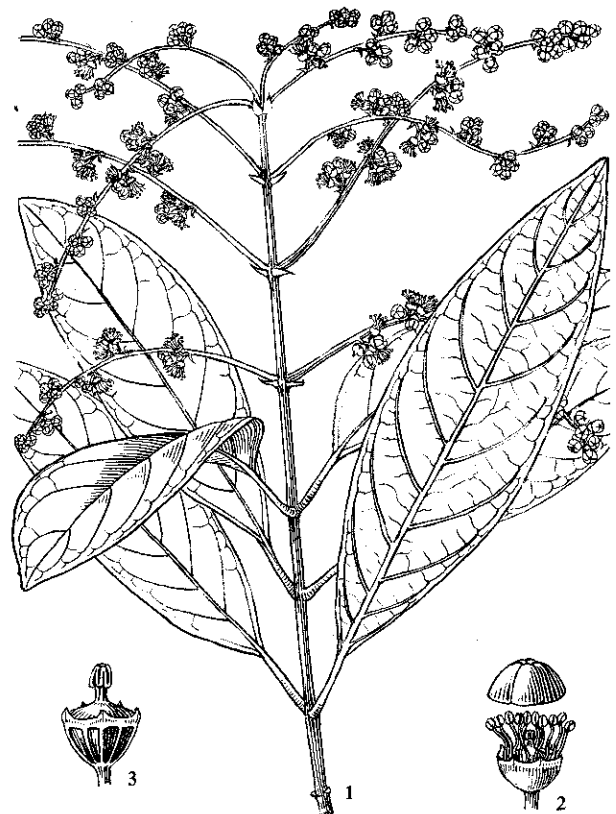


Figure 3. *Pileostegia viburnoides* Hook. f. & Thoms.  
 1. flowering branch; 2. flower; 3. fruit. (drawn by H. P. Yu)

**2. *Dichroa* Lour. 常山屬**

Deciduous shrubs. Leaves opposite. Inflorescence terminal, a corymbose cyme or panicle. Flowers bisexual. Calyx 5(–6)-lobed. Petals 5(–6), free, thick and slightly fleshy. Stamens 4–10(–20); filaments filiform or subulate; anthers ellipsoidal to ovoid, 2-celled. Ovary semi-inferior to inferior, incompletely 3–5-locular; placentation parietal; ovules many; styles 2–6, distinct or connate only at base, divergent; stigma ovoid. Fruit a berry, blue. Seeds many, tiny, ovoid, not winged; seed coat membranous, reticulate.

About 12 species mainly in E Asia and adjacent islands; six species (four endemic) in China; one species in Hong Kong.

**1. *Dichroa febrifuga* Lour. 常山 (Fig. 4; Photo 9)**

Fl. Cochinch. 301. 1790; FHK 128. 1862; FKH 98. 1912; FHN. 2: 190, fig. 399. 1965; FFJ 2: 231, fig. 196. 1984; FGD 2: 213. 1991; FRPS 35(1): 178, pl. 36: 1–3. 1995; FOC 8: 405. 2001.

*Adamia chinensis* Gardner & Champ., Hooker's J. Bot. Kew Gard. Misc. 1: 311. 1849.

*Dichroa febrifuga* Lour. var. *glabra* S. Y. Hu, J. Arnold Arbor. 61(1): 77. 1980.

Shrub, 1–2 m. Branchlets often fleshy, terete or slightly 4-angular, glabrous or very sparsely pubescent, usually purplish. Petioles 1.5–5 cm, glabrous or puberulent; leaf blade papery, varied in shape, elliptic, obovate-oblong to lanceolate, 6–25 × 2–10 cm, attenuate at both ends, margin denticulate or serrulate, abaxially glabrous or sparsely puberulent, purplish. Inflorescence terminal, a corymbose panicle, 3–20 cm. Flowers bluish, ca. 8 mm in diam. when blooming; pedicel 3–5 mm. Calyx obconical; lobes 4–6, broadly triangular, ca. 1 mm. Petals 4–6, narrowly elliptic, slightly fleshy. Stamens 10–20; filaments slightly flat; anthers ellipsoidal. Ovary inferior; styles 4–6, clavate; stigma long elliptic-ovate. Berry blue when mature, 3–7 mm in diam.

Locality: Victoria Peak, Tai Mo Shan, Sai Kung, Lam Tsuen, Lantau Island. *G. Barretto s.n. (HK sheet 34338)*; *Y. W. Lam 548*.

Distribution: Areas S of Changjiang River; India, Vietnam, Myanmar, Malaysia, Philippines, Indonesia, Japan (Ryukyu).

Ecology: Wet places in forests and thickets. Flowering: Feb.–Apr.; fruiting: May–Aug.

Uses: Medicinal (folklore).

Notes: The type specimen of *Adamia chinensis* was collected from Victoria Peak by J. G. Champion between 1847 and 1849.

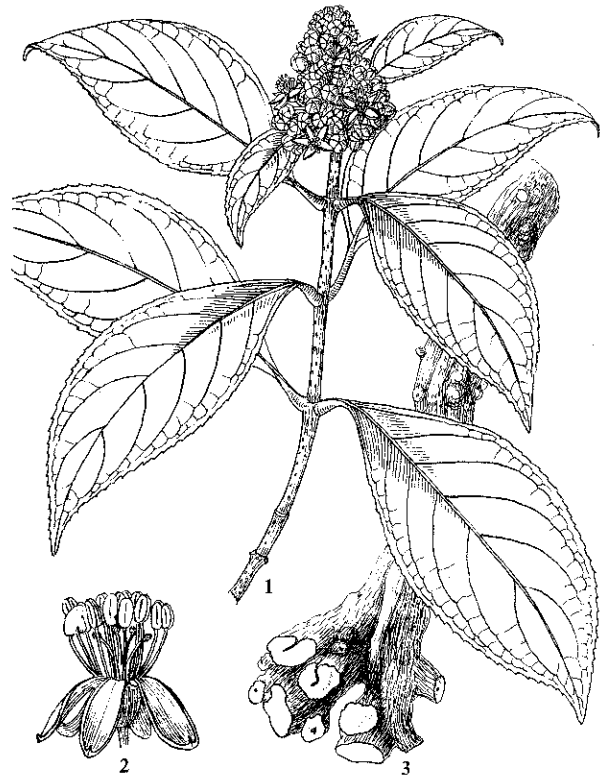


Figure 4. *Dichroa febrifuga* Lour.

1. flowering branch; 2. flower; 3. portion of stem and root (drawn by H. P. Yu)

**3. *Hydrangea* L. 繡球屬**

Deciduous or evergreen subshrubs or shrubs, rarely small trees. Bark usually exfoliating in sheets. Branchlets with white or yellow large piths. Leaves opposite, rarely verticillate. Inflorescence terminal, sometimes axillary, a corymbose or umbellate cyme, or thyrses. Flowers fertile or sterile. Sterile flowers few, sometimes absent, borne at margin of inflorescence, with 2 or 5 enlarged petaloid sepals. Fertile flowers usually many, borne at middle of inflorescence, bisexual, small. Calyx tube adnate to ovary, 4–5-lobed. Petals 4–5, free, valvate, rarely connate and forming a calyptra. Stamens usually 10. Ovary inferior to semi-inferior, imperfectly or perfectly 2–5-locular; ovules many; styles 2–5, free or connate at base. Fruit a capsule, hemispheric to turbinate, small, dehiscent apically. Seeds many, small, winged or wingless.

About 70 species distributed in Asia, N & S America; 33 species in China; one species cultivated in Hong Kong.

**1. *Hydrangea macrophylla* (Thunb.) Ser. 繡球****(Photo 10)**

Prodr. 4: 15. 1830; FFJ 2: 226, fig. 192. 1985; FRPS 35(1): 226. 1995.

*Hydrangea hortensia* Sieb., Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. (pt. 2) 14: 688, fig. 2. 1829.

*Hydrangea macrophylla* (Thunb.) Ser. f. *hortensia* (Regel) Rehd., J. Arnold Arbor. 7(4): 240. 1926; FGD. 2: 208. 1991.

*Hydrangea scandens* auct. non Maxim.: FKH 98. 1912.

*Viburnum macrophyllum* Thunb., Fl. Jap. 125. 1784.

Deciduous shrub, 1–4 m. Branchlets robust, with conspicuous lenticels and leaf scars. Leaves opposite; petioles 1–3 cm; leaf blade elliptic, broadly ovate to obovate, 7–20 × 4–10 cm, base broadly cuneate, apex shortly acuminate, margin coarsely serrate except the base, green and glossy adaxially, glabrous or hirsute along veins abaxially. Inflorescence terminal, corymbose, globose, to 20 cm in diam.; pedicels pubescent. Flowers white, pink or bluish, mostly sterile. Sterile flower: sepals 4, broadly ovate or orbicular, 1–2 cm. Fertile flower: calyx 5-lobed, lobes ovate or triangular; petals 5, oblong; stamens 10, unequal in length, to 4 mm; ovary semi-inferior, styles usually 3. Capsules narrowly ovoid, ribbed.

Locality: Cultivated. *Y. S. Lau 1899*.

Distribution: S, C & E China; Korea, Japan.

Ecology: Flowering: Jun.–Aug.

Uses: Ornamental.

## 169. GROSSULARIACEAE 鼠刺科

XIA Nian-he 夏念和

Shrubs or trees, sometimes armed. Leaves simple, alternate, margin usually glandular-dentate or serrate, pinnately- or palmately-veined; stipules usually wanting, sometimes present. Inflorescences terminal or axillary, in racemes, panicles or umbels. Flowers bisexual, rarely unisexual (the plant then sometimes dioecious), actinomorphic. Sepals (3–)5(–9), distinct or sometimes connate at base, imbricate or valvate, sometimes petaloid. Petals as many as and alternate with the sepals, imbricate, valvate or convolute. Stamens usually as many as and opposite to the sepals; anthers 2-celled, longitudinally dehiscent; staminodes present or absent. Disk usually present. Ovary inferior or superior, 2–3(–7)-carpellate, 1–many-locular; placentation axile or parietal; ovules few to many per locule; style distinct or connate at the base; stigma lobed to capitate. Fruit a capsule or a berry. Seeds many, usually arillate; embryo large; endosperm copious or scanty.

About 23 genera and ca. 350 species distributed throughout the world; three genera and 75 species in China; one genus and one species in Hong Kong.

1. *Itea* L. 鼠刺屬

Evergreen or deciduous shrubs or trees. Leaves alternate, petiolate, pinnately-veined, margin usually glandular-dentate or serrate, rarely entire; stipules small, usually deciduous. Inflorescence terminal or axillary, racemose or paniculate, many-flowered. Flowers bisexual, small. Calyx tube adnate to base of ovary, obconical, cupular or hemispherical; lobes 5, persistent. Petals 5, valvate, erect or reflexed at anthesis. Stamens 5, alternate with petals; filaments subulate; anthers ovoid to ellipsoidal. Ovary superior to semi-inferior, 2–3-locular, long ellipsoidal; ovules many, 2-seriate on axile placentation; style simple, striate, sometimes divided into middle; stigma capitate. Capsules conical to long ellipsoidal, apex cleft, with persistent calyx lobes and petals. Seeds many, flattened oblong.

About 27 species mainly distributed in SE Asia, one species in N America; 15 species in China; one species in Hong Kong.

1. *Itea chinensis* Hook. & Arn. 老鼠刺(鼠刺) (Fig. 5; Photo 11) Bot. Beech. Voy. 189, fig. 39. 1833; FHK 129. 1861; FKH 99. 1912; FGZ 285. 1956; FFJ 2: 237, fig. 200. 1984; FRPS 35(1): 271, pl. 62: 1–2. 1995; FGD 3: 228. 1995; FOC 8: 426. 2001.

Shrub or small tree, 4–15 m. Young branchlets glabrous. Petioles 1–2 cm, glabrous; leaf blade thinly leathery, obovate or ovate-oblong, 5–12(–15) × 2.5–6 cm, base cuneate, apex acute, margin obscurely glandular-crenulate at upper half or subentire, slightly revolute, glabrous on both surfaces. Racemes axillary, erect, 3–6 cm, glabrous or puberulous; bracts linear-subulate, 1–2 mm. Flowers many; pedicels slender, ca. 3 mm, puberulous. Calyx shallowly cupular; lobes triangular-lanceolate, ca. 1 mm, puberulous. Petals erect at anthesis, white, lanceolate, 2.5–3 mm. Stamens nearly as long as petals or slightly longer; filaments puberulous. Ovary superior, puberulous. Capsule narrowly ellipsoidal, 6–9 mm, puberulous, apex acuminate.

Locality: Common in Hong Kong. *H. C. Tang* 793, 2387, 7021.

Distribution: Fujian, Guangdong, Guangxi, Yunnan, Hunan; Bhutan, Laos, India.

Ecology: Thin forests. Flowering: Apr.–May; fruiting: Jun.–Aug.

Notes: Some specimens were misidentified as *Itea chinensis* var. *oblonga* (Hand.-Mazz.) C. Y. Wu previously (Check List HK Plants 122. 2002).

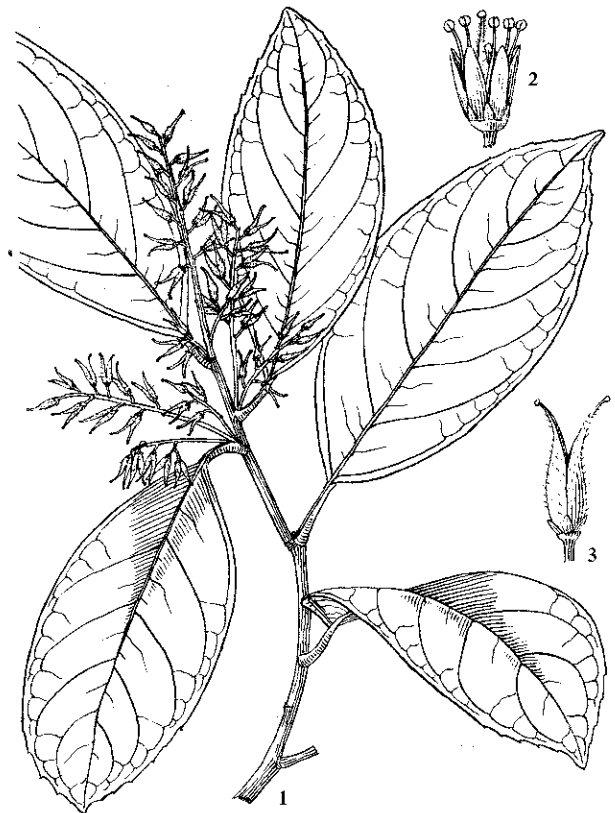


Figure 5. *Itea chinensis* Hook. & Arn.  
1. fruiting branch; 2. flower; 3. capsule. (drawn by H. P. Yu)

## 174. CRASSULACEAE 景天科

HU Qi-ming 胡啟明

Herbs or subshrubs. Stems more or less woody. Leaves succulent, alternate, opposite, or sometimes whorled. Stipule none. Flowers bisexual, or rarely unisexual, in terminal racemes, cymes, or panicles, most commonly 5-merous, seldom 3-, 4-, or 6-merous or even polymerous. Sepals free or occasionally united forming a lobed calyx. Petals free, or sometimes united at the base, rarely forming distinct corolla-tube. Stamens as many as or twice as many as the petals, in 1 or 2 whorls. Ovary superior; carpels as many as the petals, free,

or slightly connate at the base, usually each with a small flat scale (nectariferous appendage) at the base; style simple, distinct; ovules numerous, attached to the adaxial suture. Fruit a group of follicles, each with several seeds.

About 34 genera with more than 1500 species spreading over the greater parts of the world, but mainly in warm dry regions, particularly abundant in S Africa; 12 genera about 233 species in China; two genera and six species in Hong Kong.

- 1a. Flowers 4-merous; petals united into a long tube ..... 1. *Kalanchoe*  
 1b. Flowers usually 5-merous; petals free or slightly connate at the base ..... 2. *Sedum*

### 1. *Kalanchoe* Adans. 伽藍菜屬

Succulent herbs, subshrubs or shrubs, usually with erect stems. Leaves opposite or in whorls, sometimes alternate on the upper part of stems, simple, lobed or pinnately compound. Flowers 4-merous, usually colored and showy, in terminal paniculate cymes. Sepals free or united, often inflated at base, apex 4-lobed. Petals united, tubular or salverform, apex 4-lobed. Stamens twice as many as corolla-lobes, in two whorls, attached to corolla-tube; scales (nectariferous appendages) 4, linear or suborbicular. Ovary superior; carpels 4, free, apically narrowed into styles. Fruit a group of follicles, many-seeded.

About 145 species in S Africa, Madagascar and S America, but with a few species naturalized elsewhere; about seven species (three introduced) in China; five species (cultivated or naturalized) in Hong Kong.

- 1a. Flowers pendulous; stamens inserted near the base of corolla-tube.  
 2a. Leaves flat, ovate to ovate-oblong ..... 1. *K. pinnata*  
 2b. Leaves linear, subcylindric ..... 2. *K. tubiflora*  
 1b. Flowers erect; stamens inserted beyond middle of corolla-tube.  
 3a. Leaves pinnately lobed; lobes lanceolate or linear ..... 3. *K. laciniata*  
 3b. Leaves elliptic or suborbicular, not lobed.  
 4a. Stems 30–120 cm; leaves crenate ..... 4. *K. integra*  
 4b. Stems 2–8(–15) cm; leaves sharply dentate ..... 5. *K. synsepala*

#### 1. *Kalanchoe pinnata* (L. f.) Pers. 落地生根

(Photo 12)

Syn. Pl. 1: 446. 1805; Backer, Fl. Malesia I. 4: 199, fig. 1. 1951; FHN 1: 371, fig. 191. 1964.

*Crassula pinnata* L. f., Suppl. Sp. Pl. 191. 1781.

*Bryophyllum calycinum* Salisb., Parad. Lond., pl. 3. 1805; FHK 127. 1861; FKH 99. 1912.

*Bryophyllum pinnatum* (L. f.) Oken, All. Naturgesch. 3: 1966. 1841; FRPS 34(1): 36, pl. 12: 11–17. 1984; FTW ed. 2, 3: 10, pl. 5. 1993; FGD 3: 42, fig. 29. 1995; FOC 8: 204. 2001.

*Cotyledon pinnata* Lam., Encyclopédie Méthodique, Botanique 2: 141. 1786.

Succulent perennial herb, glabrous throughout. Stems erect, 0.5–1.5 m tall, ± woody at base. Leaves opposite, simple (early ones) or pinnate, petiolate; leaflets 3–5, ovate to ovate-oblong, 5–10 × 3–8 cm, apex rounded or obtuse on both ends, margin crenate. Flowers in paniculate cymes, pendulous. Calyx campanulate, light green or tinged with reddish-yellow, 2.5–4 mm; lobes 4, triangular. Corolla tubular, 4–5 cm, inflated at base; lobes 4, ovate-lanceolate, pink or purplish red. Stamens 8, attached to the base of corolla-tube. Follicles ca. 5 mm, included in corolla and calyx.

Locality: Cultivated and naturalized. *W. J. Tutcher s.n. (HK sheet 10721); Y. S. Lau 2124, 2733.*

Distribution: Native to Africa, but naturalized elsewhere in tropical and subtropical regions of the world.

Ecology: Wastelands near villages. Flowering: Summer to autumn.

Uses: Ornamental.

Notes: The species was reported as *Bryophyllum pinnatum* (L. f.) Oken previously (Check List HK Plants 47. 2004).

#### 2. *Kalanchoe tubiflora* (Harv.) Raym.-Hamet 洋吊鐘

(Photo 13)

Beih. Bot. Centrabl. 29(2): 41. 1912.

*Bryophyllum tubiflorum* Harv., Fl. Cap. 2: 380. 1862.

*Bryophyllum verticillatum* (Scott-Elliot) A. Berger, Nat. Pflanzenfam. (ed. 2), 18a: 411. 1930; FGD 3: 43. 1995.

*Kalanchoe verticillata* Scott-Elliot, J. Linn. Soc. 29: 14. 1981.

Succulent perennial herb, to 1 m tall, glabrous throughout. Stems erect, simple or branched from the base. Leaves opposite or verticillate, sessile, linear, subcylindric, 2.5–15 × 0.4–0.5 cm, greyish green, mottled with violet-brown, producing plantlets at the tips. Flowers pendulous, in terminal cymes. Calyx campanulate, 6.5–10 mm; lobes 4, triangular to triangular-lanceolate. Corolla tubular, 2.5–3 cm, inflated, constricted above ovary; lobes 4, suborbicular or broadly ovate, salmon to scarlet. Stamens 8, in 1 whorl; filaments as long as corolla-tube, attached to the base of corolla-tube. Fruit a group of follicles.

Locality: Cultivated in gardens. *S. Y. Hu & K. H. Yung 200, 453, 688 (CUHK).*

Distribution: Native to S Africa, cultivated elsewhere.

Ecology: Preferred sunny and dry places. Flowering: Oct.–Mar. of the following year.

Uses: Ornamental.

Notes: The species was reported as *Kalanchoe verticillata* Scott-Elliot previously (Check List HK Plants 47. 2004).

**3. *Kalanchoe laciniata* (L.) DC. 伽藍菜**

Hist. Pl. Grass. 2: 100. 1802; DC., Prodr. 3: 395. 1828; FKH 99. 1912; FHN 1: 370, fig. 190. 1964; FRPS 34(1): 39, pl. 13: 1–6. 1984; FGD 3: 44, fig. 30: 1–4. 1995.

Perennial succulent herb. Stems erect, to 1 m tall, few-branched. Leaves opposite; petioles 2.5–4 cm; leaf blade 8–18 × 5–15 cm, pinnatifid; lobes lanceolate, entire, irregularly toothed or lobed again. Cymes terminal and paniculate, 10–30 cm, many-flowered. Sepals green, deeply 4-lobed; lobes linear-lanceolate, 4–7 mm, membranous, apex acute. Corolla salverform, yellow or reddish; tube ca. 1.5 cm, inflated at the base; limb ca. 2 cm in diam.; lobes 4, ovate, 5–6 mm, apex acute. Stamens 8, in two whorls; filaments very short, inserted near apex of corolla-tube. Carpels 4, free, apically narrowed into styles. Fruit a group of follicles, many-seeded.

Locality: Cultivated. *Y. S. Lau 2669; W. J. Tutcher s.n. (HK sheet 1685).*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; widespread and naturalized in tropical regions of Asia and Africa.

Ecology: Flowering: Almost all the year round.

Uses: Ornamental.

**4. *Kalanchoe integra* (Medik.) Kuntze 匙葉伽藍菜**

Revis. Gen. Pl. 1: 229. 1891; FOC 8: 205. 2001.

*Cotyledon integra* Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 3: 200, pl. 9. 1775.

*Kalanchoe spathulata* DC., Pl. Grass. pl. 65. 1799–1829; FKH 99. 1912; FRPS 34(1): 38. 1984; FGD 3: 44, fig. 30: 5. 1995.

Annual succulent herb, 0.3–1.2 m tall, glabrous. Leaves opposite; petioles 2–3 cm; leaf blade oblong-spathulate, 7–10 × 2–4 cm, base attenuate, apex obtuse. Cymes terminal and paniculate, to 10 cm; flowers erect. Sepals green, deeply 4-lobed; lobes triangular or narrowly ovate, 5–12 mm, apex acuminate. Corolla yellow, salverform, 1.5–2 cm; lobes 4, lanceolate, apex acuminate. Stamens 8, in two whorls; filaments very short, inserted near apex of corolla-tube. Carpels 4, free, apically narrowed into styles. Fruit a group of follicles, many-seeded.

Locality: Cultivated in gardens. *S. Y. Hu 5249, 9377 (CUHK); HK sheet 1686.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Xizang, Fujian, Taiwan; widespread over tropical Asia.

Ecology: Flowering: Jan.–Mar.

Uses: Ornamental.

Notes: The species was reported as *Kalanchoe spathulata* DC. previously (Check List HK Plants 47. 2004).

**5. *Kalanchoe synsepala* Baker 越蝶蓮**

J. Bot. 20: 110. 1882.

Perennial succulent herb. Stems very short, 2–8(–15) cm; runners slender, 15–25 cm, arising from axils of leaves and rooting at the tip. Leaves decussately opposite, forming rosette-like tufts crowded on apex of stem and runners; leaf blade broadly ovate to suborbicular, (3–)5–10(–15) cm in diam., base subtruncate, abruptly narrowed into a short and broad petiole, apex rounded, margin purplish, with sharp teeth. Flowers in dichasial cymes terminal on axillary long peduncles; pedicels ca. 4 mm. Calyx ca. 4 mm, lobed to one-third of its length; lobes 4, triangular, acute. Corolla white, salverform; tube ca. 1 cm, glabrous; lobes 4, ovate-elliptic, 6–7 mm, apex acuminate. Stamens 8, in two whorls; filaments very short, inserted near apex of corolla-tube; anthers purple, exerted. Carpels 4, free, slightly longer than the corolla-tube, apically narrowed into styles. Fruit unknown.

Locality: Cultivated as a pot plant.

Distribution: Native to Madagascar, but cultivated elsewhere.

Ecology: Flowering: Summer to autumn.

Uses: Ornamental.

**2. *Sedum* L. 景天屬**

Annual or perennial succulent herbs, usually glabrous. Stems erect or diffuse, rarely woody at base. Leaves fleshy, mostly alternate, but in many species opposite or whorled, entire or toothed. Cymes terminal, often with second branches. Flowers normally bisexual and (4–)5(–9)-merous. Sepals free or connate at the base. Petals usually distinct or ± connate at the base. Stamens normally twice as many as the petals and in two whorls, the inner ones attached to the base of petals. Carpels usually distinct, sometimes slightly connate at the base. Scales (nectariferous appendages) attached to the base of carpels, entire or emarginate. Fruit a group of follicles, many-seeded.

More than 300 species widely distributed in N temperate regions and tropical mountains; about 125 species in China; one species in Hong Kong.

**1. *Sedum lineare* Thunb. 佛甲草****(Fig. 6)**

Syst. Veg. ed. 14, 430. 1784; FRPS 34(1): 144, pl. 32: 17–24. 1984; FGD 3: 49. 1995; FOC 8: 250. 2001.

Perennial succulent herb, glabrous throughout. Stems 10–20 cm tall, erect or ± diffuse, rooting at the nodes. Leaves sessile, in whorls of 3 or 4, sometimes alternate on the upper part of flowering stems; leaf blade linear or linear oblanceolate, 1–2.5 × 0.1–0.2 cm, base spurred; spurs truncate or obtuse, apex obtuse. Cymes terminal, with 2–3 second branches, 4–5 cm in diam. Flowers sessile, but with one flower between the branches, shortly pedicellate. Sepals 5, narrowly lanceolate, usually unequal, 1.5–6 mm. Petals 5,



yellow, elliptic-lanceolate, 4–6 × 1–1.5 mm. Stamens 10, in 2 whorls, shorter than the petals. Carpels 5, 4–5 mm, connate at the base, apically narrowed into a short style. Follicles stellately spreading, many-seeded.

Locality: Cultivated. *Y. S. Lau* 859, 2788.

Distribution: Guangdong, Guizhou, Yunnan, Sichuan, Gansu, Shaanxi, Henan, Jiangxi, Hunan, Hubei, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Japan.

Ecology: Flowering: Apr.–May.

Uses: Ornamental, medicinal (folklore).

## 176. SAXIFRAGACEAE 虎耳草科

XIA Nian-he 夏念和

Herbs. Leaves simple or compound, usually spirally arranged, often in basal rosettes, estipulate. Flowers usually in cymes or racemes, rarely solitary, bisexual, actinomorphic, 4- or 5-merous. Sepals sometimes petal-like, imbricate or valvate. Petals usually free, imbricate or valvate, sometimes absent. Stamens 5–10; filaments free; anthers 2-celled, longitudinally dehiscent; staminodes often present. Ovary superior to inferior, 2(–3)-locular with axile placentation; ovules several to many per locule, in several rows; Styles 2(–3), free. Fruit a capsule, usually septicidal. Seeds many, small; embryo straight; endosperm copious, oily.

About 36 genera and 500 species distributed worldwide, especially in temperate and cold regions of N hemisphere; 12 genera and ca. 260 species in China; one genus and one species cultivated in Hong Kong.

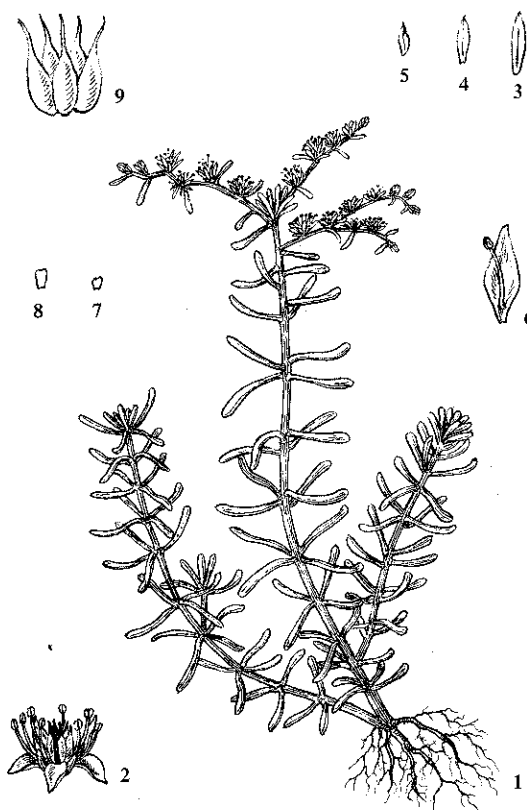


Figure 6. *Sedum lineare* Thunb.

1. whole plant; 2. flower; 3–5. sepals; 6. petal and stamen; 7–8. scales; 9. follicle. (drawn by H. P. Yu)

### 1. Saxifraga L. 虎耳草屬

Perennial, rarely annual or biennial herbs. Stem caespitose or simple. Leaves both basal and cauline, petiolate; cauline ones alternate, rarely opposite, margin dentate or lobate. Inflorescence a few- to many-flowered cyme or flower solitary, bracteate. Flowers usually bisexual, sometimes unisexual, actinomorphic, rarely zygomorphic. Sepals (4–)5, sometimes adnate to ovary at base. Petals (4–)5, yellow, orange, white, or red to purple, distinctly veined, margin usually entire. Stamens (8–)10; filaments subulate or clavate. Ovary superior to inferior, usually 2-locular; placentation usually axile; ovules many; disk sometimes well developed, annular or semi-annular. Fruit a 2-valved capsule. Seeds many, small.

About 450 species distributed in temperate and cold regions of the world, mainly in N hemisphere; 216 species in China; one species cultivated in Hong Kong.

#### 1. *Saxifraga stolonifera* Curtis 虎耳草

(Photos 14–15)

Philos. Trans. 64(1): 308, no. 2541. 1774; FOC 8: 287. 2001.

*Saxifraga chinensis* Lour., Fl. Cochinch. 281. 1790.

*Saxifraga sarmentosa* L. f., Suppl. Pl. 240. 1781; FKH 98. 1912.

*Saxifraga stolonifera* Meerb., Afbeeld. pl. 23. 1775; FFJ 2: 218, fig. 184. 1984; FRPS 34(2): 75, pl. 15: 7–9. 1992; FGD 3: 59. 1995; Check List HK Plants 124. 2002.

Perennial herb; rhizomes short; prostrate stems slender, branched. Stems 10–30 cm tall, glandular villous. Leaves usually basal, fleshy; petioles 3–15 cm; leaf blade orbicular or reniform, 4–9 cm in diam., base cordate or truncate, apex obtuse or acute, margin irregularly dentate, glandular piliferous on both surfaces, green and white spotted adaxially, purplish red abaxially. Inflorescence a many-flowered panicle, glandular hairy and tomentose. Sepals narrowly ovate, 3–4 mm, apex acute, abaxially and marginally glandular hairy. Petals 5, white or pink, upper 3 ovate, 3 mm, apex acuminate, lower 2 lanceolate-elliptic, 1–1.5 × 2–3 mm, apex acute, pinnately-veined. Filaments 6–8 mm. Ovary ovoid; styles slender, divergent. Capsules ovoid, 4–5 mm, apex deeply lobed. Seeds ovoid, tuberculate.

Locality: Cultivated. *HK sheet* 10366.

Distribution: Areas S of Changjiang River; Korea, Japan.

Ecology: Flowering: Mar.–Apr.; fruiting: Apr.–May.

## 177. ROSACEAE 薔薇科

XIA Nian-he 夏念和 • DENG Yun-fei 鄧雲飛

Evergreen or deciduous trees, shrubs or herbs, spiny or unarmed, sometimes climbing. Leaves usually alternate, sometimes distichous, rarely opposite, simple or compound; stipules usually conspicuous, rarely absent. Inflorescences terminal or axillary, cymose, corymbose, racemose or paniculate, rarely reduced to a single flower. Flowers actinomorphic, 4–5-numerous, usually bisexual, rarely unisexual (plants monoecious or dioecious), perigynous, the basal part of sepals, petals and stamens forming a flat to urceolate or sometimes conical receptacle (hypanthium), which is lined or rimmed with a glandular disk. Sepals usually 5, rarely few or more, imbricate; epicalyx segments sometimes also present. Petals as many as sepals, inserted below the margin of the disk, free, imbricate, sometimes absent. Stamens mostly numerous; filaments usually free, rarely connate; anthers small, 2-celled, dehiscing lengthwise. Ovary inferior, semi-inferior or superior; carpels 1–many, free or connate, usually adnate to the hypanthium; ovules often 2 (rarely 1 or several) in each carpel or ovary-locule; styles as many as carpels, free or connate, basal, lateral or subterminal. Fruit a follicle, achene, drupe, hip or pome. Seeds usually without albumen; cotyledons often fleshy with convex back.

About 85 genera and ca. 2000 species cosmopolitan, mostly in N temperate zone; 55 genera and 950 species in China; 12 genera, 39 species and two varieties in Hong Kong.

- 1a. Fruit dehiscent, a follicle; stipules absent ..... 1. *Spiraea*
- 1b. Fruit usually indehiscent, an achene, drupe or pome; stipules present.
  - 2a. Ovary inferior or semi-inferior; fruit a pome, sometimes berrylike.
    - 3a. Plant armed ..... 2. *Pyracantha*
    - 3b. Plant unarmed.
      - 4a. Inflorescences racemose ..... 3. *Pyrus*
      - 4b. Inflorescences paniculate.
        - 5a. Sepals deciduous after anthesis ..... 4. *Rhaphiolepis*
        - 5b. Sepals persistent after anthesis.
          - 6a. Lateral veins arching upwards before reaching the leaf margin, not excurrent ..... 5. *Photinia*
          - 6b. Lateral veins terminating in the leaf margin ..... 6. *Eriobotrya*
  - 2b. Ovary superior; fruit an achene or drupe.
    - 7a. Herbs.
      - 8a. Achenes enclosed by hypanthium; hypanthium with hooked prickles ..... 7. *Agrimonia*
      - 8b. Achenes in fruit not enclosed by hypanthium; hypanthium lacking prickles ..... 8. *Duchesnea*
    - 7b. Trees or shrubs.
      - 9a. Branchlets with straight or hooked prickles.
        - 10a. Pistils 2-ovulate, inserted on a convex receptacle ..... 9. *Rubus*
        - 10b. Pistils 1-ovulate, enclosed in a concave receptacle ..... 10. *Rosa*
      - 9b. Branchlets without prickles.
        - 11a. Leaves serrate; sepals and petals large and clearly differentiated ..... 11. *Prunus*
        - 11b. Leaves entire; sepals and petals minute and indistinguishable ..... 12. *Pygeum*

1. *Spiraea* L. 繡線菊屬

Deciduous shrubs, unarmed. Leaves simple, alternate, usually shortly petiolate, serrate or incised-serrate, sometimes lobed, veins pinnate, rarely 3–5 from the base; stipules absent. Flowers arranged in umbels, umbel-like racemes, or contracted corymbs or panicles at apex of the new shoots, bisexual, rarely unisexual and polygamous, white or rose. Hypanthium campanulate or shortly turbinate. Sepals 5, valvate or slightly imbricate, usually shorter than hypanthium. Petals 5, white, rarely yellow or red, imbricate or contorted, usually longer than sepals. Stamens 15 to numerous, borne between disk and petals; anthers didymous. Disk annular, at the rim of the hypanthium, collar-shaped or lobed. Carpels (3–)5(–8), antepetalous, free; ovules 2–several per carpel, pendulous; styles terminal or subterminal; stigmas capitellate or disciform. Follicles bony, often dehiscent along the adaxial suture and at length splitting abaxially at the top. Seeds linear or oblong, testa membranous; endosperm thin or absent.

About 80 to 120 species in N temperate regions; 70 species in China; four species (three cultivated) in Hong Kong.

- 1a. Leaf blades, inflorescences and follicles glabrous ..... 1. *S. cantoniensis*
- 1b. Leaf blades, inflorescences and follicles hairy.
  - 2a. Umbels pedunculate, peduncles 5–10 mm long ..... 2. *S. chinensis*
  - 2b. Umbels sessile.
    - 3a. Leaf blade ovate to oblong-elliptic, 1.5–3 × 0.7–1.4 cm ..... 3. *S. prunifolia*
    - 3b. Leaf blade linear-lanceolate, (1–)1.5–4 × (2–)3–7 cm ..... 4. *S. thunbergii*

**1. *Spiraea cantoniensis* Lour.** 麻葉繡線菊(麻葉繡球)

Fl. Cochinch. 1: 322. 1790; FHK 105. 1861; FKH 93. 1912; FRPS 36: 33. 1974; FFJ 2: 267. 1985; FGD 4: 169. 2000; FOC 9: 62. 2003.

Shrub, up to 1.5 m tall, branchlets terete, slender, arched, dark red-brown, glabrous. Petioles 4–7 mm, glabrous; leaf blade rhombic-elliptic or rhombic-oblong, 2–5 × 1.5–2 cm, base cuneate, apex acute, margin irregularly incised-serrate above middle, glabrous on both surfaces, dark green abaxially, pale bluish-green and glaucous adaxially, lateral veins 3–5 on each side of midvein. Umbels terminal, pedunculate, many-flowered; rachis and peduncles glabrous or pubescent; pedicels slender, 8–16 mm, glabrous; bracts linear to lanceolate, 2–3 mm, glabrous or pubescent; flowers 5–8 mm in diam.; hypanthium campanulate, shorter than 2 mm, glabrous adaxially, pubescent abaxially; sepals triangular to ovate-triangular, 1–1.5 × 1.5–2 mm, erect in fruits; petals white, suborbicular or obovate, 2.5–4 × 3–4.5 mm, glabrous, apex emarginate or obtuse; stamens 20–30, shorter than to equaling to petals; disk annular, lobed, lobes unequal, suborbicular, apex emarginate; carpels 5, subglabrous; ovary glabrous, styles shorter than stamens. Follicles erect, glabrous; styles terminal, usually divergent.

Locality: Cultivated. *Y. S. Lau 2690*; *HK sheet 9135*.

Distribution: Guangxi, Guangdong, Hunan, Jiangxi, Fujian, Zhejiang; Japan, also widely cultivated in the world.

Ecology: Flowering: Mar.–May; fruiting: Jul.–Sep.

Uses: Ornamental.

**2. *Spiraea chinensis* Maxim.** 中華繡線菊 (Fig. 7; Photo 16)

Trudy Imp. S.-Peterburgsk. Bot. Sada 6(1): 193. 1879; FRPS 36: 41. 1974; FFJ 2: 268. 1985; FGD 4: 169. 2000; FOC 9: 61. 2003.

Shrub, 1.5–3 m tall; branchlets arched, yellow tomentose initially, glabrescent. Petioles 4–10 mm, shortly tomentose; leaf blade rhombic-ovate or obovate, 2.5–6 × 1.5–3 cm, base broadly cuneate or rounded, apex acute or obtuse, margin deeply sharply incised serrate or inconspicuously 3-lobed, adaxially pubescent, abaxially yellow tomentose, lateral veins 4–6 on each side of midvein, deeply impressed adaxially, prominent abaxially. Umbels pedunculate, 16–25-flowered; peduncles 5–10 mm, tomentose; flowers 3–4 mm in diam.; bracts linear, 2–5 mm, pubescent; hypanthium campanulate, puberulous abaxially, pubescent adaxially; sepals ovate-lanceolate, 2–3 × 1–2 mm, erect or rarely reflexed in fruit, apex acuminate; petals white, suborbicular, 2–3 × 2–3 mm, apex emarginate or obtuse; stamens 20–25, shorter than to nearly equaling to petals; disk undulate annular or irregularly lobed; ovary villose; styles shorter than stamens. Follicles erect spreading, wholly pubescent; style terminal, erect or divergent.

Locality: Ma On Shan, Lantau Peak. *P. S. Choi 434*; *S. C. Ng 2923*; *K. Y. Tam 103*.

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Hunan, Jiangxi, Jiangsu, Anhui, Hubei, Henan, Hebei, Shaanxi, Nei Mongol.

Ecology: Thickets on hillslopes. Flowering: Mar.–Jun.; fruiting: Jun.–Oct.

Uses: Ornamental.



Figure 7. *Spiraea chinensis* Maxim.

1. flowering branch; 2. flower; 3. petal; 4. pistil; 5. fruit; 6. follicle. (drawn by H. P. Yu)

**3. *Spiraea prunifolia* Siebold & Zucc.** 李葉繡線菊

Fl. Jap. 1: 131, pl. 70. 1835; FRPS 36: 59. 1974; FOC 9: 70. 2003.

Shrub to 3 m tall; branchlets slender, slightly angled, pubescent initially, glabrescent. Petioles 2–4 mm, pubescent; leaf blade ovate to oblong-elliptic, 1.5–3 × 0.7–1.4 cm, base cuneate, apex acute, margin minutely sharply serrate, pubescent on both surfaces initially, then glabrescent adaxially, pinnately-veined. Umbels sessile, 3–6-flowered, with few clustered small leaves at base; pedicels 6–10 mm, pubescent; bracts leaflike, 4–7 × 3–5 mm, puberulous on both surfaces initially, glabrescent, apex indistinctly and minutely serrate; flowers double, 1–1.2 cm in diam.; hypanthium campanulate, shorter than sepals, pubescent; sepals triangular to ovate-triangular, 1.5–2 mm, shorter than petals, apex acute; petals white, broadly obovate to suborbicular, glabrous. Follicles spreading, glabrous, or pubescent along the adaxial suture.

Locality: Cultivated in gardens. *HK sheet 9189*; *G. Barretto s.n. (HK sheet 33346)*.

Distribution: Sichuan, Guizhou, Hunan, Jiangxi, Jiangsu, Anhui, Shandong, Hubei, Shaanxi; Korea, Japan.

Ecology: Flowering: Mar.–May.

Uses: Ornamental.

**4. *Spiraea thunbergii* Siebold ex Blume 珍珠繡線菊**

Bijdr. Fl. Ned. Ind. 17: 1115. 1826; FRPS 36: 60. 1974; FFJ 2: 269. 1985; FOC 9: 70. 2003.

Shrub, up to 1.5 m tall; branchlets terete, densely pubescent initially, glabrescent. Petioles 1–2 mm, pubescent; leaf blade linear-lanceolate, (1–)1.5–4 × (2–)3–7 cm, base narrowly cuneate, apex long acuminate, margin sharply serrate above middle, glabrous on both surfaces except for puberulous veins abaxially when young, pinnately-veined. Umbels sessile, with clustered small leaves at base, 3–7-flowered; pedicels slender, 6–10 mm, glabrous; flowers 6–8 mm in diam.; hypanthium campanulate, pubescent adaxially, glabrous abaxially; sepals triangular to ovate-triangular, 1.5–2 × 1–1.5 mm, apex acute, erect or reflexed in fruits; petals white, suborbicular to obovate, 2–4 × 2–3.5 mm, glabrous, base shortly clawed, apex emarginate or obtuse; stamens 18–20, to 1/3 as long as petals or shorter; disk annular, 10-lobed; ovary subglabrous; styles nearly equaling to stamens. Follicles spreading, glabrous; styles subterminal, divergent.

Locality: Cultivated in gardens. *Y. S. Lau 1750, 2667; HK sheet 9205.*

Distribution: E China; Japan.

Ecology: Flowering: Feb.–May; fruiting: Jul.

Uses: Ornamental.

**2. *Pyracantha* M. Roem. 火棘屬**

Evergreen shrubs or small trees, usually with thorny branches. Leaves alternate or fasciculate, simple, crenate, entire or serrulate, shortly petiolate or sessile; stipules minute, caducous, but on long shoots persistent longer and sometimes leafy. Inflorescence a terminal corymb-shaped thyse. Hypanthium obconical. Sepals 5, persistent and incurved after anthesis. Petals 5, suborbicular, spreading, base shortly clawed. Stamens ca. 20; filaments subulate. Carpels (2–)5, apically free, the basal half adnate to the hypanthium; ovary 5-locular, semi-inferior; ovules 2 per locule, anatropous, collateral; styles (2–4–)5, free, stigmas dilated. Fruit a pome, red or orange, without sclereids, with a persistent calyx at the apex; pyrenes 5. Seeds with testa.

Ten species in SE Europe to E Asia; seven species in China; one species cultivated in Hong Kong.

**1. *Pyracantha crenulata* (D. Don) M. Roem. 火棘****(Photo 17)**

Fam. Nat. Syn. Monogr. 3: 220. 1847; FRPS 36: 182. 1974; FGD 4: 173. 2000; FOC 9: 110. 2003; FGX 2: 327. 2005.

*Mespilus crenulatus* D. Don, Prodr. Fl. Nepal. 238. 1825.

Shrub or small tree, to 5 m tall; branchlets thorny, dark brown, rusty pubescent initially, glabrescent. Petioles short, initially brown pubescent, glabrescent; leaf blade oblong or oblanceolate, rarely ovate-lanceolate, 2–7 × 0.8–1.8 cm, base broadly cuneate or obtuse, apex acute or obtuse, sometimes with a short tip, margin crenulate or sparsely so, glabrous on both surfaces, midvein impressed abaxially, prominent adaxially. Compound corymbs terminal, 3–5 cm in diam., many-flowered; bracts caducous, lanceolate; peduncles 4–10 mm, glabrous. Flowers 6–9 mm in diam.; hypanthium campanulate, glabrous; sepals triangular, abaxially glabrous, apex acute, erect and persistent in fruits; petals white, orbicular, 4–5 × 3–4 mm, apex rounded; stamens 20; filaments 2–3 mm; ovary densely white pubescent apically; styles 5, free, as long as stamens. Pome orangish red when mature, subglobose, 3–8 mm in diam.

Locality: Cultivated. *Y. S. Lau 34, 1800; L. T. Lo 20.*

Distribution: Xizang, Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Jiangxi, Hunan, Hubei, Shaanxi, Jiangsu; India, Bhutan, Myanmar, Nepal, Vietnam.

Ecology: Flowering: Mar.–May; fruiting: Sep.–Dec.

Uses: Ornamental.

**3. *Pyrus* L. 梨屬**

Deciduous rarely half-evergreen trees, rarely shrubs, sometimes thorny. Leaves alternate, simple, serrate or entire, rarely lobed, petiolate; stipules small, caducous. Inflorescences an umbel-like raceme, few-flowered; bracts subulate, deciduous. Flowers with or before the leaves. Hypanthium urceolate, adnate to the ovary. Sepals 5, reflexed or spreading, persistent or deciduous. Petals 5, white or rarely pinkish, shortly clawed. Stamens 15–30, shorter than the petals, anthers usually red. Ovary inferior, 2–5-locular, separate or connate at base, ovules 2 (rarely many) in each locule; styles 2–5, free but closely constricted basally by the staminal disk, stigmas truncate to 2-patite. Fruit a pome, pyriform to globose, brown to yellow, sometimes lenticellate; mesocarp fleshy and with copious stones or grit-cells. Seeds ovoid, black or nearly black.

About 25 species in Europe, N Africa and E Asia; seven species in China; two species (one cultivated) in Hong Kong.

- 1a. Leaf margin obtusely serrate; styles 2–3.....1. *P. calleryana*  
 1b. Leaf margin spiny serrate; styles 4–5.....2. *P. pyrifolia*

**1. *Pyrus calleryana* Decne. 豆梨(麻子梨)****(Fig. 8; Photos 18–20)**

Jard. Fruit. 1: 329. 1871–72; FRPS 36: 367. 1974; FFJ 2: 335. 1985; FGD 4: 192. 2000; FOC 9: 178. 2003.

Deciduous tree, 5–8 m tall, brachlets initially villose. Petioles 2–4 cm, glabrous; leaf blade broadly ovate or ovate, rarely oblong-ovate, 4–8 × 3.5–6 cm, base rounded or broadly cuneate, apex acuminate, rarely acute, margin obtusely crenate, initially pubescent, soon glabrescent, lateral veins 7–9 on each side of midvein. Racemes umbel-like, 6–12-flowered; peduncles glabrous; bracts linear-lanceolate,

membranous, 0.8–1.3 cm, caducous; pedicels 1.5–3 cm, lengthening to 4 cm in fruit, glabrous. Flowers 2–2.5 cm in diam.; hypanthium urceolate, glabrous; sepals lanceolate, ca. 5 mm, pubescent adaxially, glabrous abaxially, apex acuminate, margin entire, deciduous; petals white, ovate, 1.3 × 1 mm, shortly clawed at base, apex rounded; stamens 20, slightly shorter than petals; ovary 2(–3)-locular, glabrous; styles 2(–3), nearly as long as stamens, glabrous. Pomes globose, 1 cm in diam., blackish brown, with pale dots.

Locality: Shing Mun, Tung Chung. *C. P. Lau 13*; *L. T. Lo 599*; *Y. W. Lam 17*.

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Zhejiang, Jiangsu, Anhui, Hubei, Henan, Shandong; Korea, Japan.

Ecology: Hillslopes, forests. Flowering: Feb.–Apr.; fruiting: Jun.–Dec.

Uses: Ornamental.

## 2. *Pyrus pyrifolia* (Burm. f.) Nakai 沙梨(梨) (Photo 21)

Bot. Mag. (Tokyo) 40: 564. 1926; FRPS 36: 365. 1974; FFJ 2: 334. 1985; FGD 4: 191. 2000; FOC 9: 177. 2003.

*Ficus pyrifolia* Burm. f., *Fl. Indica* 226. 1768.

*Pyrus sinensis* auct. non Lindl.: FKH 96. 1912.

Deciduous tree, 7–15 m tall; branchlets initially pubescent, glabrescent. Petioles 3–4.5 cm, initially pubescent; stipules membranous, linear-lanceolate, 1–1.5 cm, caducous; leaf blade ovate or ovate-elliptic, 7–15 × 4–8 cm, base rounded or subcordate, rarely broadly cuneate, apex caudate or acuminate, margin spinulose-serrate, glabrous or initially pubescent; lateral veins 7–9 on each side of midvein. Racemes umbel-like, 3–9-flowered; peduncles initially pubescent; pedicels 3.5–5 cm, initially pubescent; bracts linear, 1–1.4 cm, membranous, caducous. Flowers 2.5–3.5 cm in diam.; hypanthium urceolate, abaxially glabrous; sepals triangular-ovate, ca. 5 mm, abaxially glabrous, adaxially densely brown pubescent, margin glandular-denticulate, apex acuminate, caducous; petals white, ovate, 15–17 mm, shortly clawed at base, apex rounded; stamens 20, about half the length of the petals; ovary (4–)5-locular, with 2 ovules in each locule; styles (4–)5, glabrous, nearly as long as the stamens. Pome subglobose, 5–8 cm in diam., with pale dots.

Locality: Cultivated. *Y. S. Lau 670*; *HK sheet 10005, 40761*.

Distribution: Widely distributed in China; also cultivated in Korea and Japan.

Ecology: Flowering: Apr.; fruiting: Jun.–Aug.

Uses: Fruit.

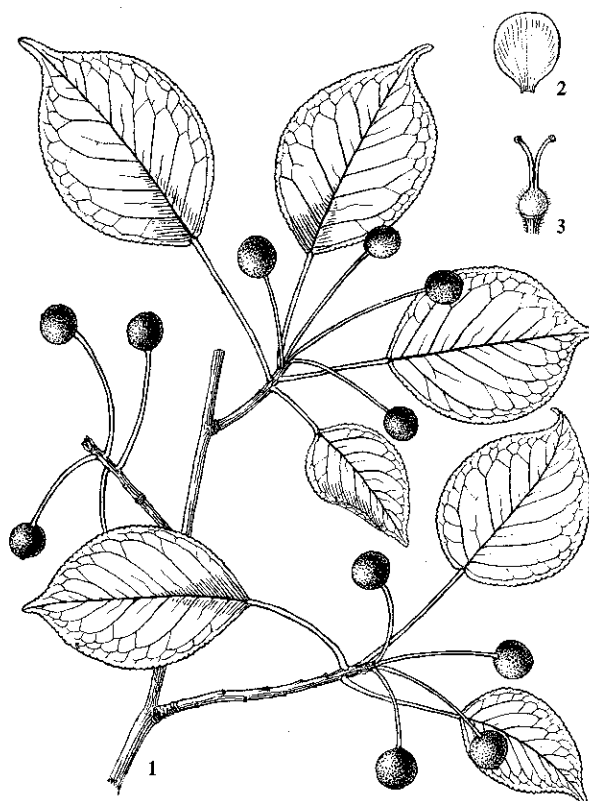


Figure 8. *Pyrus calleryana* Decne.  
1. fruiting branch; 2. petal; 3. gynoecium. (drawn by H. P. Yu)

## 4. *Rhaphiolepis* Lindl. 石斑木屬

Evergreen trees or shrubs, unarmed. Leaves simple, alternate, shortly petiolate, leathery, serrate or entire, pinnately-veined; stipules deciduous. Inflorescences racemose, paniculate or corymbose; bracts subulate or lanceolate, deciduous. Hypanthium campanulate to tubular. Sepals 5, subulate or triangular, erect or reflexed, falling off together with the upper rim of the hypanthium after anthesis. Petals 5, white to pinkish, oblong or obovate, clawed at base. Stamens 15–20, inserted on the mouth of the hypanthium. Carpels 2, completely connate with each other and adnate to the hypanthium. Ovary inferior, 2(–3)-locular; styles 2(–3), elongate, connate at base; stigmas truncate; ovules basal, erect, 2 per locule. Fruit a pome, subglobose, mostly 1-seeded, crowned by an annular remains of the calyx-teeth, often black or purplish-black. Seeds globose or turgid, testa thin but firm, endosperm absent.

About 15 species in SE and E Asia; seven species in China; two species in Hong Kong.

- 1a. Leaves oblong to ovate-lanceolate ..... 1. *R. indica*  
1b. Leaves linear-lanceolate ..... 2. *R. lanceolata*

### 1. *Rhaphiolepis indica* (L.) Lindl. ex Ker 石斑木(車輪梅、春花)

(Fig. 9; Photo 22)

Bot. Reg. 6: pl. 468. 1820; FKH 97. 1912; FHN 2: 200. 1965; FRPS 36: 276. 1974; FFJ 2: 329. 1985; FTW 3: 109. 1994; FOC 9: 142. 2003.

*Crataegus indica* L., *Sp. Pl.* 1: 477. 1753.

Shrub, rarely small trees, 1–4 m tall; branchlets initially brown tomentose, glabrescent. Leaves often crowded at apex of branchlet; petioles 5–18 mm, subglabrous; stipules subulate, caducous; leaf blade leathery, oblong to ovate-lanceolate, 2–8 × 1.5–4 mm, base attenuate and decurrent to the petioles, apex obtuse, acute or shortly acuminate, margin dentate, adaxially glabrous, abaxially glabrous

or sparsely tomentose, soon glabrescent, lateral veins 5–7 on each side of midvein, prominent abaxially. Panicles or racemes terminal, many-flowered, 4–6 cm; peduncles rusty tomentose; bracts linear-lanceolate, glabrous, caducous; pedicels 5–15 mm, densely rusty tomentose, glabrescent in fruit. Flowers fragrant, 1–1.3 cm in diam.; hypanthium obconical, 4–5 mm, glabrous or sparsely pubescent abaxially; sepals lanceolate, 4.5–8 mm, apex long acuminate, glabrous or pubescent abaxially; petals white or pink, obovate-lanceolate, 5–7 × 4–5 mm, pubescent at base, apex obtuse or acute; stamens 15, as long as or slightly longer than petals; ovary glabrous, 2–3-locular; styles 2–3, connate at base, subglabrous. Pome globose, purplish black, ca. 5 mm in diam., crowned by an annular remains of the calyx-teeth.

Locality: Common in Hong Kong. *Y. S. Lau 963, 2971; HK sheet 39936.*

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan, Zhejiang; Cambodia, Indonesia, Laos, Thailand, Vietnam, Japan.

Ecology: Forests or open fields. Flowering: Feb.–Apr.; fruiting: May–Dec.

Uses: Ornamental.

## 2. *Rhaphiolepis lanceolata* Hu 細葉石斑木

*J. Arnold Arbor.* 13(3): 335. 1932; *FHN* 2: 200. 1965; *FRPS* 36: 282. 1974; *FGD* 4: 188. 2004; *FOC* 9: 144. 2003.

Evergreen shrub or small tree, 1–3(–10) m tall; branchlets dark grey, initially brown pubescent, soon glabrescent. Leaves often crowded at apex of branchlets; petioles 2–4 mm, glabrous, winged; leaf blade leathery, linear-lanceolate, 3–9.5 × 0.5–1.2 cm, base narrowly cuneate and decurrent to the petioles, apex shortly acuminate or obtuse, margin sparsely crenate, revolute, glabrous, midvein impressed adaxially, lateral veins slender, prominent abaxially. Panicles terminal or axillary, many-flowered; peduncles brown pubescent; pedicels stout, 5–7 mm, brown pubescent; bracts lanceolate or subulate, 2–4 mm, pubescent on both surfaces. Flowers ca. 1 cm in diam.; hypanthium obconical, ca. 4 mm; sepals lanceolate, 4.5–7 mm, pubescent on both surfaces, apex acute to acuminate, or sometimes serrate towards the apex; petals white or pinkish, elliptic-lanceolate, 6–7 × 1.5–4 mm, glabrous, apex obtuse; stamens 15, slightly longer than or equaling petals; ovary 3-locular, pubescent; styles 3, glabrous, connate at base. Pome globose, 4–7 mm in diam., blackish purple, pubescent, crowned by an annular remains of the calyx-teeth.

Locality: Victoria Peak, Hoi Ha, Tsing Yi. *L. T. Lo 425; P. S. Choi 174; Y. W. Lam 145.*

Distribution: Guangdong, Guangxi; Vietnam.

Ecology: Margins of forests and thickets.

Notes: The species was reported as *Rhaphiolepis salicifolia* Lindl. previously (Check List HK Plants 126. 2002; 48. 2004).

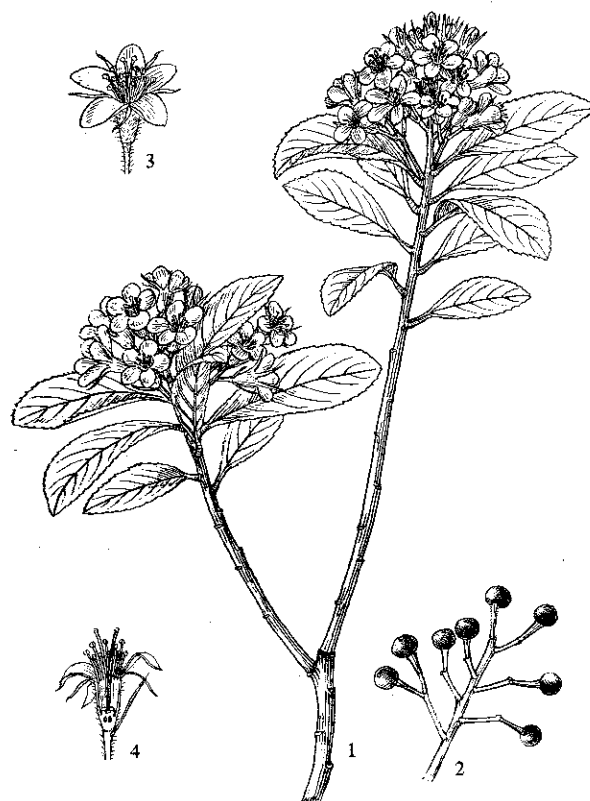


Figure 9. *Rhaphiolepis indica* (L.) Lindl.  
1. flowering branch; 2. infructescence; 3. flower; 4. vertical section of flower. (drawn by H. P. Yu)

## 5. *Photinia* Lindl. 石楠屬

Evergreen trees or shrubs, unarmed. Leaves alternate, simple, petiolate, entire or serrate, pinnately-veined; stipules free, small, caducous. Inflorescence a terminal, panicle- or corymb-shaped compound raceme. Hypanthium campanulate or turbinate, adhering to the ovary. Sepals 5, short, persistent. Petals 5, white to pinkish, more or less clawed at base. Stamens 20, rarely more, inserted in the throat of the hypanthium. Ovary more or less inferior, 2–5-loculed, with 2 erect ovules in each locule; styles 2–5, connate at base. Fruit a small, 1–4-seeded pome, crowned by an annular remains of the calyx-teeth; testa firm, endosperm thin or absent, cotyledons plano-convex.

About 25 species in S and E Asia; 18 species in China; three species (one cultivated) in Hong Kong.

- 1a. Leaves, peduncles and pedicels glabrous; lateral veins of leaves 25–30 pairs ..... 1. *P. serratifolia*  
1b. Leaves, peduncles and pedicels hairy; lateral veins of leaves less than 20 pairs.  
2a. Peduncles and pedicels pubescent; leaves epunctate ..... 2. *P. benthamiana*  
2b. Peduncles and pedicels white tomentose; leaves black glandular-punctate abaxially ..... 3. *P. raupingensis*

### 1. *Photinia serratifolia* (Desf.) Kalkman 石楠

*Blumea* 21: 424. 1973; *FOC* 9: 125. 2003.

*Crataegus serratifolia* Desf., *Tabl. Ecole Bot.* (ed. 3) 288. 1829.

*Photinia serrulata* Lindl., *Trans. Linn. Soc. London* 13(1): 103. 1821, *nom. illeg., superfl.*; *FHK* 107. 1861, *in obs.*; *FRPS* 36: 220. 1974; *FGD* 4: 182. 2000.

Evergreen shrub or small tree, 4–6(–12) m tall; branchlets brownish grey, glabrous. Petioles 2–4 cm, pubescent initially, glabrescent; leaf blade leathery, oblong, oblong-obovate or obovate-elliptic, 9–22 × 3–6.5 cm, base rounded or broadly cuneate, apex acute or acuminate, margin finely crenate to serrate, pubescent on both surfaces when very young, soon glabrescent, lateral veins 15–30 on each side of midvein. Compound corymbs terminal, 10–16 cm in diam., many-flowered, glabrous; pedicels 3–5 mm. Flowers 6–8 mm in diam.; hypanthium conical, 1 mm; sepals broadly triangular, ca. 1 × 1.5 mm, apex acute or obtuse; petals white, suborbicular to broadly ovate, 3–4.5 × 3–3.5 mm, apex obtuse or emarginate; stamens 16–20; ovary 2(–3)-locular, pillose apically; styles 2(–3), 2.5 mm, free, stigmas capitate. Pome globose to ovoid, 5–6 mm in diam., red or brownish-purple, 1-seeded.

Locality: Cultivated. *J. Lamont s.n.* (K).

Distribution: Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Hebei, Henan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang; India, Indonesia, Japan, Philippines.

Ecology: Flowering: Apr.–May; fruiting: Jun.–Dec.

Uses: Ornamental.

## 2. *Photinia benthamiana* Hance 閩粵石楠 (Fig. 10; Photo 23)

Ann. Sci. Nat., Bot., ser. 5, 5: 213. 1866; FKH 97. 1912; FRPS 36: 250. 1974; FFFJ 2: 324. 1985; FGD 4: 185. 2000; FOC 9: 133. 2003.

*Pourthiaea benthamiana* (Hance) Nakai, Bot. Mag. (Tokyo) 30(349): 24. 1916.

Deciduous small tree or shrub, 3–10 m tall; branchlets greyish-black, initially greyish-white pilose, glabrescent, lenticellate. Petioles 6–10 mm, initially pubescent, glabrescent; leaf blade papery, obovate-oblong to oblong-lanceolate, 5–11 × 2–5 cm, base attenuate to broadly cuneate, apex acute or obtuse, margin sparsely serrulate, initially both surfaces grey villous, later glabrous or with a few long hairs on veins abaxially, lateral veins 5–8 on each side of midvein. Compound corymbs terminal, many-flowered, shorter than leaves; peduncles and pedicels densely grey villous; bracts subulate, 2–4 mm; pedicels 1–5 mm. Flowers 7–8 mm in diam.; hypanthium campanulate, 3–4 mm, densely villous abaxially; sepals triangular, ca. 1 mm; petals white, obovate or orbicular, 3–5 mm, glabrous or adaxially puberulous, apex emarginate or obtuse; stamens 20, as long as or slightly shorter than petals; styles 3, glabrous, connate at base. Pomes ovoid or subglobose, 4–6 × 3–5 mm, sparsely yellowish villous.

Locality: Common in Hong Kong. *H. C. Tang 2273*; *Y. S. Lau 2748*; *K. Y. Tam 117*.

Distribution: Hainan, Guangdong, Hunan, Fujian, Zhejiang; Vietnam.

Ecology: Forests. Flowering: Mar.–May; fruiting: Jul.–Dec.

Uses: Ornamental.

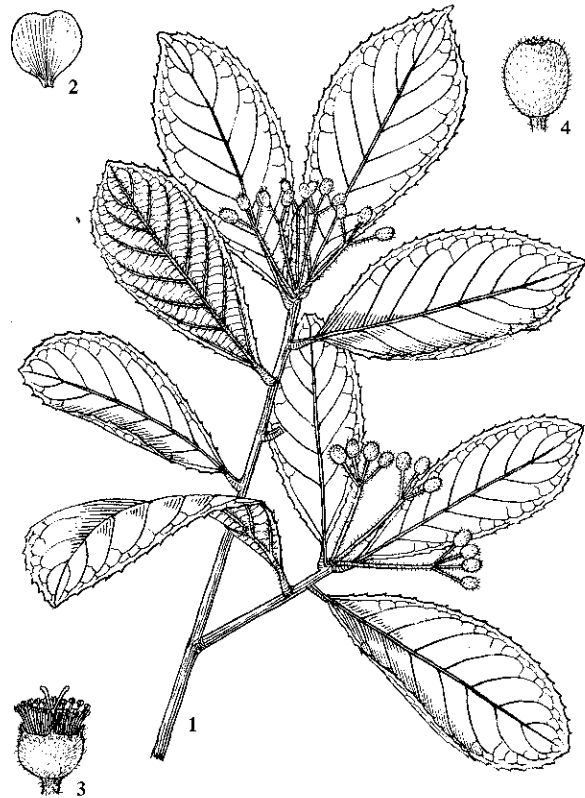


Figure 10. *Photinia benthamiana* Hance

1. fruiting branch; 2. petal; 3. flower with petals removed; 4. fruit. (drawn by H. P. Yu)

## 3. *Photinia raupingensis* K. C. Kuan 饒平石楠

(Photo 24)

Acta Phytotax. Sin. 8(3): 228. 1963; FRPS 36: 237. 1974; FGD 4: 184. 2000; FOC 9: 130. 2003.

*Photinia prunifolia* auct. non Lindl.: FHK 107. 1861; FKH 97. 1912.

Evergreen shrub or small tree, 3–5 m tall; branchlets initially densely villous, later glabrescent. Petioles 8–15 cm, glabrous; leaf blade leathery, oblong, obovate or oblong-elliptic, 4–8 × 2–3 cm, base cuneate, apex acute or obtuse, margin serrulate, adaxial surface glabrous and shining, abaxial black glandular-punctate, villous along midveins when young, later glabrescent, lateral veins 12–17 on each side of midvein. Compound corymbs terminal, 3–7 cm in diam., many-flowered; rachis, peduncles and pedicels densely grey villous; bracts subulate or linear, 3–4 mm, grey villous; hypanthium campanulate, 1 mm, abaxially densely grey villous; sepals triangular, 1 mm, abaxially villous, apex acute, persistent; petals white, obovate, 2 mm, basally villous, apex acute; stamens 20, shorter than petals; ovary 2-locular, apically villous; styles 2, connate at base. Pomes ovoid, 5–6 × 3–4 mm, red when mature.

Locality: Common in Hong Kong. *Y. S. Lau 1363*; *P. S. Choi 437*; *Y. W. Lam 2236*.

Distribution: Guangdong, Guangxi.

Ecology: Forests. Flowering: Mar.–Apr.; fruiting: Jun.–Dec.

Notes: Early records under the name *P. prunifolia* are referable to the present species (Forbes & Hemsley, J. Linn. Soc. Bot. 23: 262. 1887). The species was reported as *P. prunifolia* Lindl. previously (Check List HK Plants 29. 1993).

6. *Eriobotrya* Lindl. 枇杷屬

Evergreen trees or shrubs, unarmed. Leaves large, alternate, simple, serrate or dentate, rarely entire, petiolate or nearly sessile, with conspicuous parallel veins ending in the teeth; stipules free or rarely intrapetiolarly connate, lanceolate. Inflorescence a terminal compound panicle or corymb. Flowers bisexual, 5-merous. Hypanthium obconical, elongated above the ovary, open at the top. Sepals 5, small, acute, erect or spreading, persistent. Petals 5, white, clawed, contorted or imbricate in buds, obovate or orbicular, usually notched, margin sinuate. Stamens 15–20 (–40), anthers rounded. Ovary inferior, 2–5-loculed, with 2 erect ovules in each locule; styles 2–5, usually connate at base, villous; stigmas capitate. Fruit a fleshy pome, crowned by persistent incurved sepals, fleshy or dry, endocarp thin, with 1 or 2 large seeds.

About 26 species in SE and E Asia; 14 species in China; two species (one cultivated) in Hong Kong.

- 1a. Adult leaves glabrescent, lateral veins 9–11 pairs ..... 1. *E. fragrans*  
 1b. Adult leaves densely rusty tomentose abaxially, lateral veins 11–21 pairs ..... 2. *E. japonica*

1. *Eriobotrya fragrans* Champ. ex Benth.

香花枇杷(山枇杷)

(Fig. 11; Photo 25)

Hooker's J. Bot. Kew Gard. Misc. 4: 80. 1852; FHK 108. 1861; FKH 97. 1912; FRPS 36: 267. 1974; FGD 4: 180. 2000; FOC 9: 139. 2003.

Evergreen small tree or shrub, up to 10 m, branchlets and petioles initially densely tomentose, later glabrescent. Petioles 1.5–3 cm; leaf blade leathery, oblong-elliptic, 7–15 × 2.5–5 cm, base cuneate or attenuate, apex acute or shortly acuminate, margin remotely and conspicuously dentate above the middle, initially densely tomentose, glabrescent in age, midveins prominent on both surfaces, lateral veins 9–11 on each side of midvein. Panicles terminal, 7–9 cm, many-flowered; peduncles and pedicels densely brown tomentose; pedicels 2–5 mm. Flowers fragrant, ca. 1.5 cm in diam.; hypanthium obconical, 4–7 mm, abaxially densely brown tomentose; sepals triangular-ovate, 3–4 mm, abaxially densely brown tomentose, persistent; petals white, elliptic, ca. 5 × 3 mm, basally brown tomentose; stamens 20, shorter than petals; ovary tomentose, 4–5-locular; styles 4–5, white tomentose below the middle. Pome brown, globose, 1–1.5 cm in diam., granular-punctate, tomentose.

Locality: Hong Kong Island (Victoria Peak, Happy Valley, Mount Nicholson), Tai Mo Shan, Ma On Shan, Lantau Island (Sunset Peak). *U. A. On 5248; H. C. Tang 2110; Y. S. Lau 932.*

Distribution: Guangdong, Guangxi, Jiangxi, Hunan; Vietnam.

Ecology: Forests in ravines. Flowering: Oct.–Dec.; fruiting: May–Jun.

Notes: The type specimen was collected in a ravine on Victoria Peak by J. G. Champion between 1847 and 1850.



Figure 11. *Eriobotrya fragrans* Champ. ex Benth.

1. fruiting branch; 2. flower; 3. part of androecium; 4. gynoecium. (drawn by H. P. Yu)

2. *Eriobotrya japonica* (Thunb.) Lindl. 枇杷

(Photo 26)

Trans. Linn. Soc. London 13(1): 102. 1822; FRPS 36: 262. 1974; FGD 4: 180. 2000; FOC 9: 138. 2003.

*Mespilus japonica* Thunb., Nova Acta Regiae Soc. Sci. Upsal. 3: 199, 208. 1780.

Evergreen tree, up to 10 m tall; branchlets rather stout, densely rusty tomentose. Leaves more or less crowded at apex of branchlet; petioles 0.6–1.0 cm, rusty tomentose; leaf blade thick leathery, elliptic-oblong to broadly oblong-lanceolate, 12–30 × 3–9 cm, base cuneate, apex acute or acuminate, margin remotely dentate above middle, adaxially tomentose when young, soon glabrescent, lustrous, abaxially densely rusty tomentose, lateral veins 11–21 on each side of midvein. Panicles terminal, many-flowered, 7–20 cm, densely rusty tomentose; pedicels 2–8 mm. Flowers fragrant, 1.2–2.0 cm in diam.; hypanthium obconical, 4–5 mm; sepals triangular-ovate, 2–3 mm, apex obtuse, persistent; petals white, oblong or ovate, 5–9 × 4–6 mm, apex emarginate or obtuse; stamens 20, shorter than petals; ovary densely rusty tomentose apically, 5-locular; styles 5, free. Pome globose or ovoid, 2–5 cm in diam., yellow or orange. Seeds 1–5, globose to ovoid, 1–1.5 cm in diam., lustrous, with firm, brown testa.

Locality: Cultivated. *Y. S. Lau 1093; HK sheet 10184.*

Distribution: S of Qinling Range, widely cultivated; Japan, cultivated elsewhere.

Ecology: Flowering: Oct.–Dec.; fruiting: May–Jun.

Uses: Fruit, medicinal (folklore), timber.



Notes: This species was known in cultivation for its fruit in Hong Kong Island as early as 1850s. (Bentham, 1861; Herklots, *Food & Flowers*, No. 1: 57—58. 1948.)

### 7. *Agrimonia* L. 龍芽草屬

Perennial herbs with stout creeping rhizomes and erect leafy stems, usually hairy and often glandular. Leaves alternate, interruptedly imparipinnate, the cauline ones with small leaflets interspersed between large leaflets, leaflets several pairs, incised-serrate; stipules large, foliaceous, usually deeply toothed or lacinate, adnate to the base of petioles, persistent. Inflorescence a spike-like raceme, terminal or axillary, often interrupted; pedicels at base, subtended by a lacinate bract, bearing 2 trifid bracteoles near apex. Flowers rather small, 5-merous, bisexual. Hypanthium obconic to turbinate, armed distally with erect or patent, hooked bristles, hardened and 1-grooved at maturity. Epicalyx absent. Sepals 5, imbricate, connivent after anthesis, persistent. Petals 5, yellow, rarely white, larger than the sepals. Disk lining the sepals, margin thickened, annular, glandular. Stamens 5–15 or more, inserted at the mouth of hypanthium, 1-seriate. Pistils usually 2, free; ovary superior, 1-locular, concealed with the hypanthium; styles terminal, filiform, exerted, stigma dilated, ovules 1 per locule, pendulous. Achenes 1–2, usually only 1 per flower developing, enclosed with the hardened, 10-ribbed hypanthium, distally with hooked prickles; each achene with a single seed; pericarp thin. Seeds pendulous; testa membranous.

About 15 species mostly in N temperate regions and alpine tropical regions; four species in China; one species and one variety in Hong Kong.

- 1a. Stems sparsely pilose, rarely sparsely hirsute; leaflets sparsely pilose adaxially ..... 1. *A. pilosa*  
 1b. Stems densely rigid hirsute; leaflets hirsute on veins adaxially ..... 1a. *A. pilosa* var. *nepalensis*

#### 1. *Agrimonia pilosa* Ledeb. 龍芽草 (Fig. 12; Photo 27)

Ind. Sem. Hort. Dorpat. Suppl. 1. 1823; FFJ 2: 282. 1985; FRPS 37: 457. 1985; FGD 4: 227. 2000; FOC 9: 382. 2003.

*Agrimonia eupatoria* auct. non L.: FKH 95. 1912.

Perennial herb, 30–120 cm tall, with short rhizomes; stems erect, sparsely pilose, rarely rigid hirsute in lower part. Leaves imparipinnate; petioles pilose; stipules large, leaf-like, obovate-oblong, entire or dentate; leaflets sessile or subsessile, usually (2–)3–4 pairs, reduced to 3 leaflets on upper ones, obovate, obovate-elliptic or obovate-lanceolate, 1.5–5 × 1–2.5 cm, base cuneate, apex acute or obtuse, rarely acuminate, margin coarsely serrate, pilose on both surfaces, abaxially glandular-punctate. Raceme slender, terminal, branched or unbranched, 10–15 cm or longer; peduncles pilose; bracts usually deeply 3-lobed, segments linear; bracteoles opposite, ovate, entire or lobed; pedicels 1–5 mm, pilose. Flowers 6–9 mm in diam.; hypanthium obconic, sparsely pilose abaxially; sepals 5, triangular-ovate, apex acuminate; petals 5, yellow, oblong; stamens 5–15; styles 2, filiform, stigmas capitate. Achenes conical, 10-ribbed, sparsely pilose, with a multiseriate crown of prickles, 7–8 × 3–4 mm including prickles, prickles erect when young, connivent at maturity.

Locality: Tai Wai. *Y. S. Lau* 3303.

Distribution: Widely distributed in China; C Europe, Russia, Mongolia, Korea, Japan, N Vietnam.

Ecology: Grassy lands, thickets and streamsides. Flowering & fruiting: May–Dec.

Uses: Medicinal (folklore).



Figure 12. *Agrimonia pilosa* Ledeb.

1. flowering branch; 2. flower; 3. sepal; 4. pistil;  
 5. fruit. (drawn by H. P. Yu)

#### 1a. *Agrimonia pilosa* Ledeb var. *nepalensis* (D. Don) Nakai 黃龍尾

FFJ 2: 283. 1985; FRPS 37: 458. 1985; FGD 4: 227. 2000; FOC 9: 383. 2003.

*Agrimonia nepalensis* D. Don, Prodr. Fl. Nepal. 229. 1825.

It differs from var. *pilosa* in stems being densely and rigidly hirsute in lower part; leaflets abaxially densely pubescent or tomentose-pubescent between veins, and sparsely glandular punctate, adaxially hirsute or hirtellous on veins.

Locality: Pok Fu Lam. *HK sheet* 1638.

Distribution: Xizang, Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Hunan, Henan, Anhui, Zhejiang, Jiangsu, Shandong, Hebei, Shanxi, Shaanxi, Gansu; Japan, Nepal, Sikkim, India, Myanmar, Thailand, Laos, Vietnam.

Ecology: Grassy lands, thickets and streamsides. Flowering & fruiting: May–Dec.

Uses: Medicinal (folklore).

Notes: The species was reported as *Agrimonia eupatoria* L. previously (Check List HK Plants 29. 1993).

8. *Duchesnea* Sm. 蛇莓屬

Perennial herbs, stoloniferous. Leaves basal and cauline, 3(-5)-foliolate, with long petioles; leaflets rhombic-ovate, coarsely dentate, short-petiolulate; stipules paired, membranaceous, those of the cauline leaves free, those of basal leaves adnate at the base of petiole, incised, persistent. Flowers solitary, bisexual. Bracteoles usually 3-toothed at apex, alternating with the sepals. Hypanthium cup-shaped, lined inside by a sometimes hairy disk. Sepals 5, persistent, shorter than the bracteoles. Epicalyx 5, sometimes 4, longer than sepals. Petals 5, yellow, cuneate-oblong, truncate or somewhat retuse at apex. Stamens 20-30, filaments filiform, anthers subrounded, 2-lobed. Pistils numerous, inserted on a convex receptacle; ovary superior, unilocular, with 1 pendulous ovule; styles lateral, deciduous, stigmas undivided; receptacle pulpy. Collective fruits of many achenes, surrounded by persistent sepals and epicalyx. Achenes minute, compressed ovate, sunk in the surface of the enlarged spongy deciduous receptacle. Seed solitary, reniform, smooth, without endosperm.

Two species distributed in Afghanistan, India, SE and E Asia; and in China; one species in Hong Kong.

1. *Duchesnea indica* (Andrews) Focke

蛇莓

(Fig. 13; Photos 28-29)

Nat. Pflanzenfam. 3(3): 33. 1888; FFJ 2: 314. 1985; FRPS 37: 358. 1985; FGD 4: 221. 2000; FOC 9: 338. 2003.

*Fragaria indica* Andrews, Bot. Repos. 7: pl. 479. 1807; FKH 95. 1912.

Perennial herb, with short rhizomes; stolons many, slender, 30-100 cm, pilose. Leaves palmately 3(-5)-foliolate, many at each node; petioles 1-5 cm, pilose; leaflets obovate or rhombic-oblong, 1.5-5 × 1-3 cm, base cuneate, apex obtuse, margin obtusely serrate, pilose on both surfaces or adaxially glabrous. Flowers solitary, axillary, 1.2-2.5 cm in diam.; pedicels 2-8 cm, slender, pilose; hypanthium cup-shaped, 2-3.5 mm in diam., abaxially sparsely pilose; sepals ovate or lanceolate, 4-6 × 2-3 mm, apex acute, abaxially sparsely pilose; epicalyx obovate, 5-8 mm, apex usually 3-5-dentate, abaxially sparsely pilose; petals yellow, obovate, 5-10 mm, apex obtuse; stamens 20-30, filaments up to 2.5 mm, anthers ca. 0.5 mm; pistils 20-30, free; receptacle enlarged in fruits, globose or ellipsoidal, fleshy, ca. 1.5 × 1.3 cm, scarlet red when ripe, abaxially long hairy; achenes many, ovoid, ca. 1.5 mm, smooth or inconspicuously papillate.

Locality: Hong Kong Island, Tai Po Kau, Ng Tung Chai. *H. C. Tang* 799; *L. T. Lo* 238; *Y. S. Lau* 2949.

Distribution: Widely distributed in China; temperate and tropical regions of the world.

Ecology: Wastelands and roadsides near villages

Uses: Medicinal (folklore).

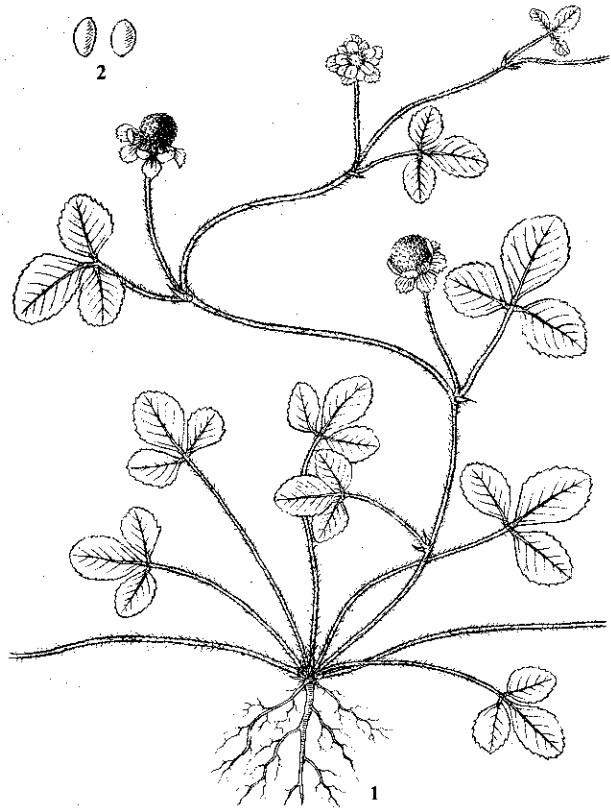


Figure 13. *Duchesnea indica* (Andr.) Focke  
1. whole plant; 2. achene. (drawn by H. P. Yu)

9. *Rubus* L. 懸鉤子屬

Erect, scrambling or creeping shrubs or subshrubs, usually prickly. Leaves simple, 3-5-foliolate, or imparipinnate; stipules free or adnate to the base of petioles, rarely absent. Inflorescences terminal or axillary panicles or racemes, rarely strongly reduced and flowers solitary. Flowers usually 5-merous, mostly bisexual, rarely unisexual and the plant dioecious. Hypanthium campanulate or urceolate. Epicalyx absent. Sepals (4-)5(-6-8), imbricate, persistent. Petals mostly 5, white or pink, orbicular, mostly unguiculate. Stamens numerous, indefinite, mostly 2-seriate, inserted on mouth of hypanthium, filaments filiform, anthers didymous. Disk absent. Carpels numerous, with a single ovule in each, inserted on a receptacle; styles (sub)terminal, filiform, stigmas capitate or bifid. Aggregate fruit berry-like, formed by the union of the succulent carpels, round the conical or shortly oblong, dry receptacle. Seeds pendulous, testa membranous, cotyledons plano-convex.

About 700 species distributed worldwide, especially abundant in the N hemisphere; 208 species in China; eight species in Hong Kong.

## 1a. Leaves compound.

2a. Leaves glandular punctate ..... 1. *R. rosifolius*

## 2b. Leaves epunctate.

3a. Plant with glandular hairs; leaflets (5-)7-9(-11) ..... 2. *R. tsangii*

## 3b. Plant without glandular hairs; leaflets 3.

4a. Leaflets glabrous; flowers white ..... 3. *R. leucanthus*

4b. Leaflets densely tomentose; flowers pink ..... 4. *R. parvifolius*

- 1b. Leaves simple.
- 5a. Leaves unlobed.....5. *R. pirifolius*
- 5b. Leaves 3–7-lobed.
- 6a. Plants glandular-hairy.....6. *R. tsangiorum*
- 6b. Plants eglandular.
- 7a. Leaves prominently wrinkled adaxially.....7. *R. reflexus*
- 7b. Leaves not wrinkled.....8. *R. alceifolius*

**1. *Rubus rosifolius* Sm. 空心泡(蔷薇莓)**

Pl. Icon. Ined. 3: 60. 1791; FKH 95. 1912; FRPS 37: 96. 1985; FFJ 2: 298. 1985; FGD 4: 199. 2000; FOC 9: 227. 2003.

Erect or scandent shrub, 2–3 m tall; branchlets, petioles, petiolules and rachis of leaves pilose and with prickles and yellow glands, sometimes subglabrous. Leaves 5–12 cm, imparipinnate, usually 5–7-foliolate; petioles 2–3 cm, petiolules of terminal leaflets 0.8–1.5 cm, lateral leaflets subsessile; leaflets ovate-lanceolate or lanceolate, 2.5–7 × 1.5–2 cm, base rounded, apex acuminate, margin spiny incised doubly serrate, pilose or subglabrous on both surfaces, with yellow glands. Inflorescences terminal or in leaf axils, 1–2-flowered, sometimes several in short racemes; bracts linear or lanceolate, 5–9 mm, pilose; pedicels 2–3.5 cm, pilose and with sparse, minute prickles, sometimes glandular. Flowers 2–3 cm in diam.; hypanthium urceolate; sepals lanceolate or ovate-lanceolate, 0.8–1.3 × 0.4–0.6 cm, apex long acuminate, abaxially pilose and glandular, reflexed after anthesis; petals 5, white, oblong, oblong-obovate or suborbicular, 1–1.5 × 0.8–1 cm, pilose abaxially, apex acute, base clawed; stamens many, shorter than petals, filaments broad; carpels many, up to 2 mm; receptacles shortly stalked. Aggregate fruits globose or ovoid, 1–1.5 cm, red, lustrous, glabrous, with few glands.

Locality: Victoria Peak, Lam Tsuen. *Y. S. Lau 544; L. T. Lo 233; HK sheet 1635.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Fujian, Taiwan, Anhui, Hubei; Japan, Korea, Vietnam, Laos, Thailand, Cambodia, Myanmar, India, Indonesia, Australia, Madagascar, Africa.

Ecology: Forests. Flowering: Feb.–May; fruiting: Jun.–Jul.

Uses: Medicinal (folklore).

**2. *Rubus tsangii* Merr. 光葉懸鉤子**

Lingnan Sci. J. 13(1): 28. 1934; FFJ 2: 206. 1985; FRPS 37: 95. 1985; FGD 4: 200. 2000; FOC 9: 227. 2003.

Scandent shrub; branchlets terete, with sparse prickles and 1–2 mm stalked glandular hairs. Leaves imparipinnate, (5–)7–9(–11)-foliolate; petioles, petiolules and rachis of leaves glabrous, with sparse shortly stalked glands and minute prickles; petioles 4–7 cm, petiolules of terminal leaflets ca. 1 cm, lateral leaflets subsessile; leaflets lanceolate or ovate-lanceolate, 4–7 × 0.8–2 cm, base rounded, apex acuminate, margin irregularly serrate or double serrate, initially sparsely pubescent, gradually glabrescent, abaxially with sparse prickles along the midveins. Inflorescences corymbose, terminal, 4–6 cm, 3–5-flowered, rarely flowers solitary; bracts lanceolate, 0.6–1 cm, glabrous; pedicels 2–4 cm, with unequal long stalked glands. Flowers 3–4 cm in diam.; hypanthium urceolate, ca. 1 cm in diam., with sparse glandular hairs; sepals oblong-lanceolate or narrowly ovate-lanceolate, 0.9–1.5 × 0.4–0.6 cm, reflexed in fruits, inner ones with grey tomentose margin, apex long caudate; petals white, narrowly obovate or oblong, 0.9–1.4 × 0.6–0.8 cm, base clawed; stamens unequal, shorter than petals, filaments somewhat broadened and flattened; pistils many, shorter than stamens. Aggregate fruits subglobose, up to 1.5 cm in diam., red, glabrous or with glandular hairs.

Locality: Lantau Island. *HK sheet 9493.*

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Fujian, Zhejiang.

Ecology: Forests. Flowering: Apr.–May; fruiting: Jun.–Jul.

**3. *Rubus leucanthus* Hance 白花懸鉤子**

(Photos 30–31)

Ann. Bot. Syst. 2: 468. 1852; FHK 105. 1861; FKH 95. 1912; FFJ 2: 301. 1985; FRPS 37: 103. 1985; FGD 4: 201. 2000; FOC 9: 229. 2003.

*Rubus glaberrimus* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 80. 1852.

Scandent shrub, 1–3 m tall; stems and branchlets glabrous, sparsely prickled. Leaves imparipinnate, 3-foliolate, sometimes reduced to simple apically on branchlets; petioles 2–6 cm, petiolules of terminal leaflets 1.5–2 cm, lateral leaflets shortly petiolulate, glabrous, with prickles; leaflets leathery, ovate or elliptic, terminal leaflets slightly larger than or nearly equaling the lateral ones, 4–8 × 2–4 cm, base rounded, apex acuminate, margin irregularly serrulate, glabrous on both surfaces. Inflorescences corymbose, terminal on the lateral short branchlets, rarely axillary, 3–5 cm, 2–8-flowered, glabrous; pedicels 0.5–1.5 cm; bracts subulate, 3–5 mm, trifid, caducous. Flowers 1–1.5 cm in diam.; hypanthium campanulate, abaxially glabrous; sepals erect, ovate, 4–7 × 3–5 mm, greyish pubescent adaxially and on margins, glabrous abaxially, apex abruptly mucronate, persistent; petals white, narrowly ovate or suborbicular, as long as or slightly longer than sepals, base long clawed, apex obtuse; stamens numerous, somewhat shorter than petals, filaments broadened and flattened, anthers ovate; carpels numerous, glabrous or pubescent apically; styles filiform, shorter than petals, glabrous or pubescent basally. Aggregate fruits subglobose, 1–1.5 cm in diam., red, glabrous; enclosed by persistent calyx-lobes.

Locality: Common in Hong Kong. *Y. S. Lau 316, 2183; HK sheet 39975.*

Distribution: Yunnan, Guizhou, Guangxi, Hainan, Guangdong, Hunan, Fujian; Thailand, Laos, Vietnam, Cambodia.

Ecology: Hillslopes and thickets. Flowering: Apr.–Jun.; fruiting: Jun.–Jul.

Uses: Edible (fruit), medicinal (folklore).

Notes: The type specimen was collected from Hong Kong Island by H. F. Hance between 1844 and 1850.

**4. *Rubus parvifolius* L.**

茅莓 (草楊莓子)

(Fig. 14; Photos 32–33)

Sp. Pl. 2: 1197. 1753; FHK 105. 1861; FKH 95. 1912; FRPS 37: 68. 1985; FFJ 2: 300. 1985; FGD 4: 198. 2000; FOC 9: 213. 2003.

Scandent shrub; branchlets pubescent and with sparse, curved prickles. Leaves imparipinnate, 3(–5)-foliolate; petioles 2.5–5 cm, petiolules of terminal leaflets 1–2 cm, tomentose, with sparse prickles; leaflets ovate, ovate-lanceolate or rhombic-orbicular, terminal ones larger, 1.5–2.5 cm, lateral ones smaller, base broadly cuneate or nearly rounded, apex obtuse or acute, margin irregularly incise-dentate or lobed, adaxially subglabrous or sparsely tomentose, abaxially densely grey tomentose. Inflorescence a terminal panicle, or sometimes flowers solitary in upmost leaf axils; peduncles together with pedicels (0.5–1.5 cm) and the campanulate hypanthium tomentose and with sparse prickles; sepals ovate-lanceolate or lanceolate, apex acuminate, tomentose, with prickles; petals pink, obovate, shorter than sepals; stamens many, filaments white, shorter than petals; Carpels tomentose. Aggregate fruits globose, red, 1–1.5 cm in diam.

Locality: Hong Kong Island, Tai Po, Tai Mo Shan, Sai Kung, Lantau Island. *H. C. Tang* 773, 2359; *HK sheet* 39952.

Distribution: Widely distributed in China except Xinjiang, Qinghai, Xizang, Nei Mongol; Korea, Japan, Vietnam.

Ecology: Hillslopes, open fields. Flowering: Mar.–Jun.; fruiting: Jun.–Aug.

Uses: Edible (fruit), medicinal (folklore).

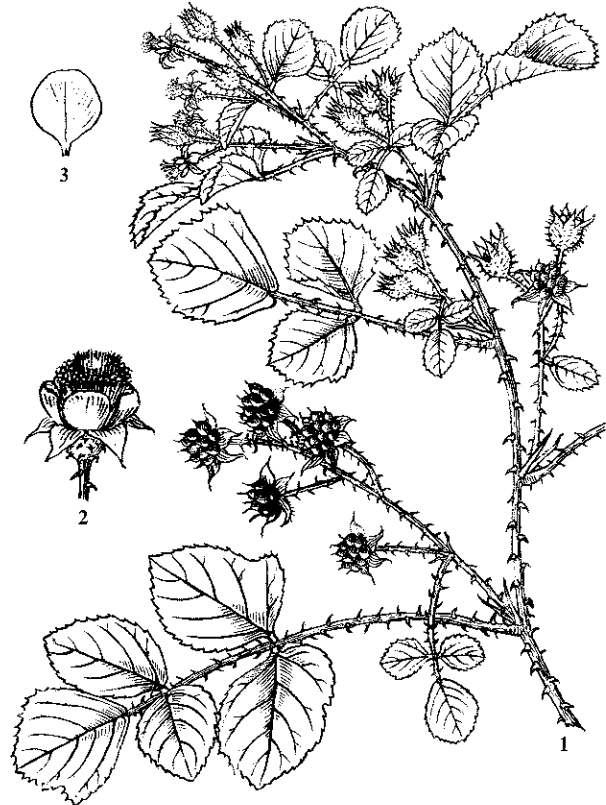


Figure 14. *Rubus parvifolius* L.

1. whole plant; 2. flower; 3. petal. (drawn by H. P. Yu)

**5. *Rubus pirifolius* Sm. 梨葉懸鉤子**

(Photo 34)

Pl. Icon. Ined. 3: t. 61. 1791 (as '*pyrifolius*'); FRPS 37: 132. 1985; FFJ 2: 308. 1985; FGD 4: 207. 2000; FOC 9: 261. 2003.*Dalibarda pyrifolia* (Sm.) Blume, *Bijdr. Fl. Ned. Ind.* 17: 1112. 1827.*Rubus hexagynus* auct. non Roxb: FKH 94. 1912.

Scandent shrub; branches strigose, with few complanate curved prickles. Leaves simple; petioles 0.6–1.5 cm, densely strigose, with sparse prickles; leaf blade leathery, ovate, ovate-oblong or elliptic-oblong, 6–11 × 3.5–5.5 cm, base rounded, apex acute or shortly acuminate, margin irregularly dentate, both surfaces glabrous, but pubescent along midvein and lateral veins, gradually glabrescent. Inflorescences terminal and axillary, paniculate or subracemose, many-flowered; peduncle, pedicels and hypanthium densely tawny pubescent, unarmed or with minute prickles. Flowers 1–1.5 cm in diam; pedicels 4–12 cm; sepals triangular-lanceolate or ovate-lanceolate, 5–7 × 2–3.5 mm, apex acuminate, margin entire or apically 2–3-laciniate, tomentose adaxially and on the margins; petals white, small, oblong or lanceolate, 3–5 mm, shorter than sepals, glabrous, margin dentate; stamens numerous, slightly longer than petals, filaments filiform; carpels 3–10, hairy, rarely glabrous; styles filiform, 6–8 mm, glabrous or basally tomentose, stigmas bifid. Aggregate fruits red, 1–1.5 cm in diam., glabrous.

Locality: Sai Kung, Tai Po, Ta Tit Yan. *Birdwood* 663; *W. J. Tutcher* 10024.

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Hainan, Guangdong, Fujian, Taiwan; Thailand, Laos, Cambodia, Indonesia, Philippines, India.

Ecology: Thickets. Flowering & fruiting: Apr.–Nov.

Uses: Medicinal (folklore), edible (fruit).

**6. *Rubus tsangiorum* Hand.-Mazz. 東南懸鉤子**

Symb. Sin. 7(3): 485. 1933; FFJ 2: 307. 1985; FRPS 37: 203. 1985; FGD 4: 210. 2000; FOC 9: 278. 2003.

Small scandent shrub, 0.3–1.5 m tall; branchlets villous and mixed with purplish red glandular hairs and bristles. Leaves simple; petioles 4–8 cm, villous, with purplish red glandular hairs; leaf blade papery, oblong or ovate-oblong, 6–14 × 2–5 cm, base deeply cordate, apex acute or shortly acuminate, margin irregularly coarsely serrate and 3–5-lobed, lateral lobes broadly triangular, apex obtuse or acute, terminal lobes slightly larger than lateral ones, broadly ovate-triangular, apex acute, adaxially pubescent, with intermixed glandular hairs on veins, abaxially thinly tomentose, with intermixed long hairs and glandular hairs on veins. Inflorescences subracemose, terminal or axillary, 5–20-flowered, terminal ones 8–13 cm, axillary ones smaller; peduncles and pedicels pubescent and with purplish red glandular hairs; pedicels unequal in length, 0.5–2.5 cm, pubescent and with purplish red glandular hairs. Flowers 1–2 cm in diam.; sepals narrowly triangular-lanceolate, 0.7–1.2 × 0.3–0.5 cm, apically deeply and palmately 2–3-lobed, lobes lanceolate; petals white, broadly obovate, 6–7 mm, much shorter than sepals, clawed at base; stamens numerous, filaments ca. 5 mm, linear; carpels many, much longer than stamens, glabrous. Aggregate fruits subglobose, ca. 1.4 cm in diam., red, glabrous.

Locality: Tai Po (Yuen Tun Ha). *F. W. King* 8955 (IBSC).

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Zhejiang.

Ecology: Thickets. Flowering: Apr.–Jul.; fruiting: Aug.–Sep.

**7. *Rubus reflexus* Ker Gawl. 鋪毛莓 (蛇泡筋)**

(Photos 35–36)

Bot. Reg. 6: 461. 1820; FHK 105. 1861; FKH 94. 1912; FFJ 2: 310. 1985; FRPS 37: 176. 1985; FGD 4: 211. 2000; FOC 9: 259. 2003.

Scandent shrub, up to 2 m tall; branchlets densely rusty tomentose, with sparse minute prickles. Leaves simple; petioles 2.5–5 cm, pubescent, with sparse minute prickles; leaf blade ovate to suborbicular, 7–14 × 5–11 cm, usually 3–5(–7)-lobed, base cordate, margin irregularly and coarsely serrate or double serrate, adaxially wrinkled and nearly glabrous or sparsely soft hairy on veins, abaxially densely rusty tomentose, with long hairs along veins. Inflorescences terminal, shortly subracemose, or sometimes flowers in axillary clusters; peduncles and pedicels densely rusty tomentose; pedicels 3–6 mm. Flowers 1–1.5 cm in diam.; hypanthium obconical, abaxially densely rusty tomentose; sepals ovate-orbicular or ovate-lanceolate to lanceolate, 6–8 × 4–7 mm, outer ones usually palmately lobed apically, lobes lanceolate, inner ones usually entire; petals white, oblong to suborbicular, glabrous, nearly as long as sepals, shortly clawed at base; stamens numerous, shorter than the petals, filaments broadened and flattened, anthers glabrous or pubescent apically; carpels many, glabrous. Aggregate fruits ovoid or subglobose, ca. 1 cm in diam., dark red, glabrous, enclosed in persistent sepals.

Locality: Common in Hong Kong. *H. C. Tang 1727; Y. S. Lau 641; HK sheet 39966.*

Distribution: Yunnan, Guangxi, Hainan, Guangdong, Hunan, Jiangxi, Fujian, Zhejiang, Taiwan, India, Malaysia, Philippines.

Ecology: Hillslopes, thickets. Flowering: Apr.–Jul.; fruiting: Aug.–Sep.

Uses: Edible (fruit), medicinal (folklore).

**8. *Rubus alceifolius* Poir. 粗葉懸鉤子**

(Photo 37)

Encycl. 6(1): 247. 1804; FFJ 2: 309. 1985; FRPS 37: 158. 1985; FGD 4: 212. 2000; FOC 9: 253. 2003.

*Rubus moluccanus* auct. non L.: FKH 95. 1912.

Scandent shrub, up to 5 m tall; branchlets densely tawny to rusty tomentose, sometimes glandular-hairy, with sparse hooked prickles. Leaves simple; petioles 3–4.5 cm, densely rusty tomentose, sparsely prickled; leaf blade papery or thinly leathery, ovate to orbicular, 6–16 × 5–15 cm, base cordate, apex rounded, rarely acute, margin irregularly 3–7-lobed, usually palmately 5-veined; lobes oblong-ovate, apex obtuse or acute, margin irregularly dentate or crenate, adaxially hirsute, abaxially densely grey or rusty tomentose. Inflorescences axillary or terminal, narrowly paniculate or racemose, 6–11 cm, sometimes flowers in axillary clusters, rarely solitary; peduncles and pedicels densely yellow or rusty tomentose, with sparsely minute, hooked prickles; pedicels 0.5–1 cm. Flowers 1–1.6 cm in diam.; hypanthium obconical, 7–10 mm, abaxially yellowish or rusty tomentose; sepals triangular-ovate, 6–9 × 5–8 mm, outer ones palmately or pinnately lacinate, rarely unlobed, inner ones entire, shortly pointed, abaxially tomentose; petals white, broadly obovate or suborbicular, nearly as long as sepals, clawed at base; stamens numerous, filaments ca. 5 mm, broadened, anthers sparsely tomentose; carpels many, glabrous. Aggregate fruits subglobose, up to 1.8 cm in diam., red, glabrous, enclosed in persistent sepals.

Locality: Tai Mo Shan, Chuen Lung, Shing Mun, Yuen Tun Ha, Sai Kung. *L. T. Lo 263, 397; Y. W. Lam 1673.*

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Hainan, Guangdong, Hunan, Jiangxi, Fujian, Jiangsu, Taiwan; Korea, Japan, Myanmar, Thailand, Laos, Vietnam, Cambodia, Indonesia, Philippines.

Ecology: Forests and thickets. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).

**10. *Rosa* L. 薔薇屬**

Erect, scrambling, or climbing shrubs, mostly prickly or bristly. Leaves alternate, imparipinnate, rarely simple; stipules leafy, partly adnate to the petioles. Flowers showy, solitary or in small corymbs or panicles, terminal on the branchlets, usually 5-merous. Hypanthium usually globular to urceolate, enclosing the ovary, contracted towards the top. Sepals 5, often unequal, sometimes lobed, caducous or persistent. Petals 5, white, yellow or pink to red, imbricate. Stamens numerous, several-seriate, inserted on the disk at the edge of the hypanthium. Carpels numerous, rarely few, free, enclosed in the hypanthium, with 1 suspended ovule in each; styles terminal or subterminal, free or united. Fruit a hip, formed from fleshy hypanthium, enclosing several or many bony achenes.

About 200 species mostly distributed in N temperate regions; 95 species in China; eight species (four cultivated) and one variety in Hong Kong.

- 1a. Stipules free from petioles or nearly so, caducous.
  - 2a. Hip (fruit) glabrous..... 1. *R. cymosa*
  - 2b. Hip (fruit) bristly ..... 2. *R. laevigata*
- 1b. Stipules adnate to petioles, persistent.
  - 3a. Styles free.
    - 4a. Leaflets 5–9; pedicels densely tomentose and glandular-hairy ..... 3. *R. rugosa*
    - 4b. Leaflets 3–5(–7); pedicels subglabrous or glandular-hairy ..... 4. *R. chinensis*
  - 3b. Styles connate.
    - 5a. Stipules pectinate; inflorescence paniculate; styles glabrous ..... 5. *R. multiflora*
    - 5b. Stipules serrate or entire; inflorescence corymbose; styles pubescent.

- 6a. Leaflets pubescent on both surfaces.  
 7a. Petals 5, single ..... 6. *R. kwangtungensis*  
 7b. Petals double ..... 6a. *R. kwangtungensis* var. *plena*  
 6b. Leaflets glabrous on both surfaces.  
 8a. Stipules serrate ..... 7. *R. luciae*  
 8b. Stipules entire ..... 8. *R. henryi*

### 1. *Rosa cymosa* Tratt. 小果蔷薇

Ros. Monogr. 1: 87. 1823; FFJ 2: 286. 1985; FRPS 37: 447. 1985; FGD 4: 219. 2000; FOC 9: 379. 2003.

*Rosa microcarpa* Lindl., Ros. Monogr. 130, pl. 18. 1820; FKH 96. 1912. non Retz. 1803, nec Bess. 1815.

Scandent shrub, 2–5 m tall; branchlets terete, glabrous or sparsely pubescent, with scattered, hooked prickles; prickles up to 6 mm. Leaves imparipinnate, 5–10 cm, 3–5(–7)-foliolate; petioles and petiolules glabrous or pubescent, with sparse prickles and glandular-hairy; stipules membranaceous, free, caducous, linear, apex acuminate, margin entire; leaflets ovate-lanceolate or elliptic, rarely oblong-lanceolate, 2.5–6 × 0.8–2.5 cm, base subrounded, apex acuminate, margin serrate, adaxially green, lustrous, abaxially paler, glabrous except for sparsely pubescent along veins on abaxial surface. Inflorescences compound corymbose, many-flowered; pedicels ca. 1.5 cm, initially pubescent, soon glabrescent; bracts lanceolate, margin sparsely glandular-hairy; flowers fragrant, 2–2.5 cm in diam.; hypanthium globose or ovoid, glabrous; sepals 5, ovate, apex acuminate, usually pinnately laciniolate, abaxially subglabrous, rarely sparsely setose, adaxially sparsely white pubescent; petals 5, white, obovate; styles free, slightly exerted, nearly as long as stamens, densely white pubescent. Hip globose, 4–7 mm in diam., red to blackish brown when mature.

Locality: Cultivated.

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Hunan, Jiangxi, Fujian, Anhui, Hebei; Japan, Laos, Vietnam.

Ecology: Flowering: May–Jun.; fruiting: Jul.–Nov.

Uses: Ornamental.

### 2. *Rosa laevigata* Michx. 金樱子

(Fig. 15; Photos 38–40)

Fl. Bor.-Amer. 1: 295. 1803; FKH 96. 1912; FRPS 37: 448. 1985; FFJ 2: 284. 1985; FGD 4: 220. 2000; FOC 9: 380. 2003.

*Rosa sinica* auct. non Aiton: FHK 106. 1861.

Evergreen scandent shrub, up to 5 m tall; branchlets glabrous, initially glandular-hairy, with sparse hooked prickles. Leaves imparipinnate, 5–10 cm, 3(–5)-foliolate; petioles and petiolules prickly and glandular-hairy; stipules free or adnate to the petioles basally, lanceolate, apex acuminate, margin pectinately lobed, caducous; leaflets leathery, elliptic-ovate, obovate or lanceolate-ovate, 2–7 × 1.2–4 cm, base rounded or cuneate, apex acute or obtuse, rarely caudate, margin serrate, adaxially green and lustrous, glabrous, abaxially yellowish green, initially glandular-hairy along the midveins, glabrescent. Flowers solitary, axillary, 5–8 cm in diam.; pedicels 1.8–3 cm, glandular-hairy or prickly; bracts absent; hypanthium ovoid, densely glandular bristly; sepals 5, ovate-lanceolate, leafy, margin pinnatifid or entire, usually glandular bristly, adaxially pubescent, abaxially glabrous, erect in fruits; petals 5, white, broadly ovate, apex emarginate, slightly longer than sepals; stamens numerous; carpels numerous; styles free, pubescent, much shorter than stamens. Hip pyriform or obovoid, rarely globose, 0.8–1.5 cm in diam., abaxially densely glandular bristly, purple-brown when mature.

Locality: Hong Kong Island, Tai Mo Shan, Sha Tin, Tai Po, Lai Chi Wo, Lantau Island. *Y. S. Lau* 958; *P. S. Choi* 407; *HK sheet* 40642.

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Hunan, Jiangxi, Fujian, Taiwan, Zhejiang, Jiangsu, Anhui, Hubei, Shaanxi; Japan.

Ecology: Thickets on hilly fields. Flowering: Apr.–Jun.; fruiting: Aug.–Dec.

Uses: Medicinal (folklore).

### 3. *Rosa rugosa* Thunb. 玫瑰

Syst. Veg. (ed. 14) 473. 1784; FRPS 37: 401. 1985.

Erect shrub, ca. 2 m tall; stems and branches tomentose, densely bristly and prickly. Leaves imparipinnate, 5–9-foliolate, 5–13 cm, including petioles; petioles densely pubescent and glandular-hairy, sometimes with minute prickles; stipules mostly

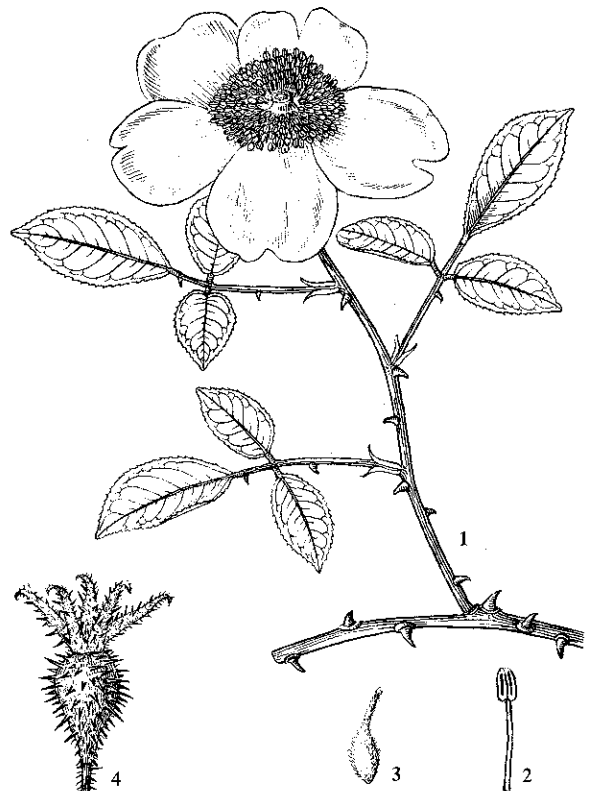


Figure 15. *Rosa laevigata* Michx.

1. flowering branch; 2. stamen; 3. pistil; 4. fruit. (drawn by H. P. Yu)

adnate to the petioles, free parts ovate, margin glandular pubescent; leaflets elliptic or elliptic-obovate, 1.5–4.5 × 1–2.5 cm, base rounded or broadly cuneate, apex acute or obtuse, margin acutely serrate, adaxially dark green, glabrous, rugose due to concave veins, abaxially pale green, densely tomentose and glandular-hairy. Flowers solitary or several in a cluster, axillary, 4–5.5 cm in diam.; bracts ovate, margin glandular-hairy, abaxially pubescent; pedicels 0.5–2.5 cm, densely pubescent and glandular-hairy; hypanthium subglobose, glabrous; sepals 5, ovate-lanceolate, apex caudate, leafy, usually pinnatifid, adaxially sparsely pubescent, abaxially densely pubescent or glandular-hairy, erect in fruits; petals fragrant, semi-double or double, white to purplish-red; styles free, slightly exerted, much shorter than stamens, pubescent. Hip depressed globose, 2–2.5 cm in diam., dark green, smooth.

Locality: Cultivated. *HK sheet 9886*.

Distribution: Native in Jilin, Liaoning and NE Shandong, widely cultivated in China; Korea and Japan.

Ecology: Flowering: Apr.–Jun.; fruiting: Aug.–Sep.

Uses: Ornamental, spice, medicinal (folklore).

#### 4. *Rosa chinensis* Jacq. 月季花

(Photo 41)

Observ. Bot. 3: 7, pl. 55. 1768; FFJ 2: 287. 1985; FRPS 37: 422. 1985; FGD 4: 216. 2000; FOC 9: 369. 2003.

Shrub, 1–2 m tall; branchlets with hooked prickles or unarmed. Leaves imparipinnate, 5–11 cm, 3–5(–7)-foliolate; petioles long, with sparse prickles and glandular-hairs; stipules mostly adnate to the petioles, upper free part auriculate, margin glandular-hairy; leaflets broadly ovate or ovate-oblong, 2.5–6 × 1–3 cm, base subrounded or cuneate, apex acuminate, margin acutely serrate, subglabrous, adaxially dark green, usually shiny, abaxially pale, terminal leaflets petiolulate, lateral ones sessile. Flowers 4–5-clustered, rarely solitary, fragrant, 4–5 cm in diam.; pedicels 2.5–6 cm, subglabrous or glandular-hairy; bracts and bracteoles leafy, linear; hypanthium ovoid or pyriform, glabrous abaxially, pubescent adaxially; sepals 5, ovate, apex caudate-acuminate, sometimes leafy, margin usually pinnatifid, rarely entire, abaxially glabrous, adaxially pubescent, caducous; petals red, pink to white, usually double, obovate, base clawed; stamens numerous, glabrous; carpels 25–50; styles free, exerted, nearly as long as stamens. Hip ovoid or pyriform, 1–2 cm in diam., red, glabrous.

Locality: Cultivated. *Y. S. Lau 3175; HK sheet 1645*.

Distribution: Native to China; widely cultivated elsewhere.

Ecology: Flowering: Apr.–Sep.; fruiting: Jun.–Nov.

Uses: Ornamental, medicinal (folklore).

#### 5. *Rosa multiflora* Thunb. 野蔷薇(七姐妹)

(Photo 42)

Syst. Veg. (ed. 14) 474. 1784; FHK 107. 1861; FRPS 37: 428. 1985; FFJ 2: 289. 1985; FOC 9: 370. 2003.

Scandent shrub, up to 3 m tall; branchlets slender, glabrous or pubescent, with sparse prickles; prickles nearly straight or slight curved. Leaves imparipinnate, (3–)5–9-foliolate, 5–10 cm including petioles; petioles glabrous or pubescent, usually with glandular hairs, shortly prickly; stipules mostly adnate to petioles, free parts pectinate, margin glandular-hairy or not; leaflets obovate-oblong or oblong, 1–5 × 0.8–2.8 cm, base broadly cuneate or rounded, apex acute or obtuse, margin serrate, abaxially pubescent, adaxially glabrous. Inflorescence corymbose, many-flowered; pedicels 1.5–2.5 cm, pubescent, glabrous or glandular-hairy; flowers fragrant, 1.5–2 cm in diam.; bracts small, at the base of pedicels; hypanthium subglobose, glabrous; sepals 5, deciduous, lanceolate, abaxially glabrous, adaxially pubescent; petals 5, white, obovate, base cuneate; stamens numerous, filaments ca. 8 mm, glabrous; carpels many; styles connate into a column, exerted, slightly longer than the stamens, glabrous. Hip globose or ovoid, 6–8 mm in diam., reddish brown, glabrous and shining.

Locality: Cultivated. *H. C. Tang 130; Y. S. Lau 528, 2113*.

Distribution: Zhejiang, Jiangsu, Shandong, Henan; Korea, Japan.

Uses: Ornamental.

#### 6. *Rosa kwangtungensis* T. T. Yu & Tsai 廣東薔薇

Bull. Fan Mem. Inst. Biol., Bot. 7(3): 114. 1936; FRPS 37: 431. 1985; FGD 4: 217. 2000; FOC 9: 371. 2003.

Scandent shrub; branches long, repent, dark grey or reddish brown, glabrous; branchlets pubescent, with minute, hooked prickles. Leaves imparipinnate, 3.5–7 cm, 5–7-foliolate; petioles 0.6–1.5 cm, pubescent, terminal leaflets petiolulate, lateral ones sessile; stipules mostly adnate to the petioles, half the length of petioles, free part lanceolate, pubescent, margin irregularly serrate to fimbriate; leaflets elliptic, oblong or elliptic-ovate, 1.5–4 × 0.8–1.8 cm, base cuneate or subrounded, apex acute or acuminate, margin serrate, adaxially dark green, pubescent along midveins, abaxially pale green, pubescent, midvein abaxially with sparse prickles and glandular hairs. Inflorescences corymbose, terminal, 5–7 cm in diam., 4–15-flowered; pedicels 1–2 cm, densely pubescent or glandular-hairy or subglabrous; bracts and bracteoles ovate, margin glandular, lacinate or serrate, apex acuminate; flowers fragrant, 1.5–3 cm in diam.; hypanthium obovoid, abaxially pubescent and glandular-hairy; sepals 5, ovate-lanceolate, apex long-acuminate, margin entire, pubescent or subglabrous on both surfaces, caducous; petals 5, white, obovate, slightly shorter than sepals; styles connate into a column, exerted, white pubescent, slightly longer than stamens. Hip globose, 0.7–1 cm in diam., purplish brown.

Locality: Castle Peak. *W. J. Tutchter 10915*.

Distribution: Guangdong, Guangxi, Fujian; Japan, Korea, Philippines.

Ecology: Thickets. Flowering: Mar.–May; fruiting: Jun.–Jul.

**6a. *Rosa kwangtungensis*** T. T. Yu & Tsai var. ***plena*** T. T. Yu & T. C. Ku 重瓣廣東薔薇

Bull. Bot. Res., Harbin 1(4): 13. 1981; FRPS 37: 432. 1985; FGD 4: 218. 2000.

It differs from var. *kwangtungensis* by its double flowers and serrate stipules.Locality: Tai Tam Tuk. *H. C. Tang 1729*.

Distribution: Guangdong, Guangxi, Fujian.

Ecology: Thickets on hillslopes. Flowering: Apr. – May.

**7. *Rosa luciae*** Franch. & Rochebr. 光葉薔薇

Bull. Soc. Roy. Bot. Belgique 10: 324. 1871; FKH 96. 1912; FOC 9: 373. 2003.

*Rosa wichurana* Crép., Bull. Soc. Roy. Bot. Belgique 25(2): 189. 1886; FFI 2: 289. 1985; FRPS 37: 432. 1985; FGD 4: 218. 2000 (as "*wichuraiana*").

Scandent shrub, 3–5 m; branchlets reddish brown, initially pubescent, soon glabrescent, prickles small, incurved, flattened at base. Leaves imparipinnate, 5–10 cm including petiole, 5–7(–9)-foliolate; stipules mostly adnate to the petiole, free parts lanceolate, margin glandular serrate or dentate and with glandular-hairs, apex shortly acuminate; leaflets elliptic, ovate or obovate, 1–3.5 × 0.7–1.5 cm, apex obtuse or acute, margin sparsely serrate, glabrous, adaxially dark green, shining, abaxially pale green. Inflorescences corymbose, many-flowered, or sometimes flowers solitary; peduncles and pedicels initially sparsely pubescent, glabrescent; bracts ovate, caducous; flowers fragrant, 2–3 cm in diam.; hypanthium subglobose, sparsely glandular-hairy; sepals 5, lanceolate or ovate-lanceolate, apex acuminate, margin entire, abaxially subglabrous, adaxially densely pubescent, tardily deciduous; petals 5, white, obovate, apex obtuse, base cuneate; styles connate into a column, exserted, pubescent, slightly longer than stamens. Hip globose or subglobose, 0.8–1.8 cm, purplish black, sparsely glandular-hairy.

Locality: Shing Mun, Sai Kung, Yung Shue O, Tai Po, Fanling, Sha Tau Kok. *Y. S. Lau 2162, 2699; Y. W. Lam 684*.

Distribution: Guangxi, Guangdong, Fujian, Zhejiang, Taiwan; Korea, Japan, Philippines.

Ecology: Hillslopes, thickets and forests. Flowering: Mar. – Jul.; fruiting: Jun. – Nov.

**8. *Rosa henryi*** Boulenger 軟條七薔薇 (亨氏薔薇)

(Photo 43)

Ann. Soc. Sci. Bruxelles, Ser. B, 53: 143. 1933; FRPS 37: 443. 1985; FFI 2: 290. 1985; FGD 4: 219. 2000; FOC 9: 378. 2003.

*Rosa moschata* auct. non Mill.: FHK 106. 1861.*Rosa luciae* auct. non Franch. & Rochebr.: FKH 96. 1912.

Scandent shrub, 3–5 m tall, with long repent branches; branchlets terete, glabrous, with short, hooked prickles. Leaves imparipinnate, 9–14 cm including petiole, usually 5-foliolate; petioles glabrous, with sparsely minute prickles; stipules mostly adnate to the petiole, free part lanceolate, glabrous or sparsely glandular-hairy; leaflets oblong, ovate, elliptic or elliptic-ovate, 3–9 × 1.5–5 cm, base subrounded or cuneate, apex long-acuminate or caudate, margin serrate, glabrous on both surfaces. Inflorescences corymbose, terminal, 3–4 cm in diam., 5–15-flowered; pedicels 1.5–2 cm, glabrous or glandular-hairy; bracts and bracteoles lanceolate, caducous; flowers fragrant, 2.5–4 cm in diam.; hypanthium globose, glabrous or shortly glandular-hairy; sepals 5, lanceolate, apex acute, margin entire or rarely lobed, abaxially subglabrous, sparsely glandular punctuate, adaxially pubescent, caducous; petals 5, white, broadly obovate, apex emarginate, base broadly cuneate; styles connate into a column, exserted, pubescent, slightly longer than stamens. Hip subglobose, 0.8–1 cm, red or purplish brown.

Locality: Tai Po. *Y. S. Lau 2977*.

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Hunan, Fujian, Zhejiang, Jiangsu, Anhui, Hubei, Henan, Shaanxi.

Ecology: Thickets. Flowering: Apr.

**11. *Prunus* L. 櫻桃屬**

Trees or shrubs, unarmed, rarely with thorns. Leaves simple, alternate, pinnately-veined, entire or serrate, with small glands in the margin and/or at the base, or on the petioles; stipules small, caducous. Inflorescences umbellate, corymbose, racemose, fasciculate, or flowers solitary. Sepals 5, imbricate, usually caducous. Petals 5, usually white or pink. Stamens 15–many, perigynous, inserted on the mouth of hypanthium. Ovary of a single carpel, superior, with 2 pendulous ovules; style elongated; stigma capitate. Fruit a drupe, usually 1-seeded.

About 280 species mainly distributed in N temperate regions, some species extending to tropical and subtropical regions; about 100 species in China; six (three cultivated) species in Hong Kong.

- 1a. Plant deciduous.
- 2a. Ovary and fruit glabrous..... 1. *P. salicina*
- 2b. Ovary and fruit pubescent.
- 3a. Lateral buds 3, terminal bud present ..... 2. *P. persica*
- 3b. Lateral buds 1, terminal bud absent..... 3. *P. mume*
- 1b. Plant evergreen.
- 4a. Leaves glandular-dotted abaxially..... 4. *P. phaeosticta*
- 4b. Leaves eglandular.
- 5a. Leaves smaller, 2–10 × 1.5–4.5 cm, base usually oblique ..... 5. *P. marginata*
- 5b. Leaves larger, 10–19 × 4–8 cm, base equal..... 6. *P. zippeliana*



1. *Prunus salicina* Lindl. 李

(Photo 44)

Trans. Hort. Soc. London 7: 239. 1828; FRPS 38: 39. 1986; FFJ 2: 274. 1985; FGD 4: 233. 2000; FOC 9: 403. 2003.

*Prunus japonica* auct. non Thunb.: FKH 93. 1912.

Deciduous tree, 9–12 m tall; branchlets greyish brown, glabrous or pubescent; axillary winter buds solitary, ovoid, with many ciliate scales, terminal bud absent. Petioles 0.5–1.5 cm, glabrous or sparsely pubescent, with or without glands; stipules linear, caducous; leaf blade papery, oblong-obovate, oblong, or oblong-ovate, 6–12 × 3–5 cm, base cuneate, apex acuminate or sharply acute, margin remotely irregularly dentate, glabrous, sometimes pubescent along the veins or in axils of veins of abaxial surface. Flowers usually in clusters of 3, 1.5–2.2 cm in diam.; pedicels 0.5–2 cm, usually glabrous; sepals 5, oblong-ovate, ca. 5 mm, abaxially glabrous, margin serrate, apex acute to obtuse; petals white, oblong-obovate, base cuneate, margin erose towards apex; stamens ca. 30, unequal in length; ovary glabrous; stigma disk-shaped. Drupe globose or ovoid, 3.5–7 cm, glabrous, green, yellow or red, glaucous, grooved; stone ovoid to oblong, rugose

Locality: Cultivated. *Y. S. Lau* 2882; *HK sheet* 9069, 9076.

Distribution: E Asia, widely cultivated.

Ecology: Flowering: Mar.–Apr.; fruiting: Jul.–Aug.

Uses: Fruit.

2. *Prunus persica* (L.) Batsch 桃

(Photos 45–46)

Beytr. Entw. Gewächsreich 1: 30. 1801; FFJ 2: 273. 1985; FGD 4: 231. 2000.

*Amygdalus persica* L., *Sp. Pl.* 1: 472. 1753; FRPS 38: 17. 1986; FOC 9: 394. 2003.

Deciduous small tree, 3–8 m tall; branchlets glabrous; axillary winter buds (2–)3, terminal buds present. Petioles 0.5–2 cm, usually with one to several glands; leaf blade oblong-lanceolate or broadly lanceolate, 7–15 × 2–3.5 cm, base cuneate, apex acuminate, margin finely to coarsely serrate, with glandular teeth, glabrous or with few hairs in axils of veins of abaxial surface. Flowers solitary, opening before or with leaves, 2–3.5 cm in diam.; pedicels short or almost obsolete; sepals 5, ovate or oblong, apex obtuse, abaxially pubescent; petals 5, pink or white, oblong or broadly obovate, 1–1.7 × 0.9–1.2 cm; stamens 20–30; anthers purplish red; ovary pubescent; styles nearly as long as stamens. Drupe ovoid, broadly ellipsoidal or compressed globose, fleshy, 3–12 cm in diam., greenish white to orangish yellow, usually with a red tinge on exposed side, densely pubescent, rarely glabrous; stone ellipsoidal to suborbicular, longitudinally and transversely furrowed and pitted.

Locality: Cultivated. *L. T. Lo* 27; *Y. S. Lau* 2689, 3280.

Distribution: E Asia, widely cultivated.

Ecology: Flowering: Mar.–Apr.; fruiting: Apr.–Sep.

Uses: Fruit, medicinal (folklore).

3. *Prunus mume* (Siebold) Siebold & Zucc. 梅 (Photo 47)

Fl. Jap. 34(2): 234. 1913; FKH 93. 1912; FFJ 2: 274. 1985; FGD 4: 232. 2000.

*Armeniaca mume* Siebold, *Verh. Batav. Genootsch. Kunsten* 12(1): 69. 1830; FRPS 38: 31. 1986; FOC 9: 400. 2003.

Deciduous small tree, 4–10 m tall, usually with spine-tipped short branches; branchlets green, glabrous; axillary winter bud 1, glabrous, terminal bud absent. Petioles 0.5–2 cm, glabrous, usually with glands; stipules caducous; leaf blade ovate or elliptic, 3.5–8 × 2.5–5 cm, base broadly cuneate or nearly rounded, apex caudate or acuminate, margin serrulate, glabrous on both surfaces or abaxially pubescent. Flowers solitary or in clusters of 2, open before leaves, 2–2.5 cm in diam.; pedicels 1–3 mm, usually glabrous; sepals 5, ovate or suborbicular, apex obtuse; petals 5, or double in cultivars, white, pink or red; stamens many, shorter or slightly longer than petals; style densely pubescent, shorter or slightly longer than stamens. Drupes subglobose, yellow, 2–3 cm in diam.; stone pitted.

Locality: Cultivated. *Y. S. Lau* 2456, 2829; *HK sheet* 9000.

Distribution: E Asia, widely cultivated.

Ecology: Flowering: Jan.–Feb.; fruiting: Mar.–Jun.

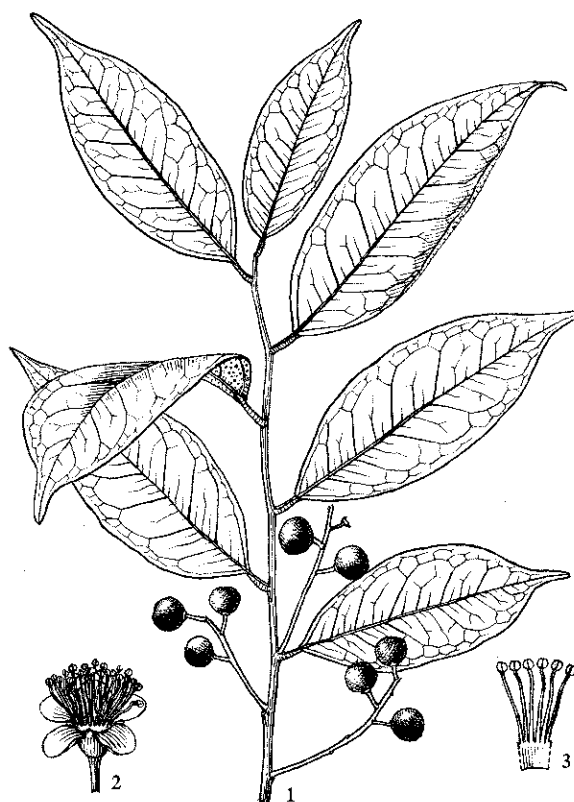
Uses: Fruit, ornamental, medicinal (folklore).

4. *Prunus phaeosticta* (Hance) Maxim.

腺葉柱櫻 (腺葉野櫻)

(Fig. 16; Photo 48)

Bull. Acad. Imp. Sci. Saint-Petersbourg 29(1): 110. 1883; FFJ 2: 275. 1985; FGD 4: 238. 2000.

Figure 16. *Prunus phaeosticta* (Hance) Maxim.

1. fruiting branch; 2. flower; 3. part of androecium. (drawn by H. P. Yu)

*Pygeum phaeostictum* Hance, J. Bot. 8(88): 72. 1870.

*Laurocerasus phaeosticta* (Hance) C. K. Schneid., Ill. Handb. Laubholz. 1: 649, fig. 355k. 1906; FRPS 38: 108. 1986; FOC 9: 427. 2003.

*Prunus punctata* Hook. f. & Thomson, Fl. Brit. India 2(5): 317. 1878; FKH 93. 1912.

Evergreen small tree or shrub, 4–12 m tall; branchlets brown, glabrous or ± pubescent, sparsely lenticellate; winter buds ovoid, with several ciliate scales. Petioles 0.3–1 cm, glabrous, eglandular; stipules lanceolate, glabrous, caducous; leaf blade leathery, narrowly elliptic, oblong or oblong-lanceolate, rarely obovate-oblong, 6–12 × 2–4 cm, base cuneate, broadly cuneate or nearly rounded, with 2 large flat glands near the base, apex caudate or acuminate, margin entire, glabrous on both surfaces, abaxially densely black glandular punctate, lateral veins 6–10 on each side of midvein. Racemes axillary, solitary, several–10-flowered, 2.5–7 cm, glabrous or sparsely pubescent; pedicels 3–5 mm; sepals 5, ovate-triangular, 1–2 mm, apex obtuse, margin serrate and ciliate; petals 5, white, suborbicular, 2–3 × 2–3 mm, glabrous; stamens 20–35, 5–6 mm; ovary glabrous or subglabrous, styles ca. 5 mm. Drupe purplish black, subglobose or ellipsoidal, ca. 1 cm in diam., glabrous; stone smooth.

Locality: Common in Hong Kong. *Y. S. Lau 1776*; *P. S. Choi 279*; *HK sheet 40350*.

Distribution: Yunnan, Guizhou, Guangxi, Guangdong, Hunan, Jiangxi, Fujian, Zhejiang, Taiwan; Japan, India, Myanmar, Bangladesh, Thailand, Vietnam.

Ecology: Forests, open field. Flowering: Mar.–May; fruiting: Apr.–Nov.

Notes: The type specimen of *Pygeum phaeostictum* was collected from “Pakwan” by H. F. Hance in 1870.

### 5. *Prunus marginata* Dunn 全緣櫻桃(鑲邊櫻)

(Photo 49)

J. Bot. 45(539): 402. 1907; FKH 93. 1912; FGD 4: 240. 2000.

*Laurocerasus marginata* (Dunn) T. T. Yu & L. L. Lu, Bull. Bot. Res., Harbin 4(4): 52. 1984; FRPS 38: 122. 1986; FOC 9: 430. 2003.

Evergreen small tree or shrub, 4–6 m tall; branchlets densely tawny pubescent, then glabrescent or persistent; winter buds dark brown, ovoid, with ciliate scales. Petioles 1–5 mm, glabrous; stipules caducous; leaf blade leathery, oblong or obovate-oblong, 5–9 × 1.5–4 cm, base narrowly cuneate, oblique, apex acuminate, margin entire, glabrous on both surfaces, abaxially greenish with or without 2 basal glands, lateral veins and reticulation of veins inconspicuous. Racemes solitary, axillary, several-flowered, 2–3 cm; rachis densely pubescent; pedicels 1–3 mm, densely pubescent; flowers 2–3 mm in diam.; sepals 5, ovate to ovate-lanceolate, apex obtuse or acute; petals 5, white, suborbicular or obovate, 2–3 mm, glabrous; stamens 25–35, longer than petals; ovary glabrous; nearly as long as stamens. Drupe ovoid, 1–1.2 × 0.7–0.9 cm, dark brown to blackish purple, glabrous; stone reticulately rugose.

Locality: Tai Mo Shan, Lantau Island. *F. W. Xing 10082*; *HK sheet 8991, 39932*.

Distribution: Guangdong.

Ecology: Forests. Flowering: Spring to summer; fruiting: Autumn to winter.

### 6. *Prunus zippeliana* Miq. 大葉桂櫻

(Photo 50)

Fl. Ned. Ind. 1: 367. 1855; FFJ 2: 275. 1985; FGD 4: 239. 2000.

*Laurocerasus zippeliana* (Miq.) Browicz, Arbor. Kornickie 15: 6. 1970; FRPS 38: 116. 1986; FOC 9: 429. 2003.

Evergreen tree, up to 25 m tall; branchlets greyish green, glabrous, lenticellate; winter buds ovoid, subglabrous. Petioles 1–2 cm, stout, glabrous, abaxially with 2 glands toward the leaf base; stipules linear, caducous; leaf blade thick leathery, broadly ovate, elliptic-oblong, obovate-elliptic or elliptic-lanceolate, 8–19 × 4–8 cm, base broadly cuneate to subrounded, apex shortly acuminate or acute, margin serrate, with black glandular-tipped teeth, glabrous on both surfaces, lateral veins 7–13 on each side of midvein, inconspicuous. Racemes axillary, solitary or branched at leaf base, 2–6 cm; densely pubescent; pedicels 1–3 mm; flowers 5–9 mm in diam; sepals 5, ovate-triangular, 1–2 mm, apex obtuse, abaxially sparsely pubescent; petals 5, white, suborbicular, 2–4 mm; stamens 20–25, 4–6 mm; ovary glabrous; styles nearly as long as stamens. Drupes red, ovoid or ellipsoidal, 1.8–2.4 × 0.8–1.1 cm, blackish purple, glabrous, apically acute, basally rounded; stone slightly reticulately rugose.

Locality: Ng Tung Chai, Tai Mo Shan. *K. Y. Tam 109*.

Distribution: Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Fujian, Taiwan, Zhejiang, Jiangxi, Hunan, Hubei, Shaanxi, Gansu; Japan, Vietnam

Ecology: Forests. Flowering: Jul.–Oct.; fruiting: Winter.

## 12. *Pygeum* Gaertn. 臀果木屬

Evergreen trees or shrubs. Leaves simple, alternate, entire, rarely serrate, blades usually with an impressed gland on each side at the base; stipules small, deciduous or rarely persistent. Inflorescence racemose, axillary and lateral, solitary or fasciculate. Flowers usually 5-merous and bisexual, sometimes polygamo-dioecious. Hypanthium obconical or cyathiform, with a persistent annular base, usually partly or entirely caducous after anthesis. Sepals 5–10(–12), small. Petals as many as and usually resembling the sepals, very rarely absent. Stamens 10–30 or more, 1–many-seriate; anthers didymous. Ovary of a single carpel, superior, with 2 pendulous ovules, enclosed in the hypanthium; style terminal, glabrous or hairy; stigma capitate. Fruit a drupe, dry, leathery, usually as broad as or broader than long, with a smooth stone, containing a single seed.

About 40 species distributed in tropical Africa, S and SE Asia, NE Australia, New Guinea, Pacific Islands; six species in China; one species in Hong Kong.

**1. *Pygeum topengii* Merr. 臀果木 (Fig. 17; Photo 51)**

Philipp. J. Sci., 15(3): 237. 1919; FRPS 38: 126. 1986; FGD 4: 241. 2000; FOC 9: 431. 2003.

*Pygeum latifolium* auct. non Miq.: FHK 104. 1861; FKH 93. 1912.

Tree, 8–25 m tall; branchlets lenticellate, initially brown pubescent, gradually glabrescent. Petioles 5–8 mm, brown pubescent; stipules small, caducous; leaf blade leathery, ovate-elliptic or elliptic, 6–12 × 3–5.5 cm, base broadly cuneate and ± asymmetric, apex shortly acute, margin entire, adaxially glabrous, abaxially covered with brown appressed hairs, especially on midvein and lateral veins, with 2 black glands near the base; lateral veins 5–8 on each side of midvein, prominent on abaxial surface. Racemes solitary or fasciculate, 4–7 cm, many-flowered. Peduncles and pedicels densely brown pubescent; pedicels 1–3 mm; flowers 2–3 mm in diam.; sepals 5 or 6, triangular-ovate, 1–2 mm, apex acute; petals 5 or 6, oblong, slightly longer than sepals or indistinguishable from sepals, abaxially pubescent, apex obtuse; ovary glabrous. Drupe reniform, deeply brown, 0.8–1 × 1–1.6 cm, glabrous, apically depressed.

Locality: Shing Mun, Yuen Tun Ha, Tai Po Kau, Lam Tsuen Valley, Ng Tung Chai, Lai Chi Wo. *Y. S. Lau* 232; *P. S. Choi* 228; *Y. W. Lam* 1872.

Distribution: Yunnan, Guizhou, Guangxi, Hainan, Guangdong, Fujian.

Ecology: Forests and fung shui woods, roadsides. Flowering: Jun.–Oct.; fruiting: Winter.

Uses: Oil (seed).



Figure 17. *Pygeum topengii* Merr.  
1. fruiting branch; 2. flower. (drawn by H. P. Yu)

**183. MIMOSACEAE 含羞草科**

WU De-lin 吴德邻

Trees or shrubs, sometimes lianas, rarely herbs. Leaves alternate, usually bipinnate, rarely once pinnate or become phyllodium; pinnae usually opposite; leaf rachis or petiole usually with glands; petioles with pulvinus; stipules present or absent, sometimes spine-like. Inflorescences spicate or capitate, rarely racemose or paniculate; bracts small, usually deciduous; bracteoles deciduous or absent. Flowers small, bisexual, sometimes unisexual, actinomorphic. Sepals united into a single tubular calyx, divided usually into (3–4–)5(–6–7) teeth, rarely entirely distinct. Petals as many as calyx-teeth, valvate in bud, free or united into a tube at the base. Stamens as many as or twice as the number of petals, or sometimes indefinite, free or united below into a tube, free part of filaments usually exerted, anther small, 2-celled, opening by longitudinal slits, often with a deciduous gland at the tip; pollen-grains borne in monads or very often in tetrads or polyads. Pistils 1(–15). Ovary superior 1-locular; ovules mostly numerous; style slender; stigma small. Pods dehiscent or indehiscent, sometimes breaking into 1-seeded segment, straight or contorted. Seeds compressed, testa hard, usually with pleurogram.

About 56 genera, 2800 species, widespread in tropical and subtropical regions, especially in C and S America, only a few species extend into temperate area; about 17 genera and 66 species in China; nine genera and 17 species in Hong Kong.

*Desmanthus virgatus* (L.) Willd., an introduced species of tropical American origin, was recorded by Dunn & Tutcher (1912), but at present time it is very rare in cultivation, so it is not described here.

- 1a. Stamens numerous; usually more than 10.
  - 2a. Filaments connate into a tube.
    - 3a. Pods dehiscent into 2 valves.
      - 4a. Pods rather falcate, elastically dehiscent from top to base; seeds with pleurogram..... 1. *Calliandra*
      - 4b. Pods circinate, dehiscent along both sutures; seeds without pleurogram..... 2. *Archidendron*
    - 3b. Pods indehiscent or late dehiscent.
      - 5a. Flowers in globose heads..... 3. *Albizia*
      - 5b. Flowers in spikes ..... 4. *Falcataria*
  - 2b. Filaments free or only connate at base ..... 5. *Acacia*
- 1b. Stamens 10 or less.
  - 6a. Pods dehiscent into several 1-seeded segments.
    - 7a. Armed shrubs without tendrils; leaflets 10–20 pairs in each pinna, sensitive ..... 6. *Mimosa*

- 7b. Unarmed woody climbers, with tendrils; leaflets 1–2 pairs in each pinna, not sensitive ..... 7. *Entada*  
 6b. Pods dehiscing along both sutures, not into several segments.  
 8a. Shrubs or small trees; leaflets 5–15 pairs in each pinna; pods straight ..... 8. *Leucaena*  
 8b. Big trees; leaflets 4–7 pairs in each pinna; pods twisted ..... 9. *Adenanthera*

### 1. *Calliandra* Benth. 朱纓花屬

Shrubs or small trees, usually unarmed. Stipules often persistent, or sometimes spinescent, rarely absent. Leaves bipinnate, eglandular, pinnae 1–several pairs; leaflets opposite, small and numerous or larger and from few pairs to one. Flowers in globose axillary heads, or in terminal racemes, 6–5-merous, polygamous. Calyx campanulate, toothed. Petals united to middle; the flower in the middle of the heads sometimes heteromorphous, with an elongated tubular corolla. Stamens numerous (up to 100), red or white, more or less united into a tube and long-exserted, showy. Anthers mostly glandular-hairy. Ovary sessile, ovules numerous; style filiform. Pods strap-shaped, slightly falcate, flat, rigidly leathery, often narrowed to the base, margins thickened, 2-valved, valves elastically opening from the apex to base, continuous inside. Seeds obovate or orbicular, compressed, testa hard, with pleurogram, without aril.

About 200 species, mainly in tropical and subtropical area of America, W Africa to Pakistan; three species (two cultivated) in China; one species commonly cultivated in Hong Kong.

#### 1. *Calliandra haematocephala* Hassk.

朱纓花(紅絨球)

(Fig. 18; Photo 52)

Retzia 1: 216. 1855; FRPS 39: 38. 1988; FGD 5: 142, fig. 83. 2003.

Deciduous shrub, 1–3 m tall. Branchlet terete, brown, rough. Stipules ovate-lanceolate, persistent. Leaves bipinnate; petioles 1–2.5 cm; pinnae one pair, 8–13 cm; leaflets 7–9 pairs, oblique-lanceolate, 2–4 cm × 7–15 mm, base oblique, apex obtuse, mucronate, margin sparsely pilose, midvein close to upper; petiolules 1 mm. Heads axillary, 3 cm in diam. (including filaments); peduncle 1–3.5 cm. Calyx campanulate, 2 mm. Corolla tube 3.5–5 mm, purplish, 5-lobed; lobes reflexed, 3 mm, glabrous. Stamens numerous, exserted, very brilliant, filament-tube 6 cm, white, with a subulate appendix inside the mouth, free part of filament 2 cm, deep red. Pods linear-oblancoate, 6–11 × 0.5–1.3 cm, dull brown, valves elastically open from apex to base along sutures when ripen, reflexed. Seeds 5–6, oblong, 7–10 × 4 mm, brown.

Locality: Cultivated. *H. C. Tang 270; Y. S. Lau 1080, 1733.*

Distribution: Guangdong, Fujian, Taiwan (cultivated); native to S America.

Ecology: Cultivated in gardens. Flowering: Aug.–Sep.; fruiting: Oct.–Nov.

Uses: Ornamental.

Notes: Another species, *Calliandra riparia* Pittier (*C. surinamensis* auct. non Benth.: Check List HK Plants 31. 1993), native to S America, was once cultivated in Hong Kong but became uncommon in recent times.

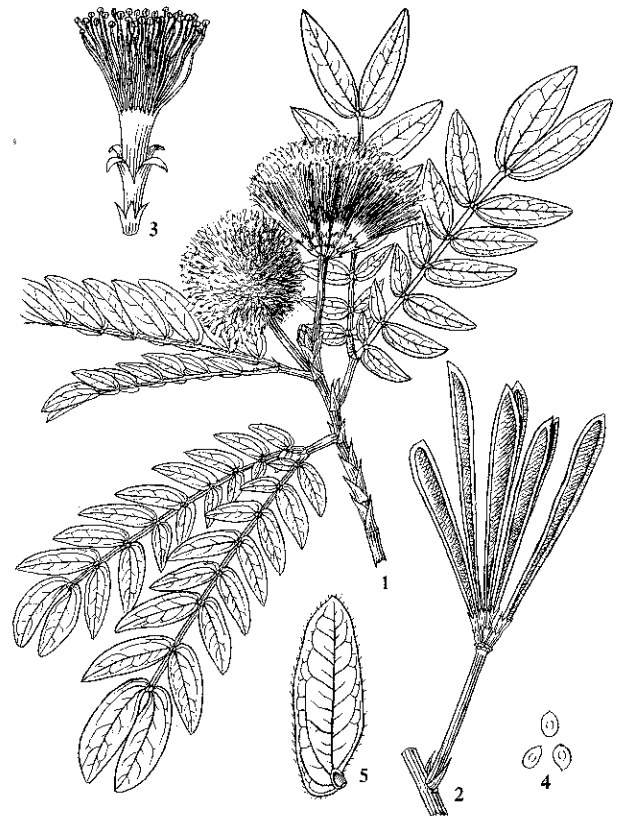


Figure 18. *Calliandra haematocephala* Hassk.  
 1. flowering branch; 2. fruiting branch; 3. flower; 4. seeds;  
 5. leaflet. (drawn by H. P. Yu)

### 2. *Archidendron* F. Muell. 猴耳環屬

Trees or shrubs unarmed. Stipules small. Leaves bipinnate, pinnae in few pairs; petioles with glands; leaflets few to several pairs, rarely 1 pair. Inflorescences globular heads, or the heads arranged in panicles, terminal, axillary or cauliflorous. Flowers white, small; hermaphroditic or polygamous, monomorphic. Calyx campanulate or tubular, 5-toothed. Petals 5, connate to middle. Stamens numerous; filaments exserted, more or less united into a tube. Anthers small, apex eglandular; carpels 1–several, free, sessile, many-ovuled; styles filiform, stigmas terminal, capitellate. Pods strongly curved or spirally twisted, or straight, cylindric, flat or swollen. Seeds ovate or orbiculate, without pleurogram.

About 94 species distributed in tropical Asia; 11 species in China; three species in Hong Kong.

- 1a. Pinnae 1–2 pairs; leaflets alternate ..... 1. *A. lucidum*  
 1b. Pinnae 2–8 pairs; leaflets opposite.  
 2a. Branchlets angulate; pinnae 2–3 pairs; leaflets 4–7 pairs, pubescent abaxially ..... 2. *A. utile*  
 2b. Branchlets not angulate; pinnae 3–8 pairs; leaflets 3–12(–16) pairs, pubescent on both surfaces ..... 3. *A. clypearia*

1. *Archidendron lucidum* (Benth.) I. C. Nielsen 亮葉猴耳環

(Fig. 19; Photo 53)

*Adansonia* n.s. 19(1): 19. 1979, & in Aubrev., *Fl. Camb. Laos Vietn.* 19: 120. 1981; FGD 5: 143, fig. 84. 2003.

*Pithecellobium lucidum* Benth., *London J. Bot.* 3: 207. 1844; FHK 102. 1861; FKH 92. 1912; FRPS 39: 52. 1988.

Tree, 2–10 m tall. Branchlets, petioles and inflorescence shortly brown-tomentose. Pinnae 1–2 pairs, base of petioles, and leaf rachis with round sunken glands, leaflets 2–3 pairs in lower pinnae, 4–5 pairs in upper pinnae, obliquely ovate or oblong, 5–9(–11) × 2–4.5 cm, the terminal pair larger, opposite, the others alternate and smaller, base oblique, apex acuminate mucronate, glabrous on both surfaces or puberulous on veins, shining and deep green adaxially. Heads globular, with 10–20 flowers, on a peduncle less than 1.5 cm, and forming a long terminal panicle. Calyx under 2 mm, together with corolla shortly brown tomentose. Petals white, 4–5 mm, connate up to middle. Ovary shortly stipitate, glabrous. Pods twisted into a ring, 2–3 cm wide, the outer edge indented between the seeds. Seeds black, 1.5 × 1 cm.

Locality: Common in Hong Kong. *L. T. Lo* 209; *Y. S. Lau* 2992; *HK sheet* 40061.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Zhejiang, Fujian, Taiwan; Vietnam, Laos, Cambodia, Thailand.

Ecology: Thin forests. Flowering: Apr.–Jun.; fruiting: Jul.–Dec.

2. *Archidendron utile* (Chun & F. C. How) I. C. Nielsen

薄葉猴耳環

(Photo 54)

*Adansonia* n.s., 19: 20. 1979, & in Aubrev., *Fl. Camb. Laos Vietn.* 19: 122. 1981; FGD 5: 144. 2003.

*Pithecellobium utile* Chun & F. C. How, *Acta Phytotax. Sin.* 7(1): 17–19, pl. 5: 2. 1958; FRPS 39: 53. 1988.

Shrub, 1–2 m tall, rarely small trees. Branchlets terete, brown-pubescent. Pinnae 2–3 pairs, 10–18 cm, with glands on petioles and at the insertion of the apical 1–2 leaflets; leaflets membranous, 4–7 pairs, opposite, oblong-rhombic, 2–9 × 1.5–4 cm, the terminal pair larger, the others smaller, base obtuse or acute, apex obtuse, mucronate, glabrous adaxially, pubescent abaxially; petiolules short. Heads 1 cm in diam. (not including filaments), forming a terminal panicle, ca. 30 cm. Flowers sessile, white, fragrant. Calyx campanulate, 1.5–2 mm, teeth and corolla pubescent. Corolla 6–7 mm, lobes ovate or oblong, less than 2 mm; filaments 12–15 mm. Ovary shortly stipitate, glabrous. Pods red brown, falcate, 6–10 × 1–1.3 cm. Seeds suborbicular, 10 mm, black and shining.

Locality: Pat Sin Leng, Sai Kung, Wu Kau Tang. *F. W. Xing* 7162, 8416; *Y. W. Lam* 2045.

Distribution: Hainan, Guangxi, Guangdong, Fujian; Vietnam.

Ecology: Forests. Flowering: Mar.–Aug.; fruiting: Apr.–Dec.

3. *Archidendron clypearia* (Jack) I. C. Nielsen 猴耳環

(Photo 55)

*Adansonia* n.s. 19(1): 15. 1979 & in Aubrev., *Fl. Camb. Laos Vietn.* 19: 115. 1981; FGD 5: 144. 2003.

*Inga clypearia* Jack, *Malayan Misc.* 2(7): 78. 1822.

*Pithecellobium clypearia* (Jack) Benth., *London J. Bot.* 3: 209. 1844; FHK 103. 1861; FKH 92. 1912; FRPS 39: 53. 1988.

Tree, up to 10 m tall. Branchlets acutely angulate, densely yellow-tomentose. Petioles quadrangular. Leaves bipinnate, with glands on leaf-rachis and at the base of petioles; pinnae (3–)4–5(–8) pairs, densely yellow tomentose, the lowermost pinna with 3–6 pairs of leaflets, the uppermost one with 10–12 pairs of leaflets; leaflets leathery, oblique, rhombic, 1–7 × 0.7–3 cm, the upper one largest, downwards smaller, shining adaxially, slightly brown pubescent on both surfaces, base very unequal-sided; subsessile. Heads of several flowers forming terminal or axillary panicle. Calyx campanulate, 2 mm, 5-toothed, as well as corolla densely brown-villose. Corolla white or yellowish, 4–5 mm, connate below middle; lobes lanceolate. Stamens twice as long as corolla, connate below middle. Ovary stalked, hairy. Pods twisted, 1–1.5 cm wide, forming 2 or 3 coils, indented between the seeds on the outer edge. Seeds 4–10, elliptic or broadly elliptic, 1 cm, black, testa wrinkled.

Locality: Common in Hong Kong. *H. C. Tang* 2479; *Y. S. Lau* 297; *HK sheet* 8852.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Zhejiang, Fujian, Taiwan; tropical Asia.

Ecology: Forests. Flowering: Feb.–Jun.; fruiting: Apr.–Aug.

Uses: Environmental, materials (tannin).

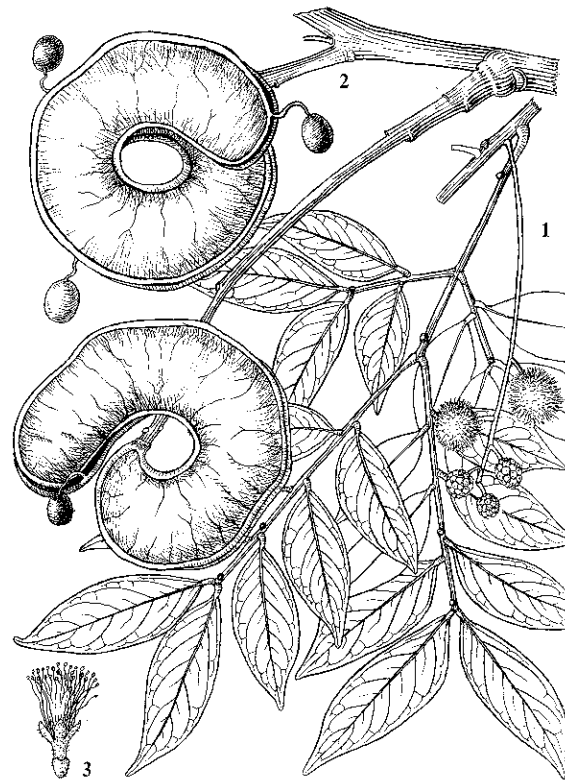


Figure 19. *Archidendron lucidum* (Benth.) I. C. Nielsen  
1. flowering branch; 2. fruiting branch; 3. flower. (drawn by H. P. Yu)

3. *Albizia* Durazz. 合歡屬

Trees or shrubs, usually unarmed, rarely scandent and with short spines. Stipules usually small, rarely larger and caducous. Leaves bipinnate, with a gland on the petiole below the pinnae, and others between some or all pinnae and leaflets; leaflets small in numerous pairs or larger in few pairs. Flowers bisexual, in globular heads, forming axillary or terminal panicles. Calyx campanulate or funnel-shaped, 5-toothed. Corolla funnel-shaped, 5-lobed, with a cylindric tube. Stamens many, united at base into a tube, free part of filaments long-exserted. The central flowers of heads with broader calyx and much longer filament-tube. Ovary flattened, style long, slender, stigma minute. Pods broadly linear or oblong, straight, plano-compressed, indehiscent, or dehiscent along both sutures, continuous inside. Seeds ovate or orbicular, compressed, funicle filiform.

About 150 species in tropical to subtropical regions of the world; 17 species in China; four species in Hong Kong.

- 1a. Climbing shrubs with curved short spines under petioles..... 1. *A. corniculata*  
 1b. Unarmed trees.  
 2a. Leaflets larger, 18–45 × 7–20 mm, 5–14 pairs..... 2. *A. lebbeck*  
 2b. Leaflets smaller, 6–12 × 1–4 mm, 10–35(–40) pairs.  
 3a. Stipules smaller than leaflets, linear-lanceolate; rachis of inflorescence short, zigzag; flowers pink..... 3. *A. julibrissin*  
 3b. Stipules larger than leaflets, cordate; rachis of inflorescence long, straight; flowers greenish white or light yellow.....  
 ..... 4. *A. chinensis*

1. *Albizia corniculata* (Lour.) Druce 天香藤

(Photo 56)

Rept. Bot. Soc. Exch. Club Brit. Isles 4: 603. 1917; FRPS 39: 57. 1988; FGD 5: 146. 2003.

*Mimosa corniculata* Lour., Fl. Cochinch. 651. 1790.

*Albizia millettii* Benth., London J. Bot. 3: 89. 1844; FHK 102. 1861; FKH 91. 1912.

Scandent shrub or vine, 5–20 m or longer. Branchlets often with a curved prickle under petiole. Stipules small, deciduous. Petioles with a complanate gland near the base. Leaves bipinnate, pinnae 2–6 pairs; leaflets 4–10 pairs, oblong or obovate-oblong, 12–25 × 7–15 mm, base oblique, apex obtuse or emarginate or ± mucronate, glabrous adaxially, puberulous abaxially. Heads consisting usually of 6–12 sessile flowers, forming a terminal or axillary panicle; peduncle slender, sparsely pubescent, 5–10 mm. Calyx shorter than 1 mm, puberulent. Corolla white, puberulent; tube 4 mm, lobes 2 mm; filaments 1 cm. Pods strap-shaped, 10–20 × 3–4 cm, flat, glabrous. Seeds 7–11, oblong, brown.

Locality: Common in Hong Kong. *H. C. Tang 1770; Y. S. Lau 129, 1986.*

Distribution: Hainan, Guangxi, Guangdong, Fujian; Vietnam, Laos, Cambodia, Thailand, Philippines, Kalimantan.

Ecology: Open fields or forests. Flowering & fruiting: Apr.–Nov.

2. *Albizia lebbeck* (L.) Benth. 大葉合歡

(Photo 57)

London J. Bot. 3: 87. 1844; FRPS 39: 62. 1988; FGD 5: 148. 2003.

*Mimosa lebbeck* L., Sp. Pl. 516. 1753.

Deciduous tree, 8–12 m tall. Branchlets minutely pubescent, glabrous in age. Stipules small, caducous. Leaves bipinnate; with disk-like glands near the base of petioles and at the insertion of pinnae on rachis, pubescent or glabrous; pinnae 2–4 pairs, 6–15 cm; leaflets 4–8 pairs, long elliptic or slightly oblique-oblong, 2–4.5 × (0.9–)1.3–2 cm, apex obtuse or retuse, glabrous on both surfaces or sparsely and finely pubescent abaxially, midvein slightly close to upper edge. Heads up to 4 cm in diam. Peduncles 1–4 together axillary. Pedicels 3–4 mm, puberulous. Flowers fragrant. Calyx tubular, 4 mm, puberulous, with short teeth. Corolla greenish yellow, infundibuliform, 7–8 mm, lobes deltoid-ovate. Stamens white or light yellowish green. Pods straw yellow, strap-shaped, 15–28 × 2.5–4.5 cm, flat, remain on trees very long after ripen. Seeds brown, 4–12, elliptic, 1 cm in diam.

Locality: Cultivated in Hong Kong. *H. C. Tang 7; Y. S. Lau 1951, 2608.*

Distribution: Guangxi, Guangdong, Fujian, Taiwan; native to tropical Africa, widely cultivated throughout tropical Asia and Africa.

Ecology: Roadsides and gardens. Flowering: May–Sep.; fruiting: Oct.–May of the following year.

Uses: Ornamental.

3. *Albizia julibrissin* Durazz. 合歡

Mag. Tosc. 3(4): 11. 1772; FRPS 39: 65. 1988; FGD 5: 148, fig. 86. 2003.

Deciduous tree, up to 16 m tall. Branchlets angular, together with leaf-rachis, inflorescences tomentose or pubescent. Stipules linear-lanceolate, much smaller than leaflet, deciduous. Leaves bipinnate, pinnae 4–12 pairs, sometimes to 20 pairs in cultivation, with glands near base of petioles and on leaf-rachis of uppermost pinnae; leaflets 10–30 pairs, obliquely linear to oblong, 6–12 × 1–4 mm, apex apiculate, midvein close to upper edge, base truncate, margin ciliate; panicles terminal. Flowers pink. Calyx tubular, 3 mm. Corolla 8 mm, lobes triangular, 1.5 mm. Calyx and corolla pubescent; filaments 2.5 cm. Pods strap-shaped, flat, 9–15 × 1.5–2.5 cm, glabrous.

Locality: Cultivated. *Y. S. Lau 1117.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Hubei, Hunan, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang, Fujian, Taiwan; temperate region of Asia, widely cultivated and naturalized.

Ecology: Flowering: May–Jul.

Uses: Environmental.

**4. *Albizia chinensis* (Osbeck) Merr.** 楹樹 (Fig. 20; Photo 58)  
Amer. J. Bot. 3(10): 575. 1916; FRPS 39: 67. 1988; FGD 5: 148. 2003.

*Mimosa chinensis* Osbeck, Dagbok Ostind. Resa 233. 1757.

*Acacia stipulata* DC., Prodr. 2: 469. 1825.

*Albizia stipulata* (DC.) Boiv., Encycl. 19(2): 33. 1838; FHK 102. 1861; FKH 91. 1912.

Deciduous tree, up to 30 m tall; branchlets yellow pubescent. Stipules large, membranous, cordate, apex apiculate, deciduous. Leaves bipinnate, pinnae 6–12 pairs, with glands near base of petioles and on leaf-rachis; leaflets 20–35(–40) pairs, sessile, oblong-linear, falcate, 6–10 × 2–3 mm, base subtruncate, apex acuminate, margin ciliate, villose abaxially; midvein close to upper edge. Heads consisting of 10–20 flowers, forming a terminal panicle. Peduncles long or short, densely villose. Flowers greenish white or lightly yellow, densely yellow brown tomentose. Calyx funnel-shaped, 3 mm, shortly 5-toothed. Corolla twice as long as calyx, lobes ovate-deltoid. Stamens 25 mm. Ovary yellow brown villose. Pods plano-compressed, 10–15 × 2 cm, initially ± pubescent, glabrous when mature.

Locality: Hong Kong Island, Tai Mo Shan, Lautau Island. *C. P. Lau 61*; *Y. S. Lau 1160*; *HK sheet 37913*.

Distribution: Hainan, Guangxi, Guangdong, Fujian, Hunan, Yunnan, Xizang; S to SE Asia.

Ecology: Forests, open fields. Flowering: Mar.–May; fruiting: Jun.–Dec.

Uses: Timber.

**4. *Falcataria* (I. C. Nielsen) Barneby & J. W. Grimes** 南洋楹屬

Unarmed trees. Stipules caducous. Leaves bipinnate, pinnae 6–20 pairs; leaflets numerous, subsessile, opposite. Inflorescence of few-flowered spikes, axillary, solitary or forming efoliate panicles. Flowers homomorphic, sessile. Calyx broadly campanulate or hemispherical, 5(–6)-toothed. Corolla sericeous, lobes as many as calyx-teeth, proximal 1/4 connate into a tube. Stamens numerous, with an intrastaminal disk around the base of ovary. Pods firmly papery, broad-linear, straight, plano-compressed, narrowly winged along ventral suture, late dehiscent through both sutures; testa hard, with pleurogram.

Three species in Moluccas, New Guinea, Solomon Island and Queensland; one species cultivated in China; and also in Hong Kong.

**1. *Falcataria moluccana* (Miq.) Barneby & J. W. Grimes**  
南洋楹 (Fig. 21; Photo 59)

Mem. New York Bot. Gard. 74(1): 255. 1966.

*Albizia moluccana* Miq., Fl. Ned. Ind. 1: 26. 1855.

*Albizia falcataria* (L.) Fosberg, Reinwardtia 7: 88. 1965; FRPS 39: 68. 1988; FGD 5: 149. 2003.

Large tree, up to 45 m tall. Branchlets minutely pubescent with many tiny, pale lenticels. Stipules small, caducous. Rachis of leaves

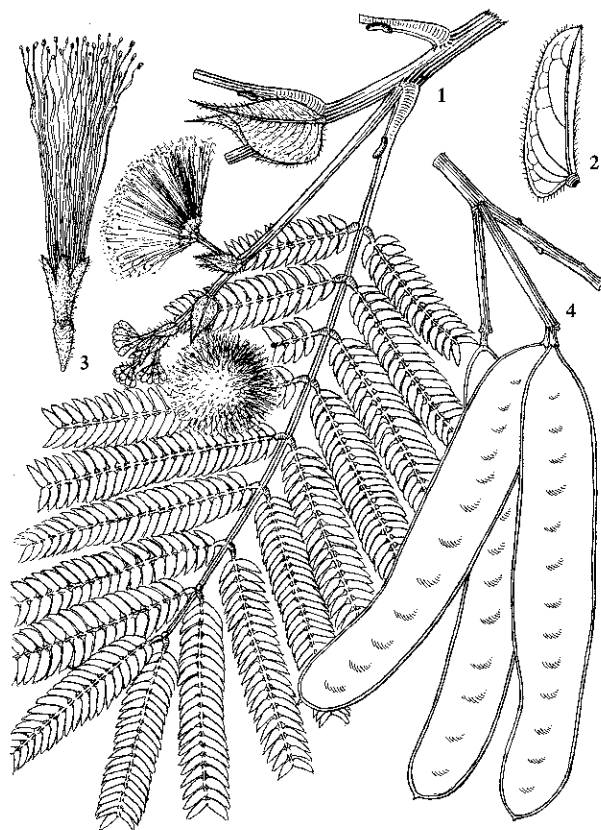


Figure 20. *Albizia chinensis* (Osbeck) Merr.

1. flowering branch; 2. leaflet; 3. flower; 4. portion of fruiting branch. (drawn by H. P. Yu)

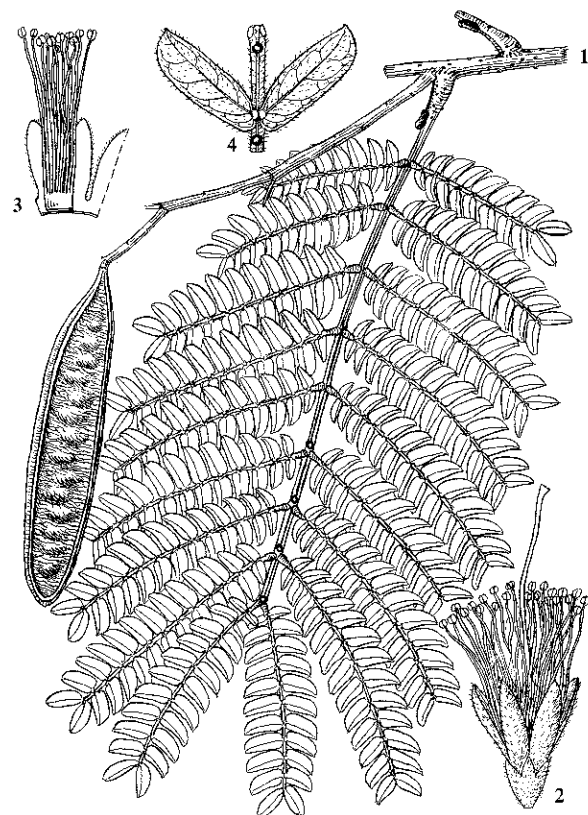


Figure 21. *Falcataria moluccana* (Miq.) Barneby & J. W. Grimes

1. fruiting branch; 2. flower; 3. portion of corolla and stamens showing connate bases; 4. leaflets. (drawn by H. P. Yu)

up to 40 cm, usually with a large, oval, disk-shaped gland near its base; pinnae densely rusty tomentellous, ca. 6–20 pairs, up to 10 cm; leaflets 6–26 pairs, sessile, obliquely oblong, slightly falcate, 1–1.5 cm × 3–6 mm, base obtuse, rounded or nearly cuneate, apex acute, midvein at about 1/4 lamina width along distal margin, with conspicuous other basal veins, glabrous adaxially, sparsely (denser on veins) puberulous abaxially. Spikes axillary, solitary or forming a panicle. Flowers greenish-yellow to cream. Calyx broadly campanulate or hemispherical, sericeous, 2.5 mm, with small teeth. Corolla sericeous, 5–7 mm, lobes oblong-ovate, 2.4–4 mm. Stamens 1 cm. Pods straight, strap-shaped, flat, 10–13 × 1.3–2.3 cm, late dehiscent through both sutures. Seeds 10–15, compressed-ellipsoidal, 7 × 3 mm, testa brown, with narrowly U-shaped pleurogram.

Locality: Cultivated. *K. Y. Tam 3*.

Distribution: Guangdong, Guangxi and Fujian (cultivated); Moluccas, New Guinea, New Britain and Solomon Island, cultivated elsewhere in tropics.

Ecology: Flowering: Apr.–Jul.

Uses: Ornamental, widely planted in tropical countries as a fast-growing timber tree.

### 5. *Acacia* Mill. 金合歡屬

Trees, shrubs or woody climbers, very rarely herbs, often very prickly or spiny. Stipules spinescent or fugacious, rarely membranous. Petioles and leaf-rachis glandular. Leaves bipinnate, with many pairs of small leaflets or reduced to a simple phyllodium. Inflorescence cylindrical spikes or globose heads, sometimes forming a large panicle; bracts often 2, connate, scale-like, under the head or in the middle or at the base of the peduncle. Flowers small, bisexual or polygamous, usually yellow, rarely white. Calyx campanulate. Petals usually ± united, rarely absent. Stamens numerous, exerted, filaments free or connate at base. Anthers minute, without glands. Ovary sessile or stipitate, with many ovules in 2 rows; style filiform; stigma small, capitate. Pods oblong to linear, straight or curved, flat to terete, membranous to woody, dehiscent into 2 valves or indehiscent. Seeds many, compressed, testa hard and glossy.

About 1200 species distributed in tropical and subtropical regions; 18 species (including cultivated) in China; six species in Hong Kong.

#### 1a. Trees or shrubs.

##### 2a. Unarmed trees; leaves reduced to a simple lanceolate phyllodium,

3a. Phyllodium smaller, 6–10 × 0.4–1 cm..... 1. *A. confusa*

3b. Phyllodium larger, 10–25 × 1.5–9 cm

4a. Phyllodium 1.5–4 cm wide; inflorescence 3.5–8 cm..... 2. *A. auriculiformis*

4b. Phyllodium 3.3–9 cm wide; inflorescence 8–11 cm..... 3. *A. mangium*

2b. Armed shrubs; leaves bipinnate; leaflets 10–20 pairs, linear-oblong, 2–6 × 1–1.5 mm. .... 4. *A. farnesiana*

#### 1b. Climbers with hooked prickles.

3a. Leaflets 15–25 pairs, linear-oblong, 8–12 × 2–3 mm..... 5. *A. concinna*

3b. Leaflets 30–54 pairs, linear, 5–10 × 0.5–1.5 mm ..... 6. *A. pennata*

#### 1. *Acacia confusa* Merr. 台灣相思

(Photo 60)

Philipp. J. Sci. Bot. 5(1): 27. 1910; FRPS 39: 24. 1988; FGD 5: 151. 2003.

*Acacia richii* auct. non A. Grey: Dunn & Tutchter, FKH 91. 1912.

Evergreen tree, 6–15 m tall, glabrous. Branches grey or brown, unarmed; branchlets slender. Leaves reduced to simple phyllodia, alternate, leathery, lanceolate, 6–10 × 0.5–1.3 cm, straight or slightly falcate, narrowed to both ends, apex slightly obtuse, glabrous on both surfaces, conspicuously 3–5(–8)-parallel-veined. Flowers numerous, in globose heads of 6–10 mm in diam., solitary or 2–3-fasciculate in axil of phyllodia. Peduncles slender, 8–10 mm. Flowers golden-yellow, fragrant. Calyx half as long as corolla. Petals greenish, 2 mm. Stamens numerous, exerted. Ovary tawny villose; style 4 mm. Pods flat, 4–9(–12) × 0.7–1 cm, black brown.

Locality: Widely cultivated in Hong Kong. *H. C. Tang 1807; Y. S. Lau 2138; L. T. Lo 140*.

Distribution: Mostly cultivated in Hainan, Guangxi, Guangdong, Fujian, Zhejiang, Taiwan, Jiangxi, Yunnan, Sichuan; Philippines, Indonesia, Fiji.

Ecology: Flowering: Mar.–Oct.; fruiting: Aug.–Dec.

Uses: Afforestation, environmental.

#### 2. *Acacia auriculiformis* Cunn. ex Benth. 耳果相思 (耳葉相思)

(Photos 61–62)

London J. Bot. 1: 377. 1842.

Evergreen trees, to 20 m tall. Bark gray-white, smooth. Branches pendulous; branchlets angular, glabrous, with conspicuous lenticels. Phyllodium falcate-oblong, 10–20 × 1.5–4(–6) cm, conspicuous main veins 3 or 4, both ends attenuate. Spikes 1 to several, fasciculate, axillary or terminal, 3.5–8 cm. Flowers orange-yellow. Calyx 0.5–1 mm, shallowly dentate. Petals oblong, 1.5–2 mm. Filaments 2.5–4 mm. Ovary densely puberulous. Pods contorted when mature, 5–8 × 0.8–1.2 cm, valves ligneous. Seeds ca. 12, black, ca. 5–3.5 mm, encircled by a 2-folded, yellow, orange to red aril.

Locality: Widely cultivated in Hong Kong. *Y. S. Lau 3321, 3322*.

Dist.: Zhejiang, Fujian, Guangdong, Guangxi (cultivated); native to N Australia and New Guinea.

Ecology: Flowering: Sep.–Nov.; fruiting: Oct.–Apr.

Uses: Afforestation, environmental.



**3. *Acacia mangium* Willd.** 大葉相思(馬占相思)

(Photo 63)

Sp. Pl., ed. 4, 4(2): 1053–1054. 1806.

Evergreen tree to 30 m tall, trunk usually straight and may exceed half tree height. Branchlets stout, very acutely angled, glabrous. Phyllodium falcate, normally 11–25 × 3.3–9 cm wide, glabrous, with 3 or 4 prominent longitudinal veins that are clearly confluent at the base but which remain separate from the lower margin, minor veins strongly anastomosing to form a prominent reticulum. Spikes cylindrical, 8–11 cm long, white to cream; peduncles 6–10 mm long. Pods tightly coiled and twisted, sometimes tightly spirally coiled, 3–5 mm wide, leathery to subwoody. Seeds with a bright orange aril.

Locality: Widely cultivated in Hong Kong. *Y. S. Lau* 3323

Distribution: Guangdong (cultivated); native to Australia.

Ecology: Flowering: Aug.–Oct.; fruiting: Oct.–Jun.

Uses: Afforestation, environmental.

**4. *Acacia farnesiana* (L.) Willd.** 金合歡

(Photo 64)

Sp. Pl. 4: 1083. 1806; FHK 101. 1861; FKH 91. 1912; FRPS 39: 28. 1988; FGD 5: 152. 2003.

*Mimosa farnesiana* L., Sp. Pl. 521. 1753.

Shrub or small tree, 2–4 m tall, many-branched; bark rough, brown; branchlets zigzag, with small lenticels. Stipules spine-like, 1–2 cm, but shorter in short branchlets. Leaves bipinnate, 2–7 cm, leaf-rachis villose, glandular; pinnae 4–8 pairs, 1.5–3.5 cm, axillary; leaflets 10–20 pairs, linear-oblong, 2–6 × 1–1.5 mm, glabrous. Flowers yellow, fragrant, in axillary heads of 1–3, 1–1.5 cm in diam. Peduncles hairy, 1–3 cm; bracts borne on apex of peduncle or nearly so. Calyx 1.5 mm, 5-toothed. Petals 2.5 mm, connate into a tube, 5-toothed. Stamens twice as long as corolla. Ovary cylindrical, puberulent. Pods turgid, subcylindric, 3–7 × 8–15 mm, brown, glabrous, straight or curved, scarcely dehiscent, filled with a pith which separates seeds from each other. Seeds several, brown, ovate, 6 mm.

Locality: Hong Kong Island, Yuen Long, Cheung Chau (cultivated). *H. C. Tang* 1141; *HK sheet* 1585, 8754.

Distribution: Cultivated in Fujian, Guangdong, Guangxi, Sichuan, Taiwan, Yunnan, Zhejiang; native to tropical America, widely cultivated and naturalized in tropical regions.

Ecology: Flowering: Sep.–Nov.

Uses: Environmental (ornamental, honey, soil improver).

**5. *Acacia concinna* (Willd.) DC.** 藤金合歡

(Fig. 22; Photo 65)

Prodr. 2: 464. 1825; FHK 91. 1861; FKH 91. 1912; I. C. Nielsen, Fl. Camb, Laos, Vietn. 19: 58. 1981; FGD 5: 154. 2003.

*Mimosa concinna* Willd., Sp. Pl. 4: 1039. 1806.

*Acacia sinuata* (Lour.) Merr., Trans. Amer. Philos. Soc., n.s., 24(2): 186. 1935; FRPS 39: 34. 1988.

*Mimosa sinuata* Lour., Fl. Cochinch. 653. 1790.

Climber; branchlets and leaf-rachises grey-tomentose, with numerous hooked prickles on branches and petioles. Stipules ovate-cordate, deciduous. Leaves bipinnate, 10–20 cm; pinnae 6–18 pairs, 8–12 cm, with a gland near the base of petiole and between the uppermost pinnae; leaflets 15–25 pairs, linear-oblong, 8–12 × 2–3 mm, greenish adaxially, glaucous abaxially, hirsute or glabrescent on both surfaces, margin ciliate; midvein near upper margin. Flowers white or yellowish, fragrant, in globular heads of 9–12 mm in diam., forming in a panicle; peduncle and branches tomentose. Calyx funnel-shaped, 2 mm. Corolla slightly exerted. Pods brown, strap-shaped, 8–15 × 2–3 cm, margin straight or slightly sinuate. Seeds 6–10.

Locality: Deep Water Bay, Wong Chuk Hang, Shek O, Tai Mo Shan, Ma On Shan. *Y. S. Lau* 1521, 1587; *K. Y. Tam* 110.

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan; tropical Asia.

Ecology: Thin forests and thickets. Flowering: Apr.–Jun.; fruiting: Jul.–Dec.

Uses: Material (tannin), medicinal (folklore).

Notes: *Acacia sinuata* (Lour.) Merr. is based on *Mimosa sinuata* Lour., but E. D. Merrill did not mention any type specimen of the species and the name is therefore regarded as dubious (cf. Nielson 1980).

**6. *Acacia pennata* (L.) Willd.** 羽葉金合歡

(Photo 66)

Sp. Pl. 4(2): 1090. 1806; FRPS 39: 36. 1988; FGD 5: 154. 2003.

*Acacia hainanensis* Hayata, Icon. Pl. Formosan. 3: 86. 1913.

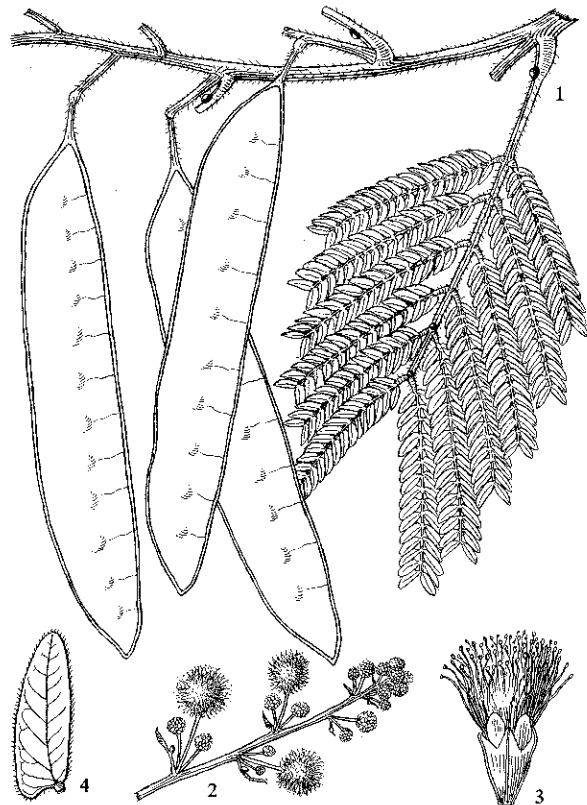


Figure 22. *Acacia concinna* (Willd.) DC.

1. fruiting branch; 2. inflorescence; 3. flower; 4. leaflet. (drawn by H. P. Yu)

*Acacia pennata* subsp. *hainanensis* I. C. Nielsen, *Adansonia* ser. 2, 19(3): 352. 1980.

Climber with copious scattered prickles. Branchlets and leaf-rachises rusty pubescent, with plate-shaped glands at the base of petioles and between upper pinnae. Pinnae 8–22 pairs; leaflets 30–54 pairs, linear, 5–10 × 0.5–1.5 mm, densely crowded, base truncate, apex slightly obtuse, margin ciliate, midvein more close to upper margin. Flowers in globular heads of 1 cm in diam., forming axillary or terminal panicle. Peduncles 1–2 cm, solitary or 2–3-fasciculate, dark brown pubescent. Calyx subcampanulate, 1.5 mm, 5-toothed. Corolla 2 mm. Ovary puberulent. Pods strap-shaped, 9–20 × 2–3.5 cm, glabrous or puberulous when young, margin slightly sinuate. Seeds 8–12, oblong, flat.

Locality: Sha Tau Kok. *F. W. Xing* 8891.

Distribution: Hainan, Guangdong, Fujian, Yunnan; tropical Asia and Africa.

Ecology: Thin forests, usually climbing on shrubs or small trees. Flowering: Mar.–Oct.; fruiting: Jul.–Apr.

## 6. *Mimosa* L. 含羞草屬

Shrubs or herbs, mostly armed, rarely trees or climbers. Stipules small; stipels usually 2 to each pinna. Leaves bipinnate, often sensitive. Flowers small, bisexual or polygamous, sessile, usually 4-merous, in globose heads or cylindrical spikes. Peduncles axillary, solitary or fasciculate in the upper axils, the upper ones sometimes racemously branched. Calyx campanulate with teeth. Petals 4, connate at base. Stamens 4 or 8, free, exerted; anthers without glands at apex. Ovary many-ovuled; style filiform. Pods oblong or linear, usually plano-compressed, membranous or leathery, consisting of 3–6 one-seeded joints, separating from the persistent margins. Seeds ovate or orbicular, flat.

About 480 species mostly in tropical America; three species and one variety introduced to China; two species naturalized in Hong Kong. *Mimosa diplotricha* C. Wright ex Sauvalle (巴西含羞草) and *Mimosa diplotricha* var. *inermis* (Adelb.) Veldk. (無刺含羞草) have also been recorded previously.

- 1a. Pinnae 1 or 2 pairs; shrubby herb to 90 cm; flowers pink; pods armed ..... 1. *M. pudica*  
 1b. Pinnae 4–9 pairs; shrub to tree, 3–6 m; flowers white; pods unarmed ..... 2. *M. bimucronata*

### 1. *Mimosa pudica* L. 含羞草

(Fig. 23; Photo 67)

Sp. Pl. 518. 1753; FKH 91. 1912; FRPS 39: 16. 1988; FGD 5: 156, fig. 89. 2003.

Diffuse shrubby herb, 30–90 cm tall. Stems terete, branched, with reflexed bristles and scattered curved prickles. Stipules lanceolate, 5–10 mm, bristly. Pinnae and leaflets sensitive; pinnae usually 2 pairs, digitate, 3–8 cm; leaflets 10–20 pairs, linear-lanceolate, 8–13 × 1.5–2.5 mm, apex acute, margins ciliate. Heads globular, 1 cm in diam.; peduncle long, 1–2, axillary. Flowers small, pink, numerous; bracts linear. Calyx minute. Corolla campanulate, lobes 4; pubescent abaxially. Stamens 4, exerted. Ovary with short stalk, glabrous; ovules 3–4; style filiform, stigma small. Pods oblong, 1–2 × 5 mm, flat, slightly recurved, consisting of 3–5 one-seeded joints which fall away from the persistent, bristly sutures. Seeds ovate, 3.5 mm.

Locality: Naturalized in Hong Kong. *L. T. Lo* 138; *HK sheet* 1579, 8719.

Distribution: Fujian, Guangdong, Guangxi, Taiwan, Yunnan; native to tropical America, naturalized in tropical regions of the world.

Ecology: Wastelands, roadsides or cultivated. Flowering: Mar.–Oct.; fruiting: May–Nov.

Uses: Ornamental, weeds.

### 2. *Mimosa bimucronata* (A. P. de Candolle) O. Kuntze

光荚含羞草

(Photo 68)

Revis. Gen. Pl. 1: 198. 1891.

*Acacia bimucronata* A. P. de Candolle, *Prodr.* 2: 469. 1825.

*Mimosa sepriaria* Benth., *Hooker's J. Bot.* 4(32): 395. 1842.

Shrubs deciduous, 3–6 m tall. Branchlets unarmed in distal parts, in lower parts armed by up to 1 cm, recurved prickles, densely yellow tomentose. Pinnae 4–9 pairs, to 1.5–8 cm, rachis unarmed, pubescent; leaflets 12–16 pairs, linear, 5–7 × 1–1.5 mm, leathery, glabrous to puberulous with ciliate margin, main vein near upper side, apex mucronate. Heads globose, forming a spreading panicle with compound, spreading lower branches. Flowers white, scented. Calyx cup-shaped, minute. Petals oblong, 2.5–4 mm, connate at base. Stamens 8; filaments 4–5 mm. Ovary initially glabrous. Pods brown, straight, strap-shaped, 3.5–4.5 × 0.6 cm, unarmed, finely reticulate-venulose, usually with 4–8

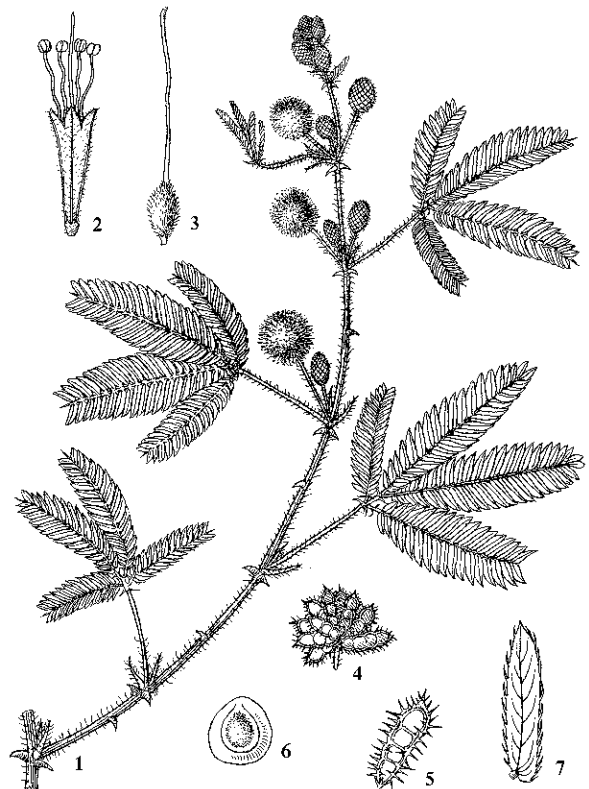


Figure 23. *Mimosa pudica* L.

1. portion of plant; 2. flower; 3. pistil; 4. inflorescence; 5. legume; 6. seed; 7. leaflet. (drawn by H. P. Yu)

segments. Seeds olivaceous, ovoid, compressed, ca. 4.5 mm.

Locality: Cultivated or naturalized. *Y. S. Lau 2554*; *L. T. Lo 464*; *P. S. Choi 241*.

Distribution.: Guangdong (cultivated); S America (native to NE Argentina and E Brazil).

Ecology: Flowering: Mar. –Sept.; fruiting: Oct. –Nov.

### 7. *Entada* Adans. 藤楹屬

Large woody climbers or scandent shrubs, usually unarmed. Stipules small, setaceous. Leaves bipinnate; petiolar glands absent; terminal pair of pinnae sometimes transformed into tendril; leaflets opposite, 1–many pairs, small and numerous. Flowers bisexual or polygamous, 5-merous, sessile, in slender spikes, solitary or forming raceme-like panicles, axillary or supra-axillary. Calyx campanulate, shortly dentate. Petals free or slightly united at base. Stamens 10, shortly connate at the base and adnate to petals, exserted; anthers with a deciduous gland at apex; filaments filiform. Ovary subsessile; ovules numerous; style filiform; stigma minute. Pods large and long, straight or curved to spirally twisted, plano-compressed, leathery or woody, valves splitting transversely at maturity into 1-seeded segment; segments falling away from the suture, which persists as an empty frame. Seeds large, globular to orbicular, testa thick, brown.

Approximately 30 species mainly in tropical Africa & America; two species and one variety in China; one species in Hong Kong.

#### 1. *Entada phaseoloides* (L.) Merr.

楹藤

(Fig. 24; Photo 69)

Philip. J. Sci. Bot. 9: 86. 1914; FRPS 39: 13. 1988; FGD 5: 158, fig. 92. 2003.

*Lens phaseoloides* L. Herb. Amb. 18. 1754.

Evergreen, large, woody climber. Stems spirally twisted. Branches glabrous. Petioles short; leaves 10–25 cm; pinnae usually 2 pairs; leaflets 1–2(–4) pairs, opposite, apical pair of pinnae transformed into tendril; leaflets leathery, elliptic or long-obovate, 3–9 × 1.5–4.5 cm, base slightly oblique, apex obtuse, emarginate. Spikes 15–25 cm, densely flowered, solitary or forming a panicle, villose. Flowers small, white, slightly fragrant. Bracts pubescent. Calyx campanulate, 2 mm, 5-toothed. Petals 5, oblong, 4 mm, glabrous, apex acute, slightly united at base. Stamens slightly longer than corolla. Ovary glabrous, style filiform. Pods up to 100 × 8–12 cm, curved, flat, with a parchment-like endocarp. Seeds dark brown, orbicular, 4–6 cm in diam., flat, testa woody, brilliant.

Locality: Tai Po Kau, Mau Ping, Hoi Ha, Kei Ling Ha Lo Wai. *Y. S. Lau 2571*; *Y. W. Lam 574*; *K. Y. Tam 120*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Xizang, Fujian, Taiwan.

Ecology: Forests. Fruiting: Apr.

Uses: Medicinal (folklore).

Notes: Listed in *Rare and Precious Plants of Hong Kong*.

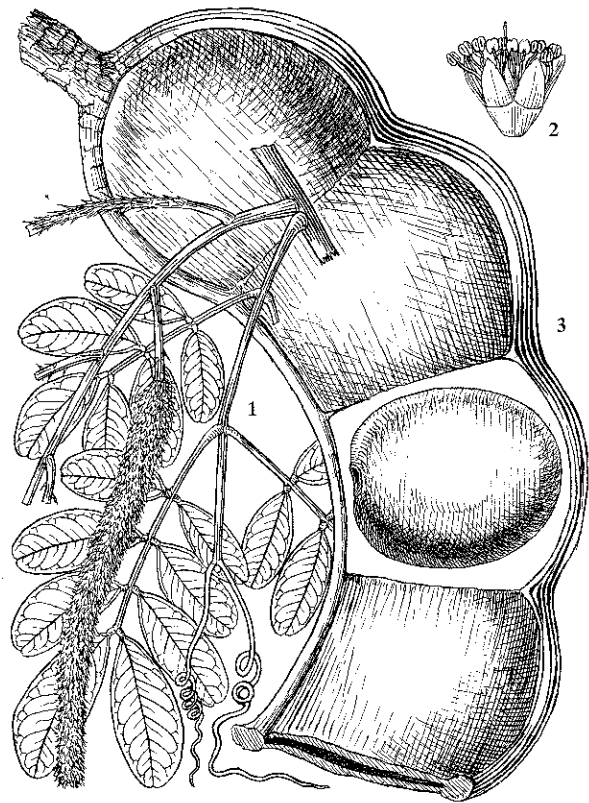


Figure 24. *Entada phaseoloides* (L.) Merr.

1. flowering branch; 2. flower; 3. portion of legume.

### 8. *Leucaena* Benth. 銀合歡屬

Trees or shrubs, unarmed. Stipules setaceous, small, deciduous. Petioles often glandular; leaves bipinnate; leaflets numerous and small or few and larger, oblique. Flowers sessile, usually bisexual, in globose heads. Peduncles solitary or fasciculate, axillary. Bracts usually 2. Calyx campanulate, 5-toothed. Petals 5, free or nearly so. Stamens 10, free, exserted; anthers without gland at apex. Ovary stipitate, ovules numerous; style filiform. Pods stipitate, broadly linear, plano-compressed, leathery, 2-valved, without septa. Seeds many, transverse, ovate, flat.

About 40 species, all in America, one species introduced and naturalized in the Old World; it occurs in mainland China and Hong Kong.

#### 1. *Leucaena leucocephala* (Lam.) de Wit 銀合歡

(Fig. 25; Photo 70)

Taxon 10(2): 53. 1961; FRPS 39: 18. 1988; FGD 5: 156, fig. 90. 2003.

*Mimosa leucocephala* Lam., Encycl. 1(1): 12. 1783.

*Leucaena glauca* (Willd.) Benth., J. Bot. (Hooker) 4(32): 416. 1842; FHK 100. 1861; FKH 91. 1912.

*Mimosa glauca* L., Sp. Pl. (ed. 2) 1504. 1763, non 1753.

Shrub or small tree, 2–6 m tall, unarmed. Branchlets pubescent, glabrous in age, with brown lenticels. Stipules deltoid, very small, caducous.

Pinnae 4–8 pairs, 5–9(–16) cm, rachis pubescent, with black glands at the insertion of lowest pinnae; leaflets 5–15 pairs, linear-oblong, 7–13 × 1.5–3 mm, base cuneate, apex acute, margin ciliate, midvein close to upper margin. Heads usually 1–2, axillary, 2–3 cm in diam. Bracts pubescent, deciduous. Peduncle 2–4 cm. Flowers white. Calyx 3 mm, apex 5-toothed, pubescent abaxially. Petals narrowly oblanceolate, 5 mm, pubescent abaxially. Stamens 10, sparsely pubescent, 7 mm. Ovary shortly stipitate, sparsely pubescent, stigma cupulate. Pod leathery, strap-shaped, 10–18 × 1.4–2 cm, straight, flat, base attenuate, pedicels in fruit up to 3 cm, pubescent, beak acute, hard. Seeds 6–25, brown, oval, 7.5 mm, flat, glossy.

Locality: Cultivated and naturalized. *H. C. Tang* 623, 870; *Y. S. Lau* 3290.

Distribution: Fujian, Guangdong, Guangxi, Taiwan, Yunnan; originally from tropical America, now widely distributed in tropical and subtropical regions.

Ecology: Hillslopes, margins of forests. Flowering: Apr. – Jul; fruiting: Aug. – Oct.

Uses: Environmental (agroforestry), green manure, animal food, fuelwood.

### 9. *Adenanthera* L. 海紅豆屬

Unarmed trees. Stipules small, caducous. Leaves bipinnate, spirally arranged, without glands; leaflets small, alternate, in many pairs. Inflorescences racemose or paniculate, axillary or terminal. Flowers white or yellowish, bisexual or polygamous, shortly stipitate. Calyx campanulate, shortly 5-toothed. Petals 5, lanceolate, coherent below middle or soon free. Stamens 10, free, slightly longer than petals. Anthers ovate, with a deciduous gland at apex. Ovary sessile, many-ovuled; style filiform; Pods strap-shaped, straight, falcate or slightly twisted, leathery, septate between seeds, dehiscent along sutures when ripe. Seeds thick, testa hard, scarlet or two-coloured, mostly enclosed by a thin pulp.

Ten species distributed in tropical Asia and Pacific Islands; one species in mainland China and Hong Kong.

#### 1. *Adenanthera microsperma* Teijsm. & Binn.

海紅豆

(Fig. 26; Photo 71)

*Natuurk. Tijdschr. Nederl. Ind.* 27: 58. 1864.

*Adenanthera pavonina* var. *microsperma* (Teijsm. & Binn.) I. C. Nielsen, *Adansonia* n.s. 2, 19(3): 341. 1980; *FRPS* 39: 5, pl. 1. 1988.

*Adenanthera pavonina* auct. non L.: Dunn & Tutcher, *FKH* 90. 1912.

Deciduous tree, 5–20 m tall. Branchlets puberulent. Leaves bipinnate. Petioles and leaf-rachis puberulent, eglandular; pinnae 3–5 pairs; leaflets 4–7 pairs, alternate, oblong or ovate, 2.5–3.5 × 1.5–2.5 cm, broadly obtuse at both ends, puberulent on both surfaces, with short petiolules. Racemes axillary, simple or forming terminal panicle on branchlets, puberulent. Flowers small, white or yellow, fragrant, shortly pedicellate. Calyx less than 1 mm, as well as pedicels golden yellow puberulous. Petals lanceolate, 2.5–3 mm, glabrous, slightly connate at base. Stamens 10, as long as corolla or longer. Ovary villose, nearly sessile; style filiform; stigma small. Pods narrowly oblong, 10–20 × 1.2–1.4 cm, valves contorted after dehiscence. Seeds red, bright, subglobose to ellipsoidal, 5–8 × 4.5–7 mm.

Locality: Chai Wan, Happy Valley, Ting Kok, Lam Tsuen, Hang Ha Po, Ma On Shan. *Y. S. Lau* 1323; *H. C. Tang* 2286; *Y. W. Lam* 93.

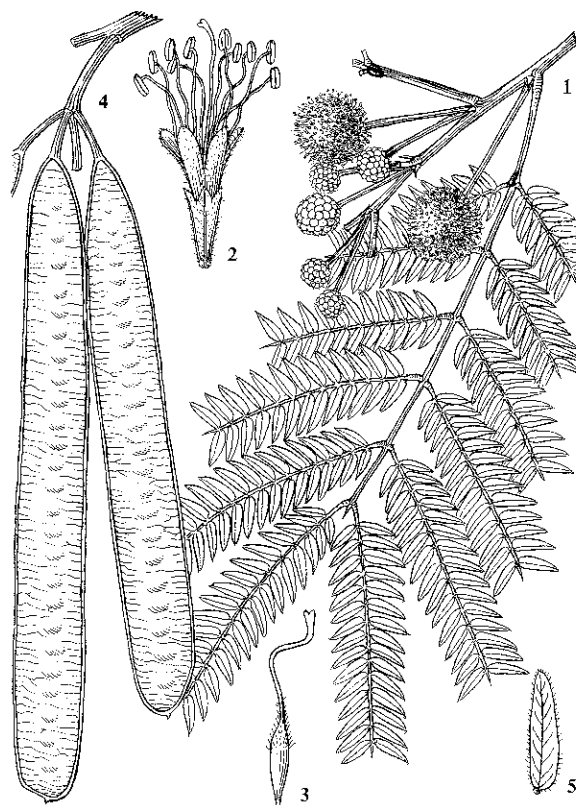


Figure 25. *Leucaena leucocephala* (Lam.) de Wit

1. flowering branch; 2. flower; 3. pistil; 4. legumes; 5. leaflet. (drawn by H. P. Yu)

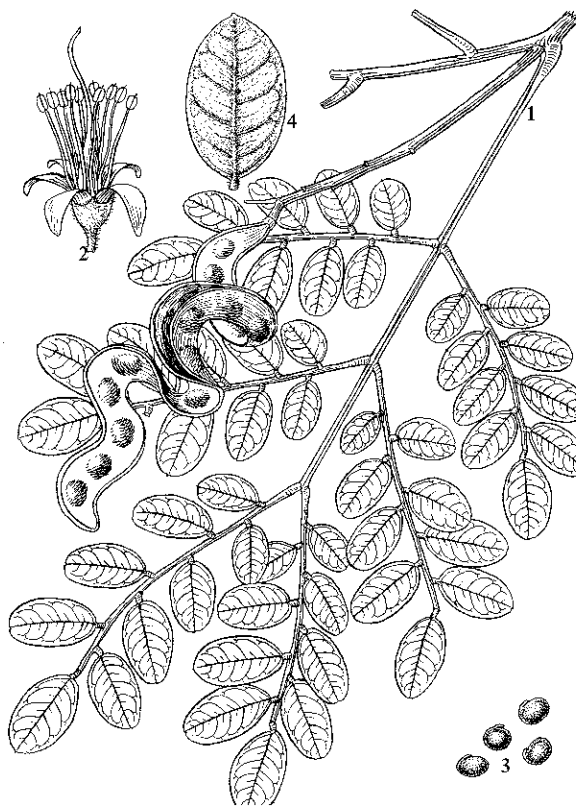


Figure 26. *Adenanthera microsperma* Teijsm. & Binn.

1. fruiting branch; 2. flower; 3. seeds; 4. leaflet. (drawn by H. P. Yu)

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Fujian, Taiwan; Cambodia, Indonesia, Laos, Malaysia, Myanmar, Vietnam.

Ecology: Forests near villages or cultivated in gardens. Flowering: Apr.–Jul.; fruiting: Jul.–Oct.

Uses: Ornamental.

## 184. CAESALPINIACEAE 蘇木科

XIA Nian-he 夏念和 • DENG Yun-fei 鄧雲飛

Trees or shrubs, sometimes vines, rarely herbs, unarmed or armed with sharp prickles. Leaves alternate, pinnate or bipinnate or 1-foliolate, rarely simple; stipules mostly caducous, stipules present or absent. Flowers mostly bisexual, rarely unisexual, zygomorphic, rarely actinomorphic, usually 5-merous. Inflorescences racemose or paniculate, rarely spicate, terminal or rarely leaf-opposed. Bracts small or calyx-like. Sepals 5, or 4 by the union of 2, free or partly united, imbricate or rarely valvate. Petals 5, rarely 4 or absent, the uppermost (adaxial) one covered by the neighbouring 2 petals. Stamens 10, or fewer, rarely many, filaments free to variously connate; anthers 2-celled, usually dehiscent lengthwise, rarely by apical pores. Disk sometimes present. Ovary stipitate or sessile, free or ± adnate to the hypanthium; styles single, undivided; ovules superposed, 1–many. Fruit a legume, 2-valved, or indehiscent. Seeds sometimes arillate, endosperm often wanting; cotyledons fleshy or foliaceous.

About 153 genera and 2800 species mostly distributed in tropical and subtropical regions of the world, some expanding to temperate regions; 21 genera and about 110 species in China; 11 genera, 31 species and one variety in Hong Kong.

- 1a. Leaves simple, usually bilobed at apex..... 1. *Bauhinia*
- 1b. Leaves pinnate or bipinnate.
  - 2a. Branches armed with spines or prickles.
    - 3a. Branches armed with single or branched spines; flowers polygamous ..... 2. *Gleditsia*
    - 3b. Branches armed with prickles; flowers bisexual ..... 3. *Caesalpinia*
  - 2b. Branches unarmed.
    - 4a. Leaves bipinnate.
      - 5a. Pods dehiscent into 2 valves, not winged ..... 4. *Delonix*
      - 5b. Pods indehiscent, winged along both sutures ..... 5. *Peltophorum*
    - 4b. Leaves pinnate.
      - 6a. Petals absent ..... 6. *Saraca*
      - 6b. Petals present.
        - 7a. Petals 5, all developed.
          - 8a. Petioles and leaf rachis eglandular ..... 7. *Cassia*
          - 8b. Petioles and leaf rachis often glandular.
            - 9a. Androecium actinomorphic; anther-cells ciliate along the sutures; pods dehiscent elastically, valves coiling; seed coat without areoles ..... 8. *Chamaecrista*
            - 9b. Androecium zygomorphic; anther-cells glabrous along the suture; pods either indehiscent or dehiscent elastically; seed coat areolate ..... 9. *Senna*
        - 7b. Petals 3 developed, 2 reduced to scales.
          - 10a. Leaflets 3–5 pairs ..... 10. *Lysidice*
          - 10b. Leaflets 10–20 pairs ..... 11. *Tamarindus*

### 1. *Bauhinia* L. 羊蹄甲屬

Trees, shrubs, or woody vines; stems often flattened, and sometimes with undivided tendrils at the base of inflorescence. Leaves simple, alternate, entire or 2-lobed or almost 2-foliolate, palmately-veined; stipules small, scale-like, caducous. Inflorescences racemose, paniculate or corymbose; bracts and bracteoles usually linear, caducous; flowers zygomorphic, bisexual, rarely unisexual; calyx-tube short-turbinate, sometimes elongated, limb entire or closed at the apex or shortly 5-toothed; teeth imbricate, variously split during flowering, spatheaceous or valvately 5-lobed or partite; petals 5, subequal, usually with a distinct claw; perfect stamens 10, 5 or 3, rarely 1 or 2, filaments free, linear, anthers dorsal, opening lengthwise; staminodes many; ovary usually stipitate, 2–many-ovuled; styles filiform or short; stigmas terminal, peltate or oblique. Legume oblong or linear, rarely falcate, indehiscent or 2-valved. Seeds many, spherical or ovoid, compressed, with or without endosperm.

About 300 species distributed in tropical and subtropical regions of the world; about 30 species in China; six species and one variety in Hong Kong.

- 1a. Trees or shrubs.
  - 2a. Perfect stamens 3..... 1. *B. purpurea*
  - 2b. Perfect stamens 5.
    - 3a. Inflorescence corymbose; flowers fertile, capable of bearing fruit.
      - 4a. Petals violet..... 2. *B. variegata*

- 4b. Petals white.....2a. *B. variegata* var. *candida*  
 3b. Inflorescence racemose; flowers sterile, usually no pods produced.....3. *B. blakeana*  
 1b. Woody vines.  
 5a. Inflorescence racemose.....4. *B. championii*  
 5b. Inflorescence corymbose.  
 6a. Leaves palmately 7-veined; seeds oblong.....5. *B. corymbosa*  
 6b. Leaves palmately 9–11-veined; seeds ovoid.....6. *B. glauca*

**1. *Bauhinia purpurea* L. 紅花羊蹄甲**

(Photo 72)

Sp. Pl. 1: 375. 1753; FHN 2: 216. 1965; FRPS 39: 156. 1988; FGD 5: 190. 2003; FGX 2: 475. 2005.

*Phanera purpurea* (L.) Benth., Pl. Jungh. 2: 262. 1852.

Evergreen tree, 5–10 m tall; bark greyish, smooth; branches glabrescent. Petioles 2.5–4.5 cm; stipules minute, 1–2 mm; leaf blades thick-papery, suborbicular in outline, 10–15 × 9–14 cm, abaxially sparsely pubescent, adaxially glabrous, 2-lobed to 1/3–1/2 of the length, base rounded to cordate, apex of lobes rounded, palmately 9–13-veined. Racemes lateral or terminal, 6–10-flowered, sometimes compound, brown sericeous. Bracts ovate-acute, 1–2 mm; bracteoles similar, inserted at about the middle of the pedicel. Buds clavate, velvety, 4–5-angled mainly toward the twisted apex, 3–5 mm. Peduncles 7–12 mm. Hypanthium turbinate, 7–12 mm. Sepals splitting on one side into 2 reflexed lobes, 2–2.5 cm. Petals 5, reddish, narrowly lanceolate, the posterior oblanceolate, 3–5 cm, claw 5–10 mm, pink or dark purple. Fertile stamens 3(–4); filaments shortly connate at base, 3–4 cm; anthers 5–7 mm; staminodes 5 or 6, filiform, 6–10 mm. Ovary velvety, 1 cm, stipitate; stipe 1 cm, yellowish brown sericeous; styles short; stigma peltate, oblique, flat. Pods linear, compressed, 12–25 × 2–2.5 cm, glabrous, irregularly veined, dehiscent. Seeds ca. 10, suborbicular, flat, 1.2–1.5 cm in diam., dark brown.

Locality: Cultivated. *Y. S. Lau 637. 1352; HK sheet 8645.*

Distribution: Hainan, Guangdong; tropical Asia, cultivated in tropical regions.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

**2. *Bauhinia variegata* L. 宮粉羊蹄甲**

(Photo 73)

Sp. Pl. 1: 375. 1753; FKH 90. 1912; FHN 2: 218. 1965; FRPS 39: 159. 1988; FGD 5: 190. 2003; FGX 2: 475. 2005.

*Phanera variegata* (L.) Benth., Pl. Jungh. 2: 262. 1852.*Bauhinia variegata* var. *chinensis* DC., Prodr. 2: 514. 1825.

Tree, up to 15 m tall; branches greyish pubescent, glabrescent. Petioles 2.5–3.5 cm, puberulous to glabrous; stipules minute, 1–2 mm, caducous; leaf blades broadly ovate to orbicular in outline, 5–9 × 7–11 cm, adaxially glabrous, abaxially glaucous and sparsely greyish pubescent, 2-lobed to 1/3 of the length, base cordate, sometimes truncate, apex of lobes rounded, palmately 11–13-veined. Racemes lateral or terminal, subcorymbose, few-flowered; axis tomentose. Peduncles stout and short. Pedicels short, 3–5 mm. Bracts triangular, very small, caducous; bracteoles similar, inserted below the middle of pedicel. Flower-buds fusiform, 3–4 cm, finely hairy. Hypanthium infundibuliform, ca. 15 cm long. Sepals 2–3 cm, splitting on one side; lobes 2–3 cm. Petals subequal, violet, obovate or oblanceolate, 4–5 cm, with a short claw, margin often crisped. Fertile stamens 5, unequal; filaments 2–4 mm, glabrous; anthers 6–7 mm, elliptic; staminodes 5, capillary, 0.5–1 cm. Ovary pubescent particularly along the sutures, ca. 2 cm, stipitate; stipe pubescent, 1.5 cm; style short; stigma small, capitate. Pod strap-shaped, obliquely striate, 15–25 × 1.5–2 cm, dehiscent. Seeds 10–15, flat, orbicular, 1.0–1.5 cm in diam.

Locality: Cultivated. *W. J. Tutcher 8420; H. C. Tang 92; HK sheet 41000.*

Distribution: S China; Malaysia, Vietnam, Laos, Thailand, Myanmar, India.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

**2a. *Bauhinia variegata* var. *candida* (Aiton) Buch.-Ham. 白花洋紫荆**

(Photo 74)

Trans. Linn. Soc. London 13(2): 497. 1822; FRPS 39: 159. 1988; FGD 5: 190. 2003.

*Bauhinia candida* Aiton, Hort. Kew. 2: 49. 1789.*Bauhinia variegata* var. *albiflora* de Wit, Reinwardtia 3: 412. 1956.

Petals white. Staminodes absent.

Locality: Cultivated. *H. C. Tang 17; HK sheet 41004, 41005.*

Distribution: S China; Vietnam, Laos, Thailand, Myanmar, India.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

**3. *Bauhinia* × *blakeana* Dunn 洋紫荆**

(Fig. 27; Photo 75)

J. Bot. 46(10): 325. 1908; FRPS 39: 156. 1988; FGD 5: 191. 2003; FGX 2: 475, pl. 199: 1–2. 2005.

Tree, 8–10 m; branchlets pubescent. Petioles 3.5–4 cm, brown pubescent; leaf blades sub-leathery, suborbicular or broadly cordate in outline, 8.5–13 × 9–14 cm, adaxially glabrous, abaxially sparsely pubescent, 2-lobed to 1/4–1/3 of the length, base cordate or sometimes truncate, apex of lobes obtuse, 9–13-veined. Racemes terminal or axillary, sometimes paniculate. Bracts and bracteoles triangular, acute at apex, 2–3.5 mm. Flower-buds fusiform, ca. 2.5 cm. Hypanthium turbinate. Petals red, subequal, oblanceolate, clawed,

5–8 × 2.5–3 cm. Fertile stamens 5; staminodes 2–5. Ovary pubescent, long stipitate. Pods usually not produced.

Locality: Cultivated. *Y. S. Lau 2651*; *P. S. Choi 22*; *HK sheet 40999*.

Distribution: Cultivated in tropical regions.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

Notes: The species was originally discovered near the seashore in Pok Fu Lam by the fathers of the Mission Etrangères in Hong Kong, who produced cuttings. The type specimen was collected from a tree raised from such cuttings and cultivated in the Hong Kong Botanical Gardens in 1905. The specific epithet commemorated Sir Henry and Lady Blake for their support to the Gardens. The species was adopted as the city flower of Hong Kong in 1965 and became the floral emblem of the Hong Kong Special Administrative Region in 1997. Local researchers, based on molecular evidence, confirmed that this species was a hybrid between *B. purpurea* L. and *B. variegata* L. (*Amer. J. Bot.* 92: 525–533. 2005; *J. Integr. Plant Biol.* 50: 111–118. 2008).

#### 4. *Bauhinia championii* (Benth.) Benth.

缺葉藤 (龍鬚藤) (Fig. 28; Photo 76)

*FKH 99. 1861*; *FKH 90. 1912*; *FHN 2: 221. 1965*; *FRPS 39: 172. 1988*; *FGD 5: 194. 2003*; *FGX 2: 479, pl. 202: 1–9. 2005*.

*Phanera championii* Benth., *Hooker's J. Bot. Kew Gard. Misc.* 4: 78. 1852.

Woody tendrilled vine; branches rusty pubescent; tendrils simple or in pairs. Petioles 0.8–4 cm, sparsely pubescent; leaf blades papery, ovate to ovate-lanceolate or cordate, 5.5–10 × 2–11 cm, base truncate or cordate, apex acuminate, rounded, obtuse or bilobed, usually acuminate at apex of lobes, adaxially glabrous, abaxially pubescent, gradually glabrescent, glaucous when dry, 5–9-veined. Racemes axillary, sometimes opposite to leaves or several in panicle, 5–25 cm, grey pubescent. Bracts and bracteoles small, subulate, ca. 1 mm. Flower-buds ellipsoidal, 2.5–4 mm, grey pubescent. Pedicels slender, 0.7–1.5 cm. Hypanthium funnel-shaped, ca. 2 mm; sepals lanceolate, ca. 3 mm. Petals white, spatulate, ca. 4.5 mm, clawed. Fertile stamens 3, filaments ca. 5.5 mm, glabrous; staminodes 2. Ovary short stipitate, pubescent, style short, stigma small. Pods obovate-oblong or narrowly oblong, 5–13 × 1.5–3.5 cm, leathery, flat, glabrous. Seeds 2–5, orbicular, flat, 0.8–1.3 cm in diam.

Locality: Common in Hong Kong. *H. C. Tang 1872, 2038*; *Y. S. Lau 1272*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; India, Vietnam, Indonesia.

Ecology: Thin forest and thickets. Flowering: Jun.–Oct.; fruiting: Jul.–Dec.

Notes: The type specimen was collected from Victoria Peak by J. G. Champion between 1847 and 1850.

#### 5. *Bauhinia corymbosa* Roxb. ex DC.

首冠藤 (深裂葉羊蹄甲) (Photo 77)

*Mem. Legum.* 13: 487. 1825; *FKH 90. 1912*; *FRPS 39: 196. 1988*; *FGD 5: 196. 2003*.

*Phanera corymbosa* (Roxb. ex DC) Benth., *Pl. Jungh.* 2: 264. 1852.

Woody tendrilled vine; young branches tendrils, petioles and inflorescence reddish pubescent; tendrils simple or paired. Petioles 0.7–2 cm; stipules linear, slightly falcate, pointed, ca. 2 mm; leaf

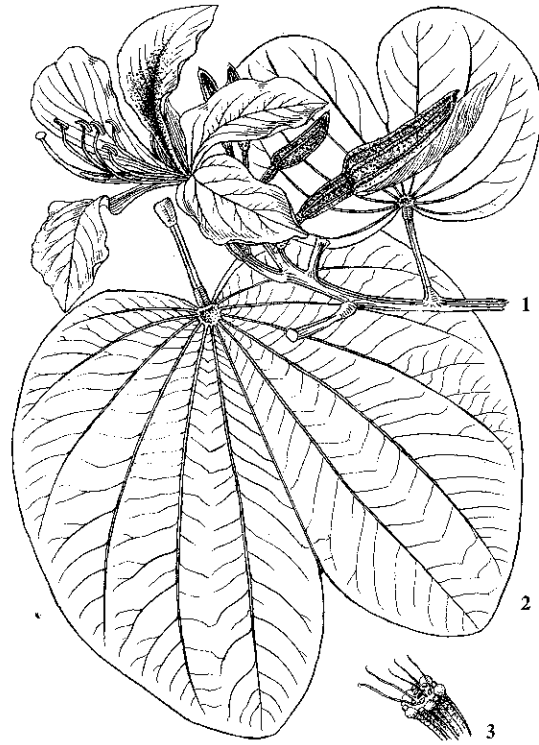


Figure 27. *Bauhinia* × *blakeana* Dunn  
1. flowering branch; 2. leaf; 3. dissected view showing staminodes receptacle. (drawn by H. P. Yu)

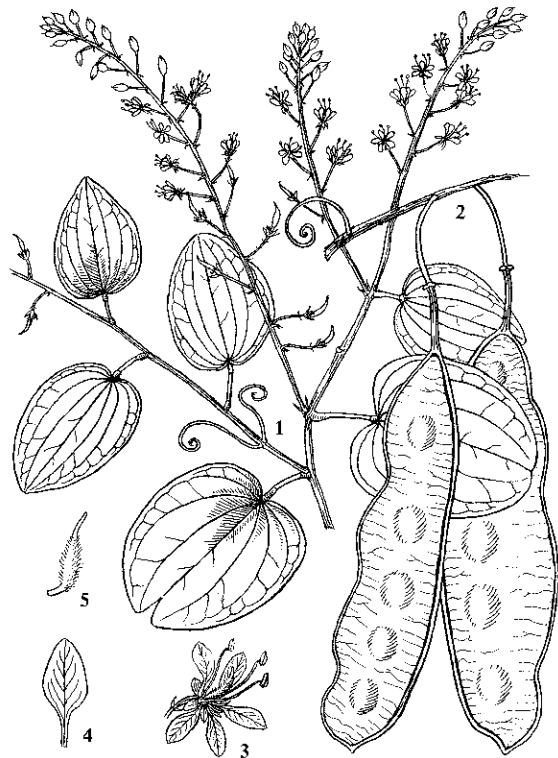


Figure 28. *Bauhinia championii* (Benth.) Benth.  
1. flowering branch; 2. fruiting branch; 3. flower; 4. petal; 5. pistil. (drawn by H. P. Yu)

blades papery, suborbicular, 1.5–4 × 2–4 cm, 2-lobed to 2/3–3/4 of the length, base truncate or slightly cordate, apex of lobes rounded, adaxially glabrous, abaxially glabrous or reddish brown pubescent at base and along the veins, 7-veined. Inflorescences terminal or leaf opposite, pyramidal or conical corymbs. Peduncles short. Pedicels slender, ca. 1 cm. Bracts and bracteoles subulate, ca. 3 mm. Flower-buds ovoid, apex acute, reddish brown pubescent. Hypanthium 1.8–2.5 cm. Sepals ca. 6 mm, abaxially pubescent, reflexed when anthesis. Petals white, pinkish striated, broadly spatulate or suborbicular, 7–12 × 6–10 mm, abaxially velutinous, margin revolute, claw short. Fertile stamens 3, filaments reddish, 0.8–1 cm; staminodes 2–5. Ovary stipitate, glabrous; stigma peltate. Pods narrowly oblong, 10–25 × 1.5–2.8 cm, thick leathery, flat, straight or slightly falcate, glabrous, glossy. Seed many, oblong, ca. 8 mm in diam., brown.

Locality: Yim Tin Tsai, Lantau Island. *Gibson 5616; F. W. Xing 9675.*

Distribution: Hainan, Guangdong, Guangxi; Vietnam, widely cultivated in tropical and subtropical regions.

Ecology: Forest and thickets. Flowering: Apr.–Jun.; fruiting: Sep.–Dec.

Uses: Ornamental.

**6. *Bauhinia glauca* (Wall. ex Benth.) Benth. 粉葉羊蹄甲(羊蹄甲藤) (Photo 78)**  
 FHK 99. 1861; FKH 90. 1912; FRPS 39: 194. 1998; FGD 5: 196. 2003; FGX 2: 486, pl. 206: 1–9. 2005.

*Phanera glauca* Wall. ex Benth., Pl. Jungh. 2: 265. 1852.

Woody tendrilled vines; young branches reddish pubescent, soon glabrescent. Petioles 2–4 cm, sparsely pubescent; stipules linear, ca. 4 mm; leaf blades papery, suborbicular, 4–9 × 4–10 cm, 2-lobed to 1/3–1/2 of the length, with rather narrow sinus and ovate, obtuse lobes, base broadly cordate or truncate, adaxially glabrous, abaxially sometimes sparsely pubescent, 9–11-veined. Inflorescences of short, compact corymbs, lateral. Peduncles 2.5–6 cm, rusty pubescent, gradually glabrescent. Pedicels 1–2 cm. Flower-buds ovoid, rusty pubescent. Bracts subulate, ca. 5 mm; bracteoles similar but smaller, 4–5 mm, inserted in the lower half of the pedicel. Hypanthium 1.2–1.5 cm, sparsely pubescent. Sepals ovate, ca. 6 mm, acute, abaxially rusty pubescent. Petals white, obovate, subequal, margin undulate, 1–1.2 cm, claw ca. 8 mm. Fertile stamens 3, filaments pink, longer than petals; staminodes 5–7. Ovary glabrous stipitate; styles ca. 4 mm, stigma oblique, peltate. Pods narrowly oblong, straight or falcate, 12–32 × 2–6 cm, thin, glabrous, indehiscent. Seeds 10–20, ovate, flat, ca. 1 cm.

Locality: Common in Hong Kong. *Y. S. Lau 1975; HK sheet 40113, 40600.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Jiangxi; India, Myanmar, Laos, Cambodia, Vietnam, Malaysia.

Ecology: Margins of forests and thickets. Flowering: Apr.–Jun.; fruiting: Jul.–Sep.

Uses: Ornamental.

## 2. *Gleditsia* L. 皂莢屬

Deciduous trees or shrubs, polygamous or dioecious. Stems and branches armed with stout, simple or branched spines. Leaves pinnate or bipinnate, rachis often furrowed; stipules small, caducous; leaflets alternate or subopposite. Inflorescence a raceme or panicle. Hypanthium campanulate, hairy. Calyx lobes 3–5, subequal, imbricate. Petals 3–5, slightly unequal, as long as calyx lobes or slightly longer, imbricate. Stamens 5–10, exerted or not; filaments distinct, slightly flattened and curved, tomentose at lower half; anthers dorsifixed. Ovary sessile or shortly stipitate; ovules 2–many; style short; stigma large. Pods flattened, indehiscent or tardily dehiscent. Seeds 1–many, ovoid or ellipsoidal, flat or subcylindrical.

About 14 species distributed in C & SE Asia, E N America and S America; six species in China; two species in Hong Kong.

- 1a. Leaves bipinnate, rarely pinnate; leaflets with sparse and inconspicuous reticulate veins; inflorescence paniculate; pods 8–12 cm ..... 1. *G. australis*  
 1b. Leaves pinnate; leaflets with dense and conspicuous reticulate veins; inflorescence racemose; pods 13.5–26 cm ..... 2. *G. fera*

**1. *Gleditsia australis* Hemsl. 小果皂莢 (Photo 79)**

J. Linn. Soc., Bot. 23: 208, t. 5. 1887; FKH 89. 1912; FRPS 39: 83, pl. 28: 5–8. 1988; FGD 5: 166. 2003; FGX 2: 446, pl. 183: 4–7. 2005.

*Gleditsia microcarpa* F. P. Metcalf, Lingnan Sci. J. 19(4): 552, fig. 3. 1940; FHN 2: 224. 1965.

Tree, 3–20 m tall. Branches greyish brown, armed with stout (3–5 cm), purplish brown, branched thorns. Leaves bipinnate or sometimes pinnate, 10–18 cm; pinnae 2–6 pairs; petiolules 0.5–1 mm; leaflets 5–9 pairs, papery or thin leathery, oblique elliptic or rhomboid-oblong, 2.5–5 × 1–2 cm, base oblique, cuneate, apex obtuse and emarginate, margin obtusely dentate or entire, slightly pubescent along veins adaxially, glabrous abaxially; reticulate veins sparse, inconspicuous. Inflorescence paniculate, terminal or axillary, to 28 cm. Male inflorescences many-flowered; bisexual inflorescences few-flowered. Flowers polygamous, pale green or greenish white. Pedicels 1–2.5 mm. Male flowers: 4–5 mm in diam.; calyx lobes lanceolate, as long as hypanthium, densely puberulous abaxially; petals elliptic, ca. 2 mm, densely pubescent on both surfaces. Bisexual flowers: 7–9 mm; hypanthium ca. 2 mm, glabrous, lobes 5–6, lanceolate, ca. 3 mm, puberulous abaxially, densely pale brown villous adaxially; petals 5–6, elliptic, pubescent abaxially, densely villous adaxially; stamens 5, included; ovary sessile, densely pale brown silky hairy. Pods linear-ellipsoidal, 8–12 × 1–2.5 cm, straight or curved, brownish black. Seeds 5–12, elliptic or oblong, 7–11 × 4–5 mm, blackish brown.

Locality: Tai Hang, Wong Nai Chung, Tai Wai, Tai Po. *S. P. Wong 9123; H. C. Tang 1005; Y. S. Lau 320.*

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Forests in valleys, sunny slopes. Flowering: Jun.–Oct.; fruiting: Nov.–Apr.

Notes: Two syntypes of this species, *Ford s.n.* and *Hance 18780* (K, BM), were collected from Hong Kong. The species was reported



as *Gleditsia macracantha* Desf. previously (Check List HK Plants 31. 1993, p.p.).

2. ***Gleditsia fera* (Lour.) Merr.** 華南皂莢 (Fig. 29; Photo 80)

Philipp. J. Sci. 13(3): 141. 1918; FGZ 319, fig. 173, 1956, excl. syn. *G. australis*; FHN 2: 223, fig. 417. 1965, excl. syn. *G. australis*; FRPS 39: 83, pl. 28: 1–4. 1988; FGD 5: 166. 2003; FGX 2: 446, pl. 183: 1–3. 2005.

*Gleditsia formosana* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 85. 1911.

*Gleditsia macracantha* auct. non Desf.: FKH 89. 1912.

*Gleditsia sinensis* auct. non Lam.: FHK 100. 1861.

*Mimosa fera* Lour., Fl. Cochinch. 2: 652. 1790.

Tree, 3–42 m tall. Branches greyish brown, armed with stout (to 13 cm), branched thorns. Leaves pinnate, 11–18 cm, rachis furrowed, glabrous or pilose; petioles not swollen at base; petiolules ca. 1 mm; leaflets 5–9 pairs, papery to subleathery, oblique elliptic or rhomboid-oblong, 2–7(–12) × 1–3(–5) cm, base oblique cuneate or obtuse, apex obtuse and emarginate, margin crenate or shallowly dentate, glabrous or sometimes pubescent along veins, dark brown and shining adaxially; reticulate veins dense, prominent on both surfaces. Inflorescences racemose, axillary or terminal, 7–16 cm. Flowers polygamous, pedicellate, greenish white. Male flowers: 6–7 mm in diam.; hypanthium ca. 2.5 mm; calyx-lobes triangular-lanceolate, 2.5–3 mm, densely pubescent abaxially; petals oblong, pubescent on both surfaces; stamens 10; staminodes linear, 4–5 mm, villose. Bisexual flowers: 8–10 mm in diam.; calyx, petals as male flowers except calyx-lobes with a ring of villose at base adaxially; stamens 5–6, anthers 5–6, ovate-triangular, apex sharp; ovary densely covered with brownish yellow silky hairs, with many ovules. Pods flat, 13.5–26 × 2.5–3 cm, straight or slightly curved, densely brownish yellow pubescent at first, later glabrescent, blackish brown, with a 5–10 mm fruit neck. Seeds many, ovate to oblong, flat or slightly raised on both surfaces, 8–11 × 5–6 mm, brown to brownish black, glossy.

Locality: Causeway Bay, Tai Po, Shek Kong, Lantau Island. Wild or cultivated. *K. Y. Chan 177*; *F. W. Xing 8595*; *HK sheet 38806*.

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Taiwan, Vietnam.

Ecology: Forests. Flowering: Apr.–May; fruiting: Jun.–Dec.

Uses: Fruit used as substitute of soap.

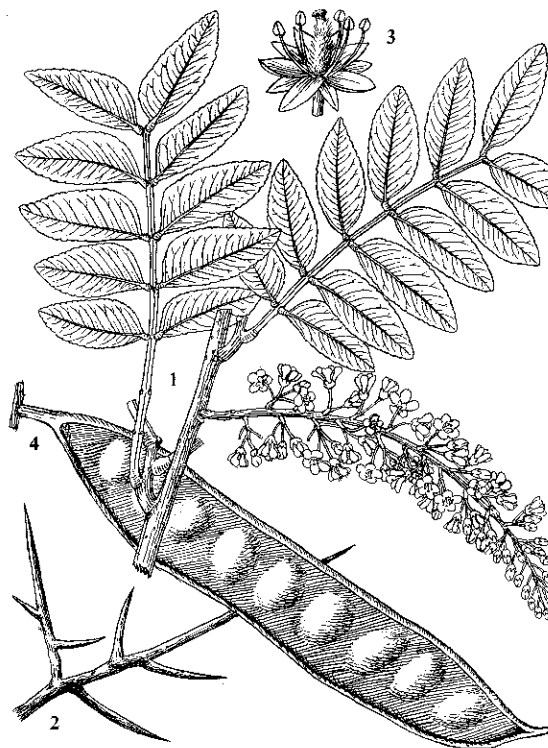


Figure 29. *Gleditsia fera* (Lour.) Merr.

1. flowering branch; 2. branched spine; 3. bisexual flower; 4. pod. (drawn by H. P. Yu)

### 3. *Caesalpinia* L. 雲實屬

Trees, shrubs or vines, unarmed or often armed with sharp prickles. Leaves bipinnate. Inflorescence a panicle or raceme, axillary or terminal. Flowers medium-sized or large, yellow or orange. Hypanthium concave. Sepals distinct, imbricate, the lower one larger, cucullate. Petals 5, clawed at base, 4 petals often orbicular, sometimes oblong, the uppermost one smaller, different from the rest 4 by colour, shape and indumentum. Stamens 10, distinct, in 2 whorls; filaments thickened at base, hairy; anthers ovoid or ellipsoidal, dorsifixed, longitudinally dehiscent. Ovary 1-locular, ovules 1–7; style terete; stigma truncate or concave. Pods ovate, oblong or lanceolate, sometimes falcate, flat or swollen, not winged or narrowly winged, smooth or spiny, leathery or woody, rarely fleshy, dehiscent or indehiscent. Seeds ovoid to globose, endosperm wanting.

About 150 species distributed in tropical and subtropical regions of the world; 17 species in China; seven species in Hong Kong.

1a. Small trees or shrubs.

2a. Leaves 30–45 cm; pinna with 10–17 pairs of leaflets; petals yellow, broadly obovate, ca. 9 cm, margin smooth.....1. *C. sappan*

2b. Leaves 12–26 cm; pinna with 8–10 pairs of leaflets; petals orange-red or yellow, orbicular, 2–2.5 cm, margin wrinkled wavy ..... 2. *C. pulcherrima*

1b. Vines.

3a. Pods armed.

4a. Stipules leafy; petals yellow; pods 5–7 cm; seeds subglobose..... 3. *C. bonduca*

4b. Stipules subulate; petals white with purplish red spots; pods 7.5–13 cm; seeds terete..... 4. *C. minax*

3b. Pods unarmed.

5a. Leaflets membranous; ovary glabrous ..... 5. *C. decapetala*

5b. Leaflets leathery; ovary hairy.

6a. Pinnae 2–3 pairs; leaflets 4–6 pairs, 3–6 × 1.5–3 cm; pods oblique broadly ovate, with reticulate veins ...6. *C. crista*

- 6b. Pinnae 8–16 pairs; leaflets 6–10 pairs, 1.2–2.5 × 0.6–1.2 cm; pods oblique oblong, without reticulate veins ....  
 ..... 7. *C. vernalis*

**1. *Caesalpinia sappan* L.** 蘇木

Sp. Pl. 381. 1753; FKH 89. 1912; FHN 2: 227. 1965; FRPS 39: 105, pl. 34: 8–11. 1988; FGD 5: 170, fig. 101. 2003; FGX 2: 455, pl. 188: 1–4. 2005.

Small tree, to 6 m tall, sparsely armed, ± finely pubescent except old branches, adaxial surface of leaves and pods. Branches densely and conspicuously lenticellate. Leaves 30–45 cm; pinnae opposite, 7–13 pairs, 8–12 cm; leaflets 10–17 pairs, papery, sessile, long elliptic to oblong-rhomboid, 1–2 × 0.5–0.7 cm, base oblique, apex emarginate. Panicles terminal or axillary, nearly as long as leaves. Bracts large, lanceolate, caducous. Pedicels 1.5 cm, finely pubescent. Receptacle shallowly campanulate. Petals yellow, broadly obovate, ca. 9 mm, the uppermost one pinkish at base, stipitate. Stamens slightly exerted, filaments densely pubescent at lower part. Ovary greyish tomentose, stipitate; style slender, hairy; stigma truncate. Pods indehiscent, reddish brown, woody, slightly compressed, suboblong to oblong-obovate, 7 × 3.5–4 cm, base slightly narrowed, apex oblique truncate, beaked. Seeds 3–4, oblong, slightly compressed, pale brown.

Locality: Kowloon (*vide* FKH 89. 1912).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; India, Sri Lanka, Myanmar, Vietnam, Malaysia.

Ecology: Forests. Flowering: May–Oct.; fruiting: Jul.–Mar.

Uses: Medicinal (folklore), raw material (dye).

**2. *Caesalpinia pulcherrima* (L.) Sw.** 洋金鳳(金鳳花)

(Photo 81)

Observ. Bot. 166. 1791; FGZ 317, fig. 172. 1956; FHN 2: 225. 1965; FRPS 39: 107, pl. 35: 5–7. 1988; FGD 5: 171. 2003; FGX 2: 455, pl. 189: 1–3. 2005.

Shrub or small tree; branchlets smooth, green or glaucous green, sparsely spiny. Leaves bipinnate, 12–26 cm; pinnae 4–8 pairs, opposite, 6–12 cm; leaflets 7–11, oblong or obovate, 1–2 cm × 0.4–0.8 cm, base oblique, apex emarginate, sometimes with a mucro. Racemes terminal or axillary, 25 cm; pedicels 4.5–7 cm. Hypanthium concave, turbinate, glabrous. Sepals glabrous, lowest one 14 mm, the rest ca. 10 mm. Petals orange-red or yellow, orbicular, 2–2.5 cm, margin wrinkled wavy, clawed. Filaments red, long exerted, 5–6 cm, base thick, hairy. Ovary glabrous; style long, orange-yellow. Pods narrow and thin, oblanceolate-oblong, 6–10 × 1.5–2 cm, glabrous, not winged, apex long beaked, black when mature. Seeds 6–9.

Locality: Cultivated. *H. C. Tang* 225; *Y. S. Lau* 993, 2376.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan (cultivated); native to W Indies, widely cultivated in tropics.

Ecology: Flowering: All year round.

Uses: Ornamental.

**3. *Caesalpinia bonduc* (L.) Roxb.** 刺果蘇木

(Photo 82)

Fl. Ind. (ed. 2) 2: 362. 1832; FRPS 39: 98, pl. 32: 1–8. 1988; FGD 5: 172. 2003; FGX 2: 451, pl. 186: 11–19. 2005.

*Guilandia bonduc* L., Sp. Pl. 381. 1753.

*Caesalpinia crista* auct. non L.: FHN 2: 225, fig. 418. 1965.

Spiny vine, all parts yellow pubescent; spines straight or curved. Leaves 30–45 cm; rachis with hooked spines; pinnae 6–9 pairs, opposite; stalk of pinnae very short, with a spine at base; stipules large, leafy, usually lobed, deciduous; leaflets 6–12 pairs, membranous, oblong, 1.5–4 × 1.2–2 cm, base oblique, apex obtuse and with an acumen, yellow pubescent on both surfaces. Racemes axillary, long pedunculate, densely flowered at upper part and sparsely flowered at lower part. Pedicels 3–5 mm; bracts subulate, 6–8 mm, hairy, reflexed, deciduous at anthesis. Hypanthium concave. Sepals 5, 8 mm, rusty hairy on both surfaces. Petals yellow, uppermost one with red dots, oblanceolate, clawed. Filaments short, woolly hairy at base. Ovary hairy. Pods leathery, oblong, 5–7 × 4–5 cm, apex beaked and swollen, finely long spiny abaxially. Seeds 2–3, subglobose, grey, glossy.

Locality: Sha Tin, Sai Kung, Lamma Island, Lantau Island. *Y. S. Lau* 748, 1101; *S. P. Lau* 182.

Distribution: Guangdong, Guangxi, Taiwan; tropical regions of the world.

Ecology: Flowering: Aug.–Oct.; fruiting: Oct.–Mar.

**4. *Caesalpinia minax* Hance** 喙莢雲實(南蛇筋)

(Photo 83)

J. Bot. 22(12): 365. 1884; FKH 88. 1912; FRPS 39: 98, pl. 32: 9–17. 1988; FGD 5: 173. 2003; FGX 2: 451, pl. 186: 1–10. 2005.

*Caesalpinia morsei* Dunn, J. Linn. Soc., Bot. 35(247): 492. 1903.

Spiny vine, all parts hairy. Stipules subulate and hard. Leaves bipinnate, to 45 cm; pinnae 5–8 pairs; leaflets 6–12 pairs, elliptic or oblong, 2–4 × 1.1–1.7 cm, base rounded, slightly oblique, apex rounded or acute, pubescent along midveins on both surfaces. Racemes or panicles terminal. Bracts ovate-lanceolate, apex shortly acuminate. Calyx-lobes ca. 13 mm, densely yellow tomentose. Petals white, with purple spots, obovate, ca. 18 × 12 mm, apex rounded, hairy abaxially and on margins. Stamens 10, slightly shorter than petals, filaments densely villous at lower part. Ovary densely covered with fine spines, styles slightly longer than stamens, glabrous. Pods densely covered with needle-like spines, oblong, 7.5–13 × 4–4.5 cm, apex obtuse and beaked. Seeds 4–8, elliptic, 18 × 10 mm.

Locality: Sai Kung, Tai Po, Lantau Island. *Y. S. Lau* 639, 2983; *HK sheet* 23829.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan.

Ecology: Thickets of valleys. Flowering: Apr.–May; fruiting: Jul.

Uses: Medicinal (folklore).

**5. *Caesalpinia decapetala*** (Roth) Alston 雲實

Handb. Fl. Ceylon suppl. 6: 89. 1931; FRPS 39: 107, pl. 35: 1–4. 1988; FGD 5: 174. 2003; FGX 2: 455, pl. 189: 4–8. 2005.

*Reichardia decapetala* Roth, Nov. Pl. Sp. 212. 1821.

*Caesalpinia sepiaria* Roxb., Fl. Ind. (ed. 2) 2: 360. 1832; Icon. Corm. Sin. 2: 351, fig. 2431. 1972.

*Caesalpinia japonica* Siebold & Zucc., Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4(2): 117. 1845; FKH 89. 1912.

Spiny vine; bark dark red. Branches, leaf rachis and inflorescences pubescent, with hooked spines. Leaves bipinnate, 20–30 cm; pinnae 3–10 pairs, opposite, stipitate, with 1 pair of spines at base; leaflets 8–12 pairs, membranous, oblong, 12–25 × 6–12 mm, nearly obtuse at both ends, pubescent on both surfaces, later glabrescent. Stipules small, oblique ovate, apex acuminate, caducous. Racemes terminal, erect, 15–30 cm, hairy. Peduncles rather spiny. Pedicels 3–4 cm, hairy, articulate below calyx. Calyx-lobes oblong, pubescent. Petals 5, yellow, membranous, orbicular or obovate, 10–12 mm, revolute at anthesis, base shortly stipitate. Stamens nearly as long as petals; filaments flat at base, woolly hairy at lower part. Ovary glabrous. Pods oblong-tongue-shaped, 6–12 × 2.5–3 cm, rigid, leathery, chestnut-brown, glabrous and glossy, swollen along ventral suture and forming a narrow wing, dehiscing along ventral suture when mature, apex beaked. Seeds 6–9, brown, 11 × 6 mm.

Locality: Castle Peak. *HK sheet 8462*.

Distribution: Area S of Yellow River; subtropical and temperate regions of the old world.

Ecology: Thickets. Flowering: Apr.–Oct.; fruiting: Jun.–Mar.

Uses: Medicinal (folklore).

**6. *Caesalpinia crista*** L.

華南雲實(假老虎鞭)

(Fig. 30: Photo 84)

Sp. Pl. 380. 1753; FTW 3: 185. 1977; FRPS 39: 102. 1988; FGD 5: 172. 2003; FGX 2: 453. 2005.

*Guilandina nuga* L., Sp. Pl. (ed. 2) 1: 546. 1762.

*Caesalpinia kwangtungensis* Merr., J. Arnold Arbor. 8(1): 7. 1927.

*Caesalpinia nuga* (L.) W. T. Aiton, Hort. Kew. (ed. 2) 3: 32. 1811.

Woody vine, all parts rusty tomentose. Leaves bipinnate; rachis 25–35 cm, spiny, pubescent; pinnae 8–16 pairs, 5–8 cm; leaflets 6–10 pairs, opposite, leathery, ovate-lanceolate, ovate or elliptic, 12–25 × 6–12 mm, base rounded, apex acute, glabrous, deep green and glossy adaxially, glaucous and sparsely rusty hairy abaxially. Racemes 10–20 cm, forming loose and large panicles. Flowers fragrant. Pedicels slender, 5–15 mm. Sepals lanceolate, ca. 6 mm, glabrous. Petals 5, unequal, 4 petals yellow, ovate, glabrous, shortly clawed, uppermost one with red spots, hairy at middle adaxially. Stamens slightly exserted; filaments enlarged at base, hairy. Ovary hairy, ovules 2. Pods broadly ovate, leathery, 3–4 × 2–3 cm, swollen, with reticulate veins, beaked at apex. Seed 1, flat.

Locality: Common in Hong Kong. *Y. S. Lau 955, 2527; HK sheet 40140*.

Distribution: SW China; S to SE Asia.

Ecology: Forests. Flowering: Apr.–Jul.; fruiting: Jul.–Dec.

**7. *Caesalpinia vernalis*** Champ. 春雲實

(Photo 85)

Hooker's J. Bot. Kew Gard. Misc. 4: 77. 1852; FHK 97. 1861; FKH 88. 1912; FRPS 39: 103. 1988; FGD 5: 173. 2003.

Spiny vine, all parts rusty tomentose. Leaves bipinnate, rachis 25–35 cm, spiny and pubescent; pinnae 8–16 pairs, 5–8 cm; petiolules 1.5–2 mm; leaflets 6–10 pairs, opposite, leathery, ovate-lanceolate, ovate or elliptic, 12–25 × 6–12 mm, base rounded, apex acute, glabrous and green adaxially, glaucous and sparsely rusty tomentose abaxially. Panicles axillary or terminal, many-flowered. Pedicels 7–9 mm. Calyx-lobes obovate-oblong, ciliate, lower one larger, 1 cm. Petals yellow, uppermost one smaller, revolute, with red spots. Stamens declined at apex; filaments pubescent at lower part. Ovary tomentose, ovules 2; styles thick, stigma oblique truncate. Pods oblique oblong, 4–6 × 2.5–3.5 cm, woody, blackish purple, without reticulate veins, rugose, apex beaked. Seeds 2, axe-shaped, slightly concave at one end, glossy, 1.7 × 2 cm, hilum truncate at one end.

Locality: Common in Hong Kong. *H. C. Tang 388, 2226; Y. S. Lau 502*.

Distribution: Guangdong, Fujian, Zhejiang.

Ecology: Forests by streams. Flowering: Apr.; fruiting: Dec.

Notes: The type specimen was collected from Aberdeen by J. G. Champion between 1847 and 1850.

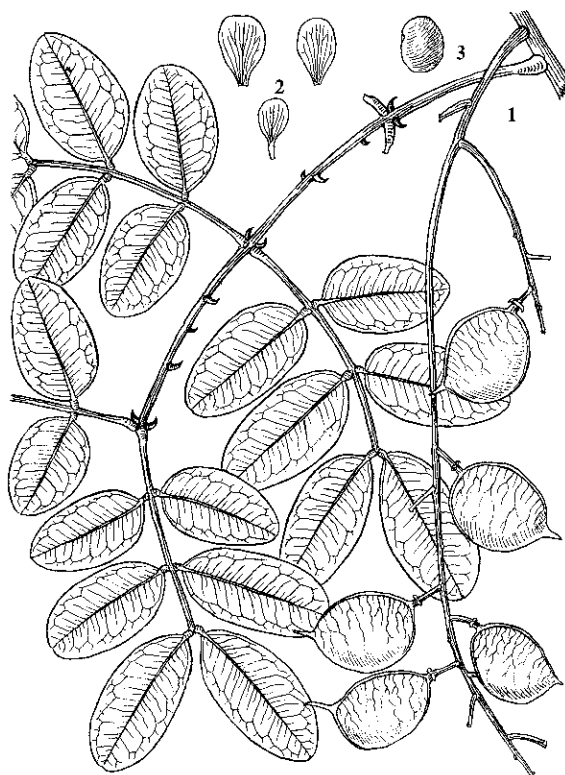


Figure 30. *Caesalpinia crista* L.

1. fruiting branch; 2. petals; 3. seed. (drawn by H. P. Yu)

4. *Delonix* Raf. 鳳凰木屬

Deciduous large trees, unarmed. Leaves large, biparipinnate, stipulate; leaflets small, many. Inflorescences racemose, terminal or axillary. Flowers pedicellate, bisexual, large, showy, white, orange or fresh red. Bracts small, caducous. Calyx-tube short, disciform or turbinate; lobes 5, narrow, subequal, valvate. Petals 5, alternate to calyx-lobes, suborbicular, spreading, long stipitate, margin rugose-wavy. Stamens 10, distinct, downwards curved. Ovary sessile, ovules many; styles filiform; stigmas truncate. Pods linear, flat, pendulous, 2-valved, valves thick and woody. Seeds many, oblong, transversely bearing.

About three species distributed in tropical Africa and tropical Asia; one species cultivated in S China; also cultivated in Hong Kong.

1. *Delonix regia* (Bojer ex Hook.) Raf. 鳳凰木

(Photo 86)

Fl. Tellur. 2: 92. 1836 [1837]; FGZ 316, fig. 170. 1956; FRPS 39: 95. 1988; FGD 5: 169, fig. 100. 2003; FGX 2: 448, pl. 185. 2005.

*Poinciana regia* Bojer ex Hook., Bot. Mag. 56: pl. 2884. 1829.

Tree, to 20 m tall, with spreading branches. Bark rough, greyish brown. Stipules persistent, lower ones pinnately lobed, upper ones hispid, not lobed. Petioles 7–12 cm, subglabrous. Leaves 20–60 cm; pinnae 15–20 pairs; petiolules very short or almost obsolete; leaflets 10–25 pairs, oblong, 4–8 × 3–4 mm, base oblique, apex obtuse, sericeous on both surfaces; midveins conspicuous. Racemes 20–40 cm. Flowers 7–10 cm in diam. Pedicels 4–10 cm. Calyx-lobes long elliptic, ca. 2.5 × 6–8 cm, green abaxially, red adaxially. Petals bright scarlet, mixed with yellow and white patches, suborbicular, 5–7 cm including the stalk. Stamens red, unequal, 3–6 cm; filaments thick, lower half hairy; anthers ca. 5 mm, red adaxially. Ovary linear, ca. 1.3 cm, yellow, hairy; styles 3–4 cm. Pods 30–60 × 3.5–5 cm, apex with persistent style, blackish brown when mature. Seeds many, 1.5 × 0.7 cm, yellow with brown patches.

Locality: Cultivated. *Y. S. Lau* 992.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan (cultivated); native to Madagascar, widely cultivated in tropical regions.

Ecology: Flowering: Jun.–Jul.; fruiting: Aug.–Oct.

Uses: Ornamental, seed poisonous.

5. *Peltophorum* (Vogel) Benth. 盾柱木屬

Deciduous trees, unarmed. Leaves bipinnate; pinnae opposite; leaflets many, opposite, sessile. Inflorescence an axillary or terminal panicle or raceme. Bracts small, deciduous or persistent; bracteole absent. Flowers bisexual, yellow, large and showy. Calyx-tube rather short; lobes 5, subequal, imbricate. Petals 5, spreading, imbricate. Stamens 10, free, filaments slightly exerted, densely hirsute at base, anthers ellipsoidal, dorsifixed. Ovary sessile, 3–8-ovuled; style long; stigma large, peltate, capitate or disciform. Pods long elliptic, flat, thin and hard, indehiscent, winged along both sutures. Seeds 2–8, flat; endosperm wanting.

About 12 species distributed in S & SE Asia and tropical Australia; two species (one introduced) in China; also cultivated in Hong Kong.

1a. Stipules entire; inflorescence a panicle; stigma 3-lobed; pods densely fine-striate throughout..... 1. *P. pterocarpum*

1b. Stipules lobed; inflorescence a raceme; stigma unlobed; pods not striate in middle..... 2. *P. tonkinense*

1. *Peltophorum pterocarpum* (DC.) Baker ex K. Heyne 盾柱木(雙翼豆)

(Photo 87)

Nutt. Pl. Ned.-Ind. (ed. 2) 2: 755. 1927; FRPS 39: 92, pl. 31: 1–7. 1988; FGD 5: 168. 2003.

*Inga pterocarpa* DC., Prodr. 1: 441. 1825.

*Caesalpinia inermis* Roxb., [Hort. Bengal. 90. 1814] Fl. Ind., ed. 1832, 2: 367. 1832.

*Peltophorum ferrugineum* (Decne.) Benth., Fl. Austral. 2: 279. 1864.

*Caesalpinia ferruginea* Decne., Nouv. Ann. Mus. Hist. Nat. 3: 462. 1834.

*Peltophorum inerme* Náves ex Fern.-Vill., Fl. Filip. (ed. 3) 4: Nov. App. 69. 1880, *nom. inval.*; FGZ 316. 1956.

Tree, 4–15 m; young branches and inflorescences densely rusty pubescent; old branches yellow lenticellate. Stipules entire. Leaves 30–42 cm; petiole robust, densely rusty pubescent; pinnae 7–15 pairs, 8–12 cm; leaflets 10–20 pairs, sessile, leathery, oblong, 1–1.8 × 0.5–0.7 cm, base oblique, apex obtuse, mucronate, entire, glabrous on both surfaces. Panicles terminal or axillary. Bracts 5–8 mm, caducous. Pedicels ca. 5 mm, as long as flower buds. Flower buds globose, 5–8 mm in diam. Calyx-lobes ovate, 5–8 × 4–7 mm, rusty tomentose. Petals obovate, 1.5–1.7 × 0.8–1 cm, densely rusty villose at middle on both surfaces, long stalked. Filaments ca. 1.2 cm, base hirsute; anthers nearly arrow-shaped, ca. 3 mm. Ovary stipitate, 3–4-ovuled; style filiform, elongated; stigma disciform, 3-lobed. Pods dark red when mature, oblong, 5–8 × 1.8–2.5 cm, flat, fusiform, winged along both sutures, wings 4–5 mm wide, densely fine-striate throughout; seeds 2–4.

Locality: Cultivated. *Y. S. Lau* 36, 2272; *HK sheet* 24924.

Distribution: Cultivated in Guangzhou; Vietnam, Sri Lanka, Malaysia, Indonesia and N Australia.

Ecology: Flowering: Jun.–Aug.; fruiting: Oct.

2. *Peltophorum tonkinense* (Pierre) Gagnep. 銀珠

(Photo 88)

Fl. Indo-Chine 2: 192. 1913; FHN 2: 228. 1965; FRPS 39: 93, pl. 31: 8–14. 1988; FGD 5: 168, fig. 99. 2003.

*Baryxylum tonkinense* Pierre, Fl. Forest. Cochinch. sub pl. 391C. 1899.

*Peltophorum dasyrrhachis* var. *tonkinensis* (Pierre) K. Larsen & S. S. Larsen, Fl. Cambodge, Laos & Vietnam 18: 61. 1980.

Tree, 10–20 m; young branches and inflorescences densely rusty pubescent, later glabrescent; old branches densely rusty lenticellate. Stipules lobed, linear or filiform, caducous. Leaves 15–35 cm; petiole robust, 7–16 cm, densely rusty pubescent; pinnae 6–13 pairs; leaflets 5–14 pairs, sessile, leathery, oblong, 1.5–2 × 0.6–1 cm, base attenuate, asymmetrical, apex obtuse, emarginate or mucronate, entire, rusty hairy along midveins at first, later glabrescent. Racemes subterminal, 8–12 cm. Pedicels 1.5–2.5 cm, 2–3 times as long as flower buds. Flower buds globose, ca. 8 mm in diam. Calyx-lobes ovate, 8–9 mm, lowest one narrower, densely rusty hairy. Petals obovate, 1.5 cm, stalked, margin minutely wavy, densely rusty villose along midveins on both surfaces. Filaments ca. 1 cm, base enlarged, densely rusty hairy; anthers ellipsoidal, ca. 3.5 mm. Ovary shortly stipitate, 3–4-ovuled; style slender, 3–4 times as long as ovary; stigma capitate, unlobed. Pods reddish brown when mature, thinly leathery, fusiform, 8–13 × 2.5–3 cm, unequally narrowed on both ends, glabrous, winged along both sutures, wings 5–7 mm wide, not striate at middle; seeds 3–4, oblique obovate, ca. 1.4 × 0.6 cm, flat, yellow.

Locality: Cultivated. *HK sheet 40203*.

Distribution: Hainan.

Ecology: Flowering: Mar.–Jun.; fruiting: Jul.–Oct.

## 6. *Saraca* L. 無憂花屬

Trees. Leaves paripinnate; petioles short and stout; stipules 2, often connate into a conical sheath, caducous. Corymbose panicles axillary or terminal. Involucral bracts caducous. Bract 1, hairy or glabrous, deciduous or persistent; bracteoles 2, subopposite, often persistent and colourful. Flowers pedicellate, yellow to deeply red, bisexual or unisexual, apetalous. Calyx-tube elongated, upper part slightly enlarged, apex with a disk; lobes 4(–6), petaloid, ovate or oblong, slightly unequal, imbricate. Stamens 4–10, all developed or 1–2 reduced, inserted at the disk on calyx throat; filaments exerted, distinct, reflexed in bud, anthers ellipsoidal or subglobose, dorsifixed, longitudinally dehiscent. Ovary compressed oblong, hairy or glabrous, shortly stipitate; ovules several to more than 10, stipe adnate to calyx-tube; style linear, stigmas capitate. Pods compressed oblong, slightly curved, leathery to subwoody, 2-valved. Seeds 1–8, elliptic or ovate, bilaterally compressed; seed-coat rigid; radicle small, erect.

About 20 species distributed in tropical Asia; two species in China; one species cultivated in Hong Kong.

### 1. *Saraca dives* Pierre 中國無憂花

Fl. For. Cochinch. 5: t. 386B. 1899; FRPS 39: 207, pl. 72: 1–4. 1988; FGD 5: 198, fig. 113. 2003; FGX 2: 489, pl. 208. 2005.

*Saraca chinensis* Merr. & Chun, Dict. Fam. & Gen. Chin. Seed Pl. 385. 1958; Icon. Corm. Sin. 2: 331. 1972, *nom. nud.*

*Saraca indica* auct. non L.: Icon. Corm. Sin. 2: 331. 1972.

Tree, 5–20 m tall. Petioles short and thick, 0.7–1.2 cm; leaflets 5–6 pairs, slightly purplish red when young, pendulous, subleathery, long elliptic, ovate-lanceolate or long obovate, 15–35 × 5–12 cm, basal one pair often smaller, base cuneate, apex acuminate, acute or obtuse; lateral veins 8–11 pairs. Inflorescences axillary, main rachis hairy or subglabrous. Involucral bracts large, broadly ovate, hairy, caducous. Bracts ovate, lanceolate or oblong, 1.5–5 × 0.6–2 cm, lowest one larger, gradually smaller upward, hairy or not, caducous or deciduous. Bracteoles same as bracts in shape, but much smaller. Flowers yellow, turning red, bisexual or unisexual. Pedicels shorter than calyx tube, not articulate. Calyx tube 1.5–3 cm, lobes oblong, ciliate. Stamens 8–10, 1–2 usually reduced and subulate, filaments exerted, anthers ellipsoidal, 3–4 mm. Ovary slightly curved, glabrous or hairy along both sutures and stipe. Pod brown, flat, 22–30 × 5–7 cm, valves coiling. Seeds 5–9, various in shape, flat, with a shallow furrow at middle on both surfaces.

Locality: Cultivated. *Y. S. Lau 2576*; *HK sheet 8691*.

Distribution: Taiwan (cultivated); Laos, Thailand, Malaysia, Indonesia.

Ecology: Flowering: Apr.–May; fruiting: Jul.–Oct.

Uses: Ornamental.

Notes: The species was reported as *Saraca indica* L. previously (Check List HK Plants 137. 2002; 52. 2004).

## 7. *Cassia* L. 臘腸樹屬

Trees, shrubs, or herbs. Leaves paripinnate, often glandular on petioles and leaf rachis; leaflets opposite, sessile or shortly petiolulate; stipules various. Inflorescences racemose or paniculate, axillary or terminal, rarely flowers solitary or few clustered in leaf axils. Bracts and bracteoles various. Calyx-tube solid, turbinate or slenderly vase-shaped; lobes 5, imbricate, reflexed at anthesis, deciduous. Petals usually 5, obovate or elliptic-oblong, clawed at base or sessile, subequal or lower 2 longer. Stamens 10, usually unequal, in 2 whorls, the outer whorl consisting of 3 long abaxial stamens (filaments sigmoidally bent proximally and incurved distally, often dilated or abruptly nodulose in the outer curve, anthers dorsifixed, dehiscing ventrally above middle by vertical slits and by basal pores) and 2 much shorter, sterile, adaxial stamens, the inner whorl consisting of 2 unequal pairs of stamens (filament straight erect or gently bent forward, anthers dorsifixed, dehiscing by basal pore) and 1 much smaller, sterile stamen. Ovary stipitate, linear incurved, ovules many per locule; styles incurved; stigmas small. Pods pendulous, shortly stipitate, linear or terete or laterally compressed, indehiscent, with septum between seeds; valves woody, stiffly papery or crustaceous. Seeds lying transversely, endosperm present.

About 30 species widely distributed in tropical and subtropical regions of the world, few in temperate regions; several species introduced to China; one species commonly cultivated in Hong Kong.

*C. javanica* L. and *C. javanica* var. *indochinensis* Gagnep. are occasionally cultivated in Hong Kong.

### 1. *Cassia fistula* L. 臘腸樹 (豬腸豆)

(Photo 89)

Sp. Pl. 1: 377. 1753; FHN 2: 230. 1965; FRPS 39: 110, pl. 43: 3–4. 1988; FGD 5: 182. 2003; FGX 2: 466. 2005.

Deciduous small to medium-sized tree, to 15 m tall. Branches slender. Bark smooth, grey when young, rough and dark brown when old. Petioles short; leaves 30–40 cm; rachis and petioles not winged, eglandular; leaflets 3–4 pairs, thinly leathery, broadly ovate, ovate or oblong, 8–13 × 3.5–7 cm, base cuneate, apex shortly acuminate and obtuse, margin entire, puberulous on both surfaces when young, glabrescent; lateral veins slender, conspicuous on both surfaces. Racemes to 30 cm or longer, lax, pendulous. Flowers blooming at the same time as leaves appearing, ca. 4 cm in diam. Pedicels slender, 2–5 cm, ebracteate. Sepals long ovate, thin, 1–1.5 cm, reflexed after flowering. Petals yellow, obovate, subequal, 2–2.5 cm, conspicuously veined. Stamens 10, 3 of them with long and curved filaments, exerted, 4 of them short and straight, with broad and large anthers, the rest 3 very small, sterile; anthers longitudinally dehiscent. Pods terete, 30–60 × 2–2.5 cm, dark brown, indehiscent, 3-furrowed. Seeds 40–100, separated by septum.

Locality: Cultivated. *H. C. Tung 25; Y. S. Lau 1906; HK sheet 8523.*

Distribution: S & SW China (cultivated); native to India, Myanmar, Sri Lanka.

Ecology: Flowering: Jun.–Aug.; fruiting: Oct.

Uses: Ornamental, timber.

## 8. *Chamaecrista* Moench 假决明属

Trees, shrubs, or herbs. Leaves paripinnate, often glandular on petioles and leaf rachis; leaflets opposite, sessile or shortly petiolulate; stipules various. Inflorescences racemose or paniculate, axillary or terminal, rarely flowers solitary or few clustered in leaf axils. Bracteoles 2. Calyx-tube short, lobes 5, imbricate. Petals usually 5, subequal or lower 2 longer. Androecium actinomorphic, stamens (4–)10, in 2 whorls, actinomorphic, the 2 whorls unequal in length, anthers dorsifixed or basifixed, dehiscing by apical pores, thecae ciliate along the sutures. Ovary slender, sometimes curved, sessile or stipitate, ovules many per locule; styles incurved; stigmas small. Pods elongate, usually compressed, dehiscent. Seeds smooth or pitted, without areoles.

About 330 species in most tropical and subtropical regions; four species in China; two species in Hong Kong.

- 1a. Leaflets 14–25 pairs, 8–13 mm ..... 1. *C. leschenaultiana*  
 1b. Leaflets 20–50 pairs, 3–4 mm ..... 2. *C. mimosoides*

### 1. *Chamaecrista leschenaultiana* (DC.) Degener 短叶决明

(Photo 90)

Fl. Hawaiiensis Fam. 169b. 1934.

*Cassia leschenaultiana* DC., Mem. Soc. Phys. Geneve 2: 132. 1824; FRPS 39: 128. 1988; FGD 5: 181. 2003; FGX 2: 466, pl. 194: 5–8. 2005.

*Cassia mimosoides* var. *wallichiana* (DC.) Baker, Fl. Brit. India 2(5): 266. 1878; FHN 2: 234. 1965.

*Cassia mimosoides* subsp. *leschenaultiana* (DC.) Ohashi, J. Jap. Bot. 50: 308. 1975; FTW 3: 201. 1977.

*Cassia wallichiana* DC., Mem. Soc. Phys. Geneve 2: 132. 1824.

*Chamaecrista nictitans* var. *glabrata* (Vogel) H. S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 822. 1982; FTW ed. 2, 3: 180. 1993.

Annual or perennial shrubby herb, 0.3–0.8(–1) m tall. Stems erect, branched; young branches densely yellow pubescent. Stipules linear-subulate, 7–9 mm, persistent. Petioles with 1 disciform gland at upper end; leaves 3–8 cm; leaflets 14–25 pairs, linear-falcate, 8–13(–15) × 2–3 mm, asymmetrical, midvein near to the upper margin. Inflorescences axillary, 1–several-flowered. Bracteoles ca. 5 mm. Sepals linear, ca. 1 cm, sparsely yellow pubescent abaxially. Petals orange-yellow, slightly longer than or as long as sepals. Stamens 10, sometimes 1–3 reduced. Ovary densely white pubescent. Pods flat, 2.5–5 × 0.5 cm, 8–16-seeded.

Locality: Po Toi Islands, Lantau Island. *Y. W. Lam 1046; F. W. Xing 9629.*

Distribution: SW to SE China; India, Myanmar, Vietnam.

Ecology: Open fields. Flowering: Jun.–Aug.; fruiting: Sep.–Nov.

Notes: The species was reported as *Cassia leschenaultiana* DC. previously (Check List HK Plants 135. 2002; 51. 2004).

### 2. *Chamaecrista mimosoides* (L.) Greene

含羞草决明(山扁豆) (Fig. 31; Photo 91)

Pittonia 4(20D): 27. 1899; FTW ed. 2, 3: 180. 1993.

*Cassia mimosoides* L., Sp. Pl. 1: 379. 1753; FHK 98. 1861; FKH 89. 1912; FHN 2: 234. 1965; FRPS 39: 126, pl. 42: 1–4. 1988; FGD 5: 181. 2003; FGX 2: 464, pl. 194: 1–4. 2005.

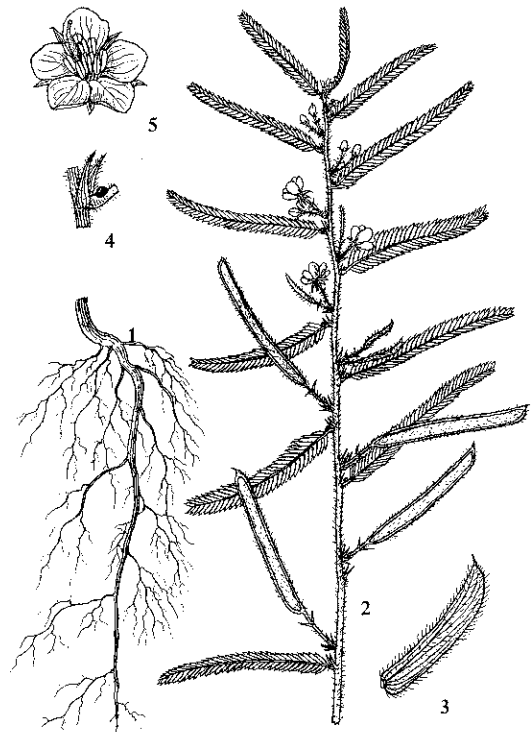


Figure 31. *Chamaecrista mimosoides* (L.) Greene

1. root; 2. flowering branch; 3. leaflet; 4. portion of branch showing stipules, petiole and gland; 5. flower. (drawn by H. P. Yu)

Annual or perennial shrubby herb, 30–60 cm tall, many-branched. Branches slender, puberulous. Stipules linear-subulate, 4–7 mm, obviously striped, persistent. Leaves 4–8 cm, with a disciform gland at the distal end of petiole or below the lowest pair of leaflets; leaflets 20–50 pairs, reddish brown when dry, linear-falcate, 3–4 × 1 mm, apex shortly acute, asymmetrical; midveins near the upper margin. Flowers axillary, solitary or 2–several in short racemes. Bracteoles ca. 3 mm. Sepals 6–8 mm, apex acute, sparsely pubescent abaxially. Petals yellow, slightly longer than sepals, unequal, shortly stipitate. Stamens 10, 5 longer and 5 shorter. Pods falcate, flat, 2.5–5 × 0.4 cm, fruiting pedicels 1.5–2 cm. Seeds 10–16.

Locality: Common in Hong Kong. *P. S. Choi 182, 384; Y. W. Lam 1024.*

Distribution: SW to SE China; tropical and subtropical regions.

Ecology: Thickets, slopes and open fields. Flowering & fruiting: Aug.–Oct.

Uses: Green manure, medicinal (folklore).

## 9. *Senna* Mill. 決明屬

Trees, shrubs, subshrubs or herbs. Leaves paripinnate, often glandular on petioles and leaf rachis; leaflets opposite, sessile or shortly petiolulate; stipules various, stipels lacking. Inflorescences racemose or paniculate, axillary or terminal, rarely flowers solitary or few clustered in leaf axils. Bracteoles absent. Calyx-tube short, lobes 5, imbricate. Petals usually 5, subequal or lower 2 longer. Androecium zygomorphic, stamens (4–)10, ± graduated in length from adaxial to abaxial side of flower, the 3 adaxial stamens staminodal, the (6–)7 fertile anthers basifixed, usually modified into heteromorphic sets of 4 medium and (2–)3 abaxial, all beakless or variably beaked or appendaged at apex, dehiscing by pores or short slits, the thecae either glabrous or pubescent but not ciliolate along the lateral sutures. Ovary slender, sometimes curved, sessile or stipitate, ovules many per locule; styles incurved; stigmas small. Pods either indehiscent, or breaking inelastically through one or both sutures; if through both, then the valves not coiling. Seed-coat often with a closed areole on each face or margin.

About 300 species in tropical and subtropical regions; 18 species in China; seven species in Hong Kong.

In addition, *S. bicapsularis* (L.) Roxb., *S. floribunda* (Cav.) H. S. Irwin & Barneby, *S. hirsuta* (L.) H. S. Irwin & Barneby, *S. spectabilis* (DC.) H. S. Irwin & Barneby, *S. multijuga* (Rich.) H. S. Irwin & Barneby and *S. polyphylla* (Jacq.) H. S. Irwin & Barneby are occasionally cultivated in Hong Kong.

### 1a. Subshrubs or herbs.

2a. Leaflets 3 pairs, pubescent abaxially ..... 1. *S. tora*

2b. Leaflets 4–10 pairs, glabrous on both surfaces.

3a. Leaflets 4–5 pairs, 4–9 × 2–3.5 cm; pods linear-falcate, compressed, 10–13 cm ..... 2. *S. occidentalis*

3b. Leaflets 5–10 pairs, 1.7–4.2 × 0.7–2 cm; pods subterete, 5–10 cm ..... 3. *S. sophora*

### 1b. Trees or shrubs.

4a. Petioles and leaf rachis eglandular.

5a. Trees; leaflets 3–6.5 × 1.5–2.5 cm ..... 4. *S. siamea*

5b. Shrubs; leaflets 8–15 × 3.5–7.5 cm ..... 6. *S. alata*

4b. Petioles and leaf rachis with 2 or more glands.

6a. Leaflets 7–9 pairs, 2–5 × 1–1.5 cm; pod 7–10 × 0.8–1.2 cm ..... 5. *S. surattensis*

6b. Leaflets 4–6 pairs, 3.5–10 × 2.5–4 cm; pod 15–20 × 1.2–1.8 cm ..... 7. *S. sulfurea*

### 1. *Senna tora* (L.) Roxb. 決明

Fl. Ind. (ed. 2) 2: 340. 1832.

*Cassia tora* L., Sp. Pl. 1: 211. 1753; FHK 98. 1861; FKH 89. 1912; FHN 2: 234. 1965; FRPS 39: 126. 1988; FGD 5: 181. 2003; FGX 2: 464. 2005.

Annual erect shrubby herb, 1–2 m tall. Stipules linear, pubescent, caducous. Leaves 4–8 cm; petioles eglandular; rachis with 1 clavate gland between each pair of leaflets; petiolules 1.5–2 mm; leaflets 3 pairs, membranous, obovate or obovate-elliptic, 2–6 × 1.5–2.5 cm, base attenuate, oblique, apex obtuse and mucronate, sparsely pubescent adaxially, pubescent abaxially. Flowers axillary, usually 2-clustered. Peduncles 6–10 mm. Pedicels 1–1.5 cm, filiform. Sepals unequal, membranous, ovate or ovate-oblong, ca. 8 mm, pubescent abaxially. Petals yellow, lower 2 slightly longer, 12–15 × 5–7 mm. Fertile stamens 7, anthers square, ca. 4 mm, dehiscing by apical pores, filaments shorter than anthers. Ovary sessile, white pubescent. Pods slender, nearly 4-angled, acuminate at both ends, 15 × 0.3–0.4 cm, membranous. Seeds ca. 25, rhomboid, glossy.

Locality: Naturalized. *S. P. Lau 149; HK sheet 39274, 39751.*

Distribution: Native to tropical America, widely cultivated and naturalized in tropical regions.

Ecology: Slopes, open fields and wastelands. Flowering & fruiting: Aug.–Nov.

Uses: Medicinal (seed), dye.

Notes: The species was reported as *Cassia tora* L. previously (Check List HK Plants 136. 2002; 51. 2004).

### 2. *Senna occidentalis* (L.) Link 望江南(野扁豆)

(Fig. 32; Photo 92)

Handbuch 2: 140. 1831.

*Cassia occidentalis* L., Sp. Pl. 1: 377. 1753; FHK 98. 1861; FKH 89. 1912; FHN 2: 233. 1965; FRPS 39: 125. 1988; FGD 5: 180. 2003; FGX 2: 464. 2005.

Erect subshrub, 0.8–1.5 m tall, glabrous. Branches few, herbaceous, angled. Stipules membranous, ovate-lanceolate, caducous. Leaves ca. 20 cm; with a large, brownish, conical gland near the base of petiole; petiolules 1–1.5 mm; leaflets 4–5 pairs, membranous, ovate to ovate-lanceolate, 4–9 × 2–3.5 cm, apex acuminate, ciliolate. Inflorescence a corymbose raceme, axillary or terminal, 5 cm. Bracts linear-lanceolate or long-ovate, apex long acuminate, caducous. Flowers ca. 2 cm. Sepals unequal, outer ones suborbicular, 6 mm, inner ones ovate, 8–9 mm. Petals yellow, outer ones 15 × 9–10 mm, the rest ones to 20 × 15 mm, apex rounded, all shortly stipitate. Stamens 10, 7 fertile, 3 sterile. Pods linear-falcate, brown, compressed, 10–13 × 0.8–0.9 cm, slightly curved, margin thickened, apex mucronate; fruiting pedicels 1–1.5 cm. Seeds 30–40, with thin septum between seeds.

Locality: Naturalized. *H. C. Tang* 2076; *Y. S. Lau* 233; *P. S. Choi* 272.

Distribution: SW to SE China; native to tropical America, widely naturalized in tropical and subtropical regions of the world.

Ecology: Open fields. Flowering: Apr.–Aug.; fruiting: Jun.–Oct.

Uses: Medicinal (folklore).

Notes: The species was reported as *Cassia occidentalis* L. previously (Check List HK Plants 136. 2002; 51. 2004).

### 3. *Senna sophera* (L.) Roxb. 槐葉決明 (江南槐)

*Fl. Ind.* (ed. 2) 2: 347. 1832.

*Cassia sophera* L., *Sp. Pl.* 1: 379. 1753; *FKH* 89. 1912; *FHN* 2: 233. 1965; *FRPS* 39: 125. 1988; *FGD* 5: 181. 2003; *FGX* 2: 464. 2005.

Erect subshrub, 0.8–1.5 m tall, glabrous. Branches few, herbaceous, angled. Stipules membranous, ovate-lanceolate, caducous. Leaves ca. 20 cm; with a large, brownish, conical gland near base of petiole; petiolules 1–1.5 mm; leaflets 5–10 pairs, membranous, elliptic-lanceolate, 1.7–4.29 × 0.7–2 cm, apex acute or shortly acuminate, ciliolate. Inflorescence a corymbose raceme, axillary or terminal, 5 cm. Bracts linear-lanceolate or long ovate, apex long acuminate, caducous. Flowers ca. 2 cm. Sepals unequal, outer ones suborbicular, 6 mm, inner ones ovate, 8–9 mm. Petals yellow, outer ones 15 × 9–10 mm, the rest ones to 20 × 15 mm, apex rounded, all shortly stipitate. Stamens 10, 7 fertile, 3 sterile. Pods flat and thickened at first, subterete when mature, brown, compressed, 5–10 cm, slightly curved, margin thickened, apex mucronate; fruiting pedicels 1–1.5 cm. Seeds 30–40, with thin septum between seeds.

Locality: Naturalized. *Y. S. Lau* 462; *L. T. Lo* 40; *P. S. Choi* 277.

Distribution: Widely cultivated in tropical and subtropical regions.

Ecology: Roadsides. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore), edible (young leaves and pods).

Notes: The species was reported as *Cassia sophera* L. previously (Check List HK Plants 136. 2002; 51. 2004).

### 4. *Senna siamea* (Lam.) H. S. Irwin & Barneby 鐵刀木

*Mem. New York Bot. Gard.* 35: 98. 1982.

*Cassia siamea* Lam., *Encycl.* 1: 648. 1785; *FHN* 2: 233. 1965; *FGD* 5: 185, fig. 108. 2003; *FGX* 2: 468, pl. 196: 1–2. 2005.

Tree, ca. 10 m tall. Bark grey, nearly smooth, slightly fissured. Young branches angled, sparsely pubescent. Stipules linear, caducous. Leaves 20–30 cm; petioles and rachis eglandular, puberulous; petiolules 2–3 mm; leaflets 6–10 pairs, leathery, oblong or oblong-elliptic, 3–6.5 × 1.5–2.5 cm, base rounded, apex obtuse and emarginate, mucronate, margin entire, glabrous adaxially, glaucous abaxially. Racemes axillary, arranged in corymbs. Bracts linear, 5–6 mm. Sepals suborbicular, unequal, upper ones smaller, lower ones larger, finely hairy. Petals yellow, broadly ovate, 12–14 mm, shortly stipitate. Stamens 10, 7 fertile, 3 sterile, anthers dehiscing by apical pores. Ovary sessile, white pubescent. Pods flat, 15–30 × 1–1.5 cm, margin thickened, pubescent, purplish brown when mature. Seeds 10–20.

Locality: Cultivated. *H. C. Tang* 267, 385; *Y. S. Lau* 905.

Distribution: Yunnan (wild), S China (cultivated); India, Myanmar, Thailand.

Ecology: Flowering: Oct.–Nov.; fruiting: Dec.–Jan.

Uses: Timber, environmental.

Notes: The species was reported as *Cassia siamea* Lam. previously (Check List HK Plants 136. 2002; 51. 2004).

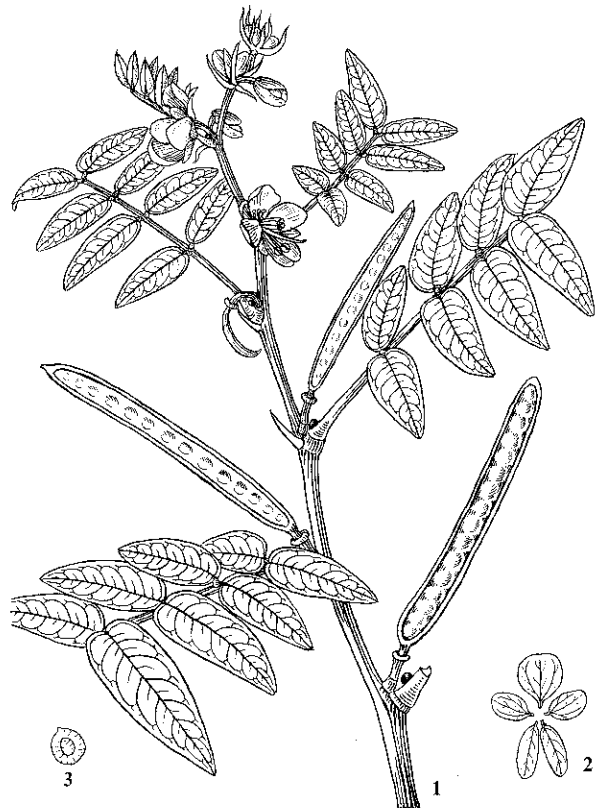


Figure 32. *Senna occidentalis* (L.) Link

1. flowering and fruiting branch; 2. petals; 3. seed. (drawn by H. P. Yu)

(Photo 93)



**5. *Senna surattensis* (Burm. f.) H. S. Irwin & Barneby 黄槐决明 (黄槐)**

(Photo 94)

Mem. New York Bot. Gard. 35: 81. 1982.

*Cassia surattensis* Burm. f., Fl. Indica 97. 1768; FHN 2: 232. 1965; FRPS 39: 136, pl. 46: 1–6. 1988; FGD 5: 184, fig. 107. 2003; FGX 2: 468, pl. 196: 3–6. 2005.

Shrub or small tree, 4–7 m tall, many-branched. Bark smooth, greyish brown. Branchlets ridged. Young branchlets, leaf rachis and petioles pubescent. Stipules linear, curved, 6–8 mm. Leaves 10–15 cm including the petiole; rachis slightly bilaterally compressed, with 2–3 clavate glands between the lowest 2–3 pairs and the apical pair; petiolules ca. 2 mm; leaflets 7–9 pairs, elliptic to oblong-elliptic, 2–4(–5) × 1.4–2 cm, base obtuse to subrounded, apex broadly obtuse to rounded and emarginate, margin entire, adaxially dark green, glabrous, abaxially paler, sparsely puberulous, especially on the veins. Racemes axillary. Sepals yellowish green, unequal, lower two smaller, ovate, 3–5 mm, upper three broadly elliptic, 6–8 mm. Petals fresh yellow to deeply yellow, broadly elliptic, 1.5–2 × 1–1.4 cm, apex broadly obtuse to subrounded. Stamens 10, all fertile, lower 2 with longer anthers. Ovary filiform, hairy. Pods flat, linear, dehiscent, 7–10 × 0.8–1.2 cm, apex long beaked, fruit neck ca. 5 mm; fruiting pedicels conspicuous. Seeds 10–12, glossy.

Locality: Cultivated. *Y. S. Lau 1469, 2007; L. T. Lo 155.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan (cultivated); native to tropical Asia, widely cultivated elsewhere.

Ecology: Flowering &amp; fruiting: Nearly all the year round.

Uses: Ornamental.

Notes: The species was reported as *Cassia surattensis* Burm. f. previously (Check List HK Plants 136. 2002; 51. 2004).**6. *Senna alata* (L.) Roxb. 翅荚决明**

(Photo 95)

Fl. Indica 2: 349. 1824; H. S. Irwin &amp; Barneby, Mem. New York Bot. Gard. 35(2): 460. 1982.

*Cassia alata* L., Sp. Pl. 378. 1753; FRPS 39: 131. 1988; FGD 5: 182. 2003.

Shrub, 1.5–3 m tall. Branches stout, green. Leaves 30–70 cm; petioles and leaf rachis winged, with 2 ridges along the adaxial surface; stipules triangular; leaflets 6–12 pairs; petiolules very short; blade obovate-oblong or oblong, 8–15 × 3.5–7.5 cm, base obliquely truncate, apex obtuse and mucronate, margin entire, thinly leathery; veins conspicuously raised abaxially. Racemes terminal and axillary, long pedunculate, 10–50 cm. Sepals oblong, 1–2 cm. Petals yellow, with purple veins, ovate, 2 × 1.5 cm. Stamens 7 fertile, 3 reduced. Ovary densely tawny puberulent; style filiform or gently tapering distally. Pods broadly linear in outline, 10–20 × 1.2–1.5 cm, winged lengthwise down the middle of each valve. Seeds 50–60.

Locality: Cultivated. *Y. S. Lau 3171, 3240; P. S. Choi 271.*

Distribution: Hainan, Guangdong, Yunnan (cultivated); native to tropical America, widely cultivated in tropical regions.

Ecology: Flowering: Nov.–Jan.; fruiting: Jan.–Feb.

Uses: Ornamental.

Notes: The species was reported as *Cassia alata* L. previously (Check List HK Plants 134. 2002; 51. 2004).**7. *Senna sulfurea* (DC. ex Collad.) H. S. Irwin & Barneby 粉荚决明**

Mem. New York Bot. Gard. 35: 78. 1982.

*Cassia glauca* Lam., Encycl. 1: 647. 1785; FKH 89. 1912; FRPS 39: 136, pl. 46: 7–8. 1988; FGD 5: 184. 2003.*Cassia sulfurea* DC. ex Collad., Hist. Nat. Med. Cases 84–85. 1816.

Shrub or small tree. Branchlets angulate, sparsely pubescent, glabrescent. Stipules linear, caducous. Leaves 5–30 cm including the petiole, between the lowest 2 pairs of leaflets each with a clavate gland on the leaf rachis adaxially; petioles 3.5–6.5 cm; petiolules ca. 3 mm; leaflets (4–)5(–6) pairs, ovate or elliptic, 3.5–10 × 2.5–4 cm, base broadly cuneate or subrounded, apex obtuse or inconspicuously emarginate, green adaxially, glaucous abaxially. Racemes axillary. Sepals ovate or orbicular, unequal, upper three 3–4 mm, lower two 8 mm. Petals yellow or deeply yellow, ovate or obovate, 2–2.5 cm, 5-veined. Stamens 10, lower 2 with longer filaments. Ovary filiform, hairy. Pod flat, straight, linear, 15–20 × 1.2–1.8 cm, dehiscent, apex long beaked, fruit neck ca. 1.5 cm, fruiting pedicels 2.5–3 cm. Seeds 20–30.

Locality: Cultivated.

Distribution: Fujian, Hainan, Guangdong, Yunnan (cultivated); India, Sri Lanka, Indochina, Malay Peninsula, Australia and Polynesia.

Ecology: Flowering &amp; fruiting: Nearly all year round.

**10. *Lysidice* Hance 儀花屬**

Shrubs or trees. Leaves paripinnate; leaflets 3–5 pairs, opposite, asymmetrical; stipules small, subulate or sharply triangular, caducous or tardily deciduous. Inflorescence a panicle, terminal or axillary; peduncles subtended by red or white bracts; bracteoles small, paired on or near pedicel apex. Flowers purplish red or pink. Calyx tubular, apex 4-lobed, lobes imbricate, reflexed after flowering. Petals 5, upper 3 larger, obovate, long stipitate, lower 2 very small, scale-like or subulate. Fertile stamens 2, distinct or slightly connate at base; filaments exerted, reflexed in bud; anthers ellipsoidal, dehiscing longitudinally; staminodes 3–8, unequal, subulate, without anthers or with small globose anthers. Ovary oblong, flat, stipitate, ovules 6–14; styles slender; stigmas small, capitate. Pods oblong or obovate-oblong, flat, thickly leathery or woody, 2-valved, valves flat or slightly twisted or coiled. Seeds flat, oblique broad-elliptic or suborbicular, glossy, margin thickened or not. Cotyledons flat, embryo small.

Two species distributed in S to SE China and Vietnam; one species cultivated in Hong Kong.

**1. *Lysidice rhodostegia* Hance 儀花**

(Photo 96)

J. Bot. 5(58): 299. 1867; FRPS 39: 204, pl. 71: 1–5. 1988; FGD 5: 197. 2003; FGX 2: 489, pl. 207: 1–5. 2005.

Shrubs or trees, 2–5(–10) m tall. Petiolules short and thick, 2–3 mm; leaflets 3–5 pairs, papery, long-elliptic or ovate-lanceolate, 5–16 × 2–6.5 cm, base obtuse, apex caudate; lateral veins slender, subparallel, conspicuous on both surfaces. Panicles 20–40 cm, rachis, bracts and bracteoles pubescent; bracts and bracteoles pink, ovate-oblong or elliptic; bracts 1.2–2.8 × 0.5–1.4 cm; bracteoles 2–5 mm. Calyx-tube 1.2–1.5 cm, 1/3 longer than lobes; calyx-lobes oblong, dark purplish red. Petals purplish red, broadly ovate, ca. 1.2 cm, apex obtuse and emarginate. Fertile stamens 2, anthers ca. 4 mm; staminodes often 4, subulate. Ovary hairy, ovules 6–9; styles slender, hairy. Pods obovate-oblong, 12–20 cm, base slightly oblique, sutures unequal, dehiscent; valves often coiled. Seeds 2–7, brownish red, oblong, 2.2–2.5 × 1.2–1.5 cm, margin not thickened; seed-coat thin and rigid, slightly wrinkled.

Locality: Cultivated. *Y. S. Lau* 2577, 2586, 3220.

Distribution: Guangdong, Guangxi, Yunnan; Vietnam.

Ecology: Flowering: Jun.–Aug.; fruiting: Sep.–Nov.

Uses: Ornamental, medicinal (folklore).

**11. *Tamarindus* L. 酸豆屬**

Trees. Leaves paripinnate, alternate. Stipules small, caducous. Inflorescences terminal, racemose or narrowly paniculate. Bracts and bracteoles ovate-oblong, colourful, usually caducous. Calyx-tube narrowly turbinate, 4-lobed; lobes imbricate. Petals only posterior 3 developed, subequal, anterior 2 small, scale-like, included in the base of staminal tube. Fertile stamens 3, connate into an upcurved tube or sheath at the lower half; filaments short, anthers dorsifixed; staminodes spinose-hairy, inserted at apex of staminal tube. Ovary stipitate, stipe adnate to calyx-tube, ovules many; styles elongated, stigmas capitate. Pods long cylindrical, indehiscent, exocarp thin, rigid, mesocarp thick and fleshy, endocarp thinly membranous, with septum between seeds. Seeds oblique rectangular or oblique ovate, compressed. Cotyledons thick, fleshy; embryo basal, erect.

One species native to Africa, cultivated in tropical regions of the world; it is also cultivated in Hong Kong.

**1. *Tamarindus indica* L. 酸豆**

(Photo 97)

Sp. Pl. 1: 34. 1753; FHN 2: 235. 1965; FTW 3: 389. 1977; FRPS 39: 217, pl. 76. 1988; FGD 5: 202, fig. 117. 2003; FGX 2: 495, pl. 211. 2005.

Tree, 10–15(–25) m tall. Bark dark grey, irregularly fissured. Leaflets 10–20 pairs, oblong, 1.3–2.8 × 0.5–0.9 cm, base rounded, oblique, apex rounded or emarginate, glabrous on both surfaces. Inflorescences few-flowered. Peduncles and pedicels yellowish green pubescent. Bracteoles 2, ca. 1 cm, firmly enclosing the buds before flowering. Calyx-tube ca. 7 mm, lobes lanceolate-oblong, ca. 1.2 cm, reflexed after flowering. Petals yellow or mixed with purplish red stripes, obovate, as long as calyx-lobes, margin wavy wrinkled. Fertile stamens 1.2–1.5 cm, hairy near base, free parts of filaments ca. 7 mm; anthers ellipsoidal, ca. 2.5 mm. Ovary terete, ca. 8 mm, slightly curved, hairy. Pods terete-cylindrical, brown, 5–14 cm, straight or curved, often irregularly constricted. Seeds 3–14, brown, glossy.

Locality: Aberdeen, Deep Water Bay, Tai Wai, Peng Chau (cultivated). *P. S. Choi* 490; *Y. W. Lam* 981; *HK sheet* 8685.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; native to Africa, cultivated in tropics.

Ecology: Flowering: May–Aug.; fruiting: Dec.–May.

Uses: Edible (pods).

**185. FABACEAE (PAPILIONACEAE) 蝶形花科**

WU De-lin 吳德鄰

Trees, shrubs, or herbs, sometimes climbing or decumbent. Stipules mostly present; stipels present or absent. Leaves alternate or rarely opposite, mostly compound, odd- or even-pinnate, trifoliolate, digitate, or 1-foliolate, rarely simple or reduced to scales. Flowers bisexual, very rarely cleistogamous, solitary to forming racemose, paniculate, capitate, or rarely spicate inflorescences. Bracts and bracteoles present. Calyx tubular, regularly (4–)5-toothed or lobed, 2-lipped or spathaceous, lobes or teeth imbricate or valvate. Petals (very rarely absent) 5, papilionaceous, imbricate, free or rarely partially connivent; adaxial petal (vexillum or standard) outermost, the 2 lateral petals (alae or wings) more or less parallel with each other, the lower 2 innermost forming the keel (carina). Stamens often 10, monadelphous or diadelphous, rarely all quite free; often the adaxial (vexillary) filament free or partly united with the others; free part of filaments usually filiform, rarely swollen; anther 2-celled, uniform or very rarely dimorphic and then alternately basifixed and dorsifixed, usually opening by a longitudinal slit; disk rarely present. Ovary of 1 carpel, superior, 1-locular, or sometimes transversely (very rarely longitudinally) septate; ovules 1–many, inserted on the adaxial suture. Pod dehiscent by one or both sutures, or indehiscent, sometimes winged, sometimes jointed and breaking up into 1-seeded segments. Seeds without or with very scanty endosperm, sometimes strophiolate; radicle sometimes inflexed.

About 425 genera, 12000 species distributed worldwide. The more primitive woody genera mostly occur in the S hemisphere and in the tropics whereas the more advanced and herbaceous genera are found in temperate regions, especially rich in Mediterranean countries; 128 genera, 1372 species in China; 53 genera, 130 species, four subspecies and one varieties in Hong Kong.

- 1a. Ligneous plants.
- 2a. Woody vines.
- 3a. Leaves simple (1-foliolate) ..... 1. *Bowringia*
- 3b. Leaves compound.
- 4a. Leaves even-pinnate; leaflets 7–16 pairs ..... 2. *Abrus*
- 4b. Leaves odd-pinnate; leaflets 3 or more.
- 5a. Leaves pinnately 3-foliolate.
- 6a. Inflorescence paniculate; pods not winged on sutures ..... 3. *Spatholobus*
- 6b. Inflorescence racemose; pods winged on sutures ..... 4. *Mucuna*
- 5b. Leaves pinnate; leaflets more than 3.
- 7a. Leaves deciduous ..... 5. *Wisteria*
- 7b. Leaves evergreen.
- 8a. Leaflets alternate; pods thin ..... 6. *Dalbergia* (part)
- 8b. Leaflets opposite; pods more or less thickened.
- 9a. Leaflets exstipellate; pods winged on sutures ..... 7. *Derris*
- 9b. Leaflets stipellate; pods not winged on sutures ..... 8. *Millettia* (part)
- 2b. Trees or shrubs.
- 10a. Shrubs; leaves pinnately or digitately 3-foliolate.
- 11a. Pods transversely jointed.
- 12a. Umbels axillary, not enclosed in 2 opposite leafy bracts; stems triangular ..... 9. *Dendrolobium*
- 12b. Umbels enclosed in 2 opposite leafy bracts; stems terete ..... 10. *Phyllodium*
- 11b. Pods not transversely jointed.
- 13a. Leaves digitately 3-foliolate; pods 1–2-seeded ..... 11. *Flemingia*
- 13b. Leaves pinnately 3-foliolate; pods 1- or 3–11-seeded.
- 14a. Pods 1-seeded, not depressed between the seeds ..... 12. *Lespedeza*
- 14b. Pods 3–11-seeded, depressed between the seeds ..... 13. *Cajanus* (part)
- 10b. Trees or small trees; leaves odd-pinnate, rarely pinnately 3-foliolate (*Erythrina*).
- 15a. Leaves pinnately 3-foliolate; branchlets often armed with thorns or conical spines; flowers often appearing before or with new leaves ..... 14. *Erythrina*
- 15b. Leaves odd-pinnate (only *Ormosia simplicifolia* 1-foliolate); branchlets without spines; flowers often appearing after leaves.
- 16a. Leaflets alternate.
- 17a. Flowers white, greenish or purplish; anthers basifixed; pods oblong or liguliform, not winged ..... 6. *Dalbergia* (part)
- 17b. Flowers yellow; anthers dorsifixed; pods orbicular, winged around seed ..... 15. *Pterocarpus*
- 16b. Leaflets opposite.
- 18a. Filaments free or connate only at base.
- 19a. Pods moniliform ..... 16. *Sophora*
- 19b. Pods not moniliform.
- 20a. Pods not winged and not thickened on both suture.
- 21a. Pods dehiscent into 2 valves; seeds obovate or oblong, scarlet or bicoloured ..... 17. *Ormosia*
- 21b. Pods indehiscent; seeds reniform, brown ..... 19. *Pongamia*
- 20b. Pods winged along the ventral suture or thickened on both suture, indehiscent ..... 18. *Maackia*
- 18b. Filaments wholly connate into a tube.
- 22a. Leaflets 20–30(–40) pairs; flowers large, 7–10 cm ..... 27. *Sesbania* (*S. grandiflora*)
- 22b. Leaflets 2–7 pairs; flowers smaller, 0.8–1.6 cm ..... 8. *Millettia* (part)
- 1b. Herbaceous plants or subshrubs.
- 23a. Erect or procumbent herbs, or subshrubs.
- 24a. Leaves simple (1-foliolate).
- 25a. Calyx glume-like, lobes dry and hard, striate ..... 20. *Alysicarpus*
- 25b. Calyx not glume-like, lobes herbaceous, not striate.
- 26a. Pods jointed.
- 27a. Petioles broadly winged ..... 21. *Tadehagi*
- 27b. Petioles not winged.
- 28a. Pods indehiscent ..... 22. *Desmodium* (part)
- 28b. Pods dehiscent along dorsal suture ..... 23. *Codariocalyx*
- 26b. Pods not jointed.
- 29a. Unbranched or little-branched herbs; leaves less than 1 cm wide; flower solitary, axillary; pods 2-seeded ..... 24. *Eriosema*

- 29b. Branched herbs; leaves more than 1 cm wide; racemes terminal; pods 6–30-seeded ..... 25. *Crotalaria* (part)
- 24b. Leaves compound.
- 30a. Leaves even-pinnate.
- 31a. Leaves 2-foliolate..... 26. *Zornia*
- 31b. Leaves usually more than 2-foliolate.
- 32a. Leaflets 10–40 pairs.
- 33a. Stipules medifixed ..... 27. *Sesbania* (part)
- 33b. Stipules basifixed..... 39. *Aeschynomene*
- 32b. Leaflets not more than 6 pairs.
- 34a. Leaflets 2 pairs.
- 35a. Bracts large, ciliate, imbricate; corolla purple, vexillum 5 mm wide; pods developed above ground, reniform, 4 mm long ..... 28. *Geissaspis*
- 35b. Bracts absent; corolla yellow, vexillum 1.7 cm wide; pods developed underground, oblong, 2–5 cm long ..... 29. *Arachis*
- 34b. Leaflets 1–6 pairs.
- 36a. Pods consisting of several 1-seeded segments folded on top of one another within persistent calyx ..... 30. *Smithia*
- 36b. Pods not segmented and not enclosed in calyx ..... 31. *Vicia* (*V. faba*)
- 30b. Leaves odd-pinnate or 3-foliolate.
- 37a. Leaves pinnately or digitately 3-foliolate.
- 38a. Pods transversely jointed.
- 39a. Pods distinctly stipitate, ventral suture deeply incised, the depth of the sinus less than 1/5 of the pod; stamens monadelphous ..... 32. *Hylodesmum*
- 39b. Pods not stipitate, constricted on both sutures or dorsal suture straight; stamens diadelphous, rarely monadelphous.
- 40a. Calyx enlarged after flowering, net-veined ..... 33. *Christia*
- 40b. Calyx not enlarged after flowering, not net-veined ..... 22. *Desmodium* (part)
- 38b. Pods not transversely jointed.
- 41a. Leaves dentate; pods shell-like..... 34. *Medicago*
- 41b. Leaves not dentate; pods not shell-like.
- 42a. Prostrate and much-branched herbs.
- 43a. Leaflets closely parallel-veined; pods 1-seeded ..... 35. *Kummerowia*
- 43b. Leaflets not closely parallel-veined; pods 3–4-seeded ..... 53. *Trifolium*
- 42b. Erect herbs or subshrubs.
- 44a. Calyx distinctly 2-lipped; pods large, 2–5 cm wide ..... 36. *Canavalia* (part)
- 44b. Calyx not distinctly 2-lipped; pods smaller, under 2 cm wide.
- 45a. Flowers yellow; corolla 5 or 8–12 mm ..... 25. *Crotalaria* (part)
- 45b. Flowers purplish or white; corolla 4 or 6–8 mm.
- 46a. Corolla 4 mm; pods 6–8 mm, 8–10-seeded ..... 37. *Pycnospora*
- 46b. Corolla 6–8 mm; pods 4–7.5 cm, 1–5-seeded..... 38. *Glycine*
- 37b. Leaves odd-pinnate.
- 47a. Plants clothed with medifixed hairs ..... 40. *Indigofera*
- 47b. Plants not clothed with medifixed hairs.
- 48a. Pods jointed; segments of pods folded on top of one another..... 41. *Uraria*
- 48b. Pods not jointed.
- 49a. Leaflets 3–8 pairs..... 42. *Tephrosia*
- 49b. Leaflets 1–3 pairs..... 43. *Clitoria*
- 23b. Twining or climbing herbs.
- 50a. Leaves pinnately 3-foliolate.
- 51a. Leaves and calyx glandular.
- 52a. Pods 2-seeded ..... 44. *Rhynchosia*
- 52b. Pods 3–11-seeded.
- 53a. Pods not depressed between seeds ..... 45. *Dunbaria*
- 53b. Pods depressed between seeds ..... 13. *Cajanus* (part)
- 51b. Leaves and calyx eglandular.
- 54a. Styles involute and thickened; hilum with spongy remainder mass.
- 55a. Keel apex with twisted long beak (over 360°) ..... 46. *Phaseolus*
- 55b. Keel apex without twisted long beak (if twisted, not more than 360°).
- 56a. Pods terete or linear-oblong, under 1 cm wide..... 47. *Vigna*
- 56b. Pods oblong-falcate, 1.4–1.8 cm wide ..... 48. *Lablab*

- 54b. Styles cylindric, not involute and thickened; hilum without spongy remainder mass.  
 57a. Inflorescence-rachis nodose.  
   58a. Calyx distinctly 2-lipped; stamens monadelphous; pods large, 2–6 cm wide ..... 36. *Canavalia* (part)  
   58b. Calyx not distinctly 2-lipped; stamens diadelphous; pods smaller, not more than 1.5 cm wide.  
     59a. Roots not tuberiform; pods linear, 6–7 mm wide ..... 49. *Galactia*  
     59b. Roots tuberiform; pods loriform, 1.2–1.4 cm wide ..... 50. *Pachyrhizus*  
 57b. Inflorescence-rachis not nodose ..... 51. *Pueraria*
- 50b. Leaves even-pinnate.  
 60a. Stipules smaller than leaflets ..... 31. *Vicia* (part)  
 60b. Stipules larger than leaflets ..... 52. *Pisum*

### 1. *Bowringia* Champ. ex Benth. 藤槐屬

Scandent shrubs. Stipules minute; stipels absent. Leaves 1-foliolate. Flowers in axillary short racemes. Calyx membranaceous, cup-shaped, truncate and minutely 5-toothed. Corolla white, all petals shortly clawed; vexillum broad, suborbicular; wings falcate-oblong; keels subsimilar to wings or slightly larger, scarcely connate dorsally. Stamens free or connate only at base; anthers oblong. Ovary stipitate, ovules numerous; style subulate, stigma terminal. Pods turgid, ovoid or subglobose, thin-leathery, 2-valved. Seeds 1–2, oblong or subglobose, brown or scarlet, strophiole large.

Four species distributed in W Africa to SE Asia; one species in China; it also occurs in Hong Kong.

Based on the species *B. callicarpa*, the genus *Bowringia* was named by J. G. Champion in honour of his friend John C. Bowring, Jr. (1821–1893), a local naturalist in the 1850s and the eldest son of Sir John Bowring (1792–1872).

#### 1. *Bowringia callicarpa* Champ. ex Benth.

藤槐

(Fig. 33; Photo 98)

Hooker's J. Bot. Kew Gard. Misc. 4: 75. 1852; FHK 95. 1861; FKH 87. 1912; FRPS 40: 97. 1994; FGD 5: 220, fig. 123. 2003.

Scandent shrub. Leaves simple; petioles 1–3 cm, slightly turgid on both ends; stipules small, ovate-deltoid; leaf blade sub-leathery, oblong or ovate-oblong, 6–13 × 2–6 cm, base rounded, apex acuminate, glabrous on both surfaces, lateral veins 5–6 on each side of midvein. Racemes axillary, 2–5-flowered; pedicels 10–13 cm. Calyx cup-shaped, teeth minute. Corolla white; vexillum suborbicular or oblong, 6–8 mm, apex emarginate or obcordate; claw 1–2 mm; wings falcate-oblong, slightly longer than vexillum; keel oblong, 5–7 mm. Stamens 10, unequal, free. Pods ovoid, 2.5–3 × 1.5 cm, apex rostrate, with distinct reticulate veins on both surfaces. Seeds 1–2, dark brown or black, elliptic, 12 × 8 mm.

Locality: Hong Kong Island, Ng Tung Chai, Ma On Shan, Lantau Island. *L. T. Lo* 475; *Y. S. Lau* 1168; *K. L. Yip* 4103.

Distribution: Hainan, Guangdong, Guangxi, Fujian; Vietnam.

Ecology: Margins of forests, streamsides. Flowering: May–Jun.; fruiting: Dec.–Jan.

Notes: The type specimen was collected from Victoria Peak by John C. Bowring, Jr. around 1850.

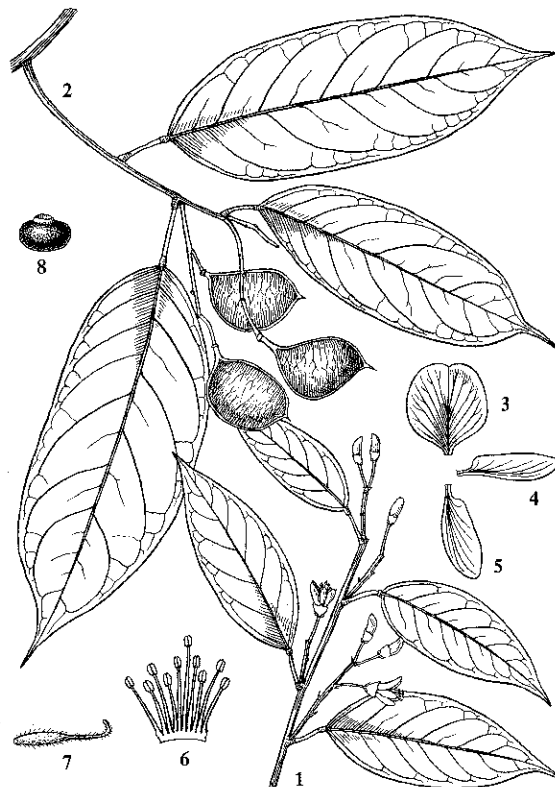


Figure 33. *Bowringia callicarpa* Champ. ex Benth.

1. flowering branch; 2. fruiting branch; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. seed. (drawn by H. P. Yu)

### 2. *Abrus* Adans. 相思子屬

Shrubs, stems often elongate and climbing. Stipules linear-lanceolate, exstipellate. Leaves deciduous, even-pinnate; leaflets many-paired, without tendril, the petiole ending in a short point. Racemes axillary, terminal or leaf-opposed. Flowers fasciculate at nodes of rachis, small, rose or white. Calyx truncate, teeth very short, upper 2 subconnate. Corolla longer than calyx, purple, pink or white, vexillum ovate, claw short and broad, more or less adherent to the staminal tube; wings narrowly falcate-oblong; keel longer and broader than wings, arcuate. Stamens 9, connate into a sheath split adaxially; vexillary stamen absent; anthers uniform. Ovary subsessile; ovules numerous; styles short, incurved, not bearded, stigma capitate. Pods oblong or linear, plano-compressed, 2-valved, subseptate within between seeds. Seeds 2–many, subglobose or ellipsoidal, shining, sometimes red and black.

About 12 species distributed in tropical and subtropical regions; four species in China; three species in Hong Kong.

- 1a. Pods inflated; seeds bicoloured, usually scarlet with a black spot on one side..... 1. *A. precatorius*  
 1b. Pods compressed; seeds concoloured, yellow-brown, dark brown or black.  
 2a. Leaflets 10–16 pairs, 1–2.5 × 0.5–1 cm; pods white villous, 3.5–5 × 0.8–1 cm..... 2. *A. mollis*  
 2b. Leaflets 7–12 pairs, 0.5–1.2 × 0.3–0.5 cm; pods sparsely yellowish pubescent, 2.2–3 × 0.7–0.8 cm..... 3. *A. cantoniensis*

**1. *Abrus precatorius* L. 相思子 (Fig. 34; Photo 99)**

Syst. Nat. (ed. 12), 2: 472. 1767; FHK 92. 1861; FKH 82. 1912; FRPS 40: 123. 1994; FGD 5: 228. 2003.

Climbing shrub, much branched, minutely white strigose. Leaves even-pinnate, 10–15 cm; leaflets 8–15 pairs, membranous, oblong or several distal pairs oblanceolate-oblong, 10–22 × 4–6 mm, base rounded, apex truncate, apiculate. Racemes axillary, 3–6 cm, many-flowered, crowded in a head-shaped cluster. Calyx campanulate, shallowly 4-lobed, whitely strigose. Corolla purplish, petals nearly equal in length; vexillum broadly ovate, with deltoid claw; wings and keel very narrow. Stamens 9. Ovary hairy. Pods oblong, 2.5–3 × 1–1.5 cm, slightly turgid, densely strigose, dehiscent, valves leathery, 5-seeded. Seeds elliptic, 5–6 mm, bright scarlet, with a black spot on one side.

Locality: Common in Hong Kong. *L. T. Lo* 393; *P. S. Choi* 363; *HK sheet* 39272.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; widely distributed in tropical regions.

Ecology: Thin forests. Flowering: Sep.; fruiting: Oct.–Dec.

**2. *Abrus mollis* Hance 毛相思子 (Photo 100)**

J. Bot. 9(101): 130. 1871; FKH 82. 1912; FRPS 40: 125. 1994; FGD 5: 228. 2003.

Climbing shrub. Branches, leaf-rachis and petioles yellow-villose. Leaves even-pinnate; leaflets 10–16 pairs, membranous, oblong or the uppermost one obovate, 1–2.5 × 0.5–1 cm, base rounded, apex truncate, apiculate, villose on both surfaces, but the hairs more dense and white abaxially. Racemes axillary, 3–7 cm. Flowers 4–6-fasciculate at nodes of rachis. Calyx campanulate, grey-villose. Corolla pink or purplish. Pods oblong, compressed, 3.5–5 × 0.8–1 cm, densely villose, dehiscent, 4–9-seeded. Seeds ovate, 5 × 3.5 cm, compressed, dark brown or black, brilliant.

Locality: Common in Hong Kong. *H. C. Tang* 220; *Y. S. Lau* 768, 1366.

Distribution: Hainan, Guangdong, Guangxi, Fujian; Indochina.

Ecology: Thin forests and thickets. Flowering: Jul.–Aug.; fruiting: Sep.–Dec.

Uses: Medicinal (folklore), materials (beads), seeds very poisonous.

**3. *Abrus cantoniensis* Hance 廣州相思子(廣東相思子)**

J. Bot. 6: 112. 1868; FKH 82. 1912; FRPS 40: 126. 1994; FGD 229, fig. 127. 2003.

Woody climber, 1–2 m tall. Stems densely yellow-brown hirsute when young, glabrescent in age. Leaves even-pinnate; leaflets 7–12 pairs; membranous or thin papery, oblong or obovate-oblong, 5–12 × 3–5 mm, base slightly cordate, apex truncate, apiculate, sparsely pubescent adaxially, strigose abaxially, veins elevated on both surfaces. Racemes axillary, short. Calyx cup-shaped, 3 mm, rarely 4–5-toothed. Corolla purplish; vexillum ovate-elliptic, 8 mm, emarginate; wings and keel equal in length with vexillum. Stamens 9. Ovary sessile. Pods oblong, 2.2–3 × 0.7–0.8 cm, compressed, beaked, sparsely yellowish pubescent, 4–7-seeded. Seeds oblong, 5–6 mm, dark brown or yellow brown.

Locality: Pat Sin Leng, Hung Fa Ling, Po Sam Pai, Lantau Island. *Y. S. Lau* 3267; *HK sheet* 7702, 36000.

Distribution: Hainan, Guangdong, Guangxi, Hunan; Thailand.

Ecology: Thin forests and thickets. Flowering: Aug.–Sep.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).

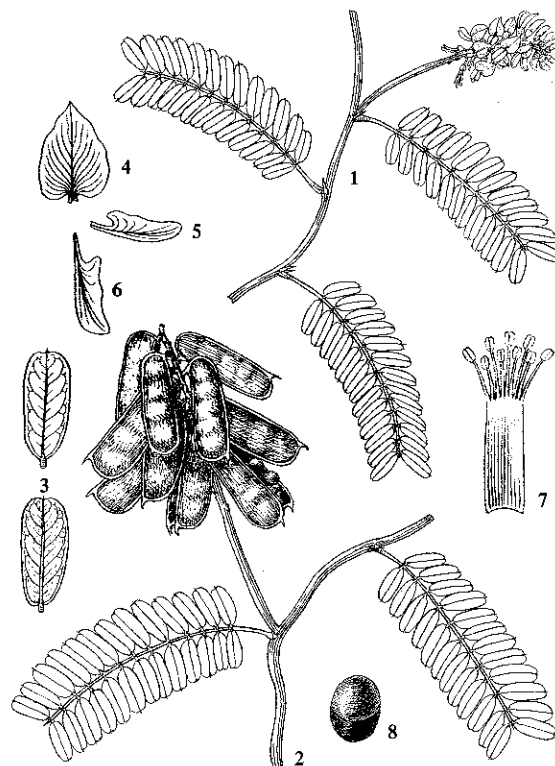


Figure 34. *Abrus precatorius* L.

1. flowering branch; 2. fruiting branch; 3. both surfaces of leaflet; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. seed. (drawn by H. P. Yu)

**3. *Spatholobus* Hassk. 密花豆屬**

Tall climbing shrubs, often tomentose. Stipules small, stipellate. Leaves pinnately 3-foliolate. Flowers small, numerous, in axillary or terminal panicles; bracts and bracteoles small, narrow. Calyx campanulate or tubular, 5-toothed, 2-lipped, the 2 upper teeth connate, apex entire or emarginate. Corolla rose, purple or white; vexillum ovate or suborbicular, obtuse, without appendages; wings obliquely oblong, free; keel almost straight, obtuse, shorter than wings; vexillary stamens free, remainder connate; anthers uniform. Ovary sessile

or stipitate; ovules 2; style subulate or compressed, incurved, not barbate, stigma small, terminal. Pods sessile or stipitate, broadly linear, often falcate,  $\pm$  thickened and dehiscent at top, 1-seeded. Seeds flat, obovate, estrophiolate.

About 40 species distributed in tropical Asia; ten species in China; one species in Hong Kong.

**1. *Spatholobus suberectus* Dunn** 密花豆 (Fig. 35; Photo 101)  
J. Linn. Soc. Bot. 35(247): 489. 1900; FRPS 41: 192. 1995; FGD 5: 303, fig. 160. 2003.

Climbing shrub, to 10 m or longer. Stems stout, with red juice flood out when injured. Leaves pinnately 3-foliolate; leaflets papery or subleathery, the terminal one broadly elliptic,  $9-19 \times 5-14$  cm, bilateral symmetric, base acuminate, apex rounded or shortly acuminate, lateral ones ovate or broadly ovate, asymmetric, base oblique, glabrous on both surfaces or slightly puberulent, lateral veins 6-8 pairs, slightly incurved. Panicles axillary or terminal, up to 50 cm; peduncle and pedicels yellow-brown pubescent. Calyx tubular, 3.5-4 mm, hairy, calyx-teeth less than 1 mm. Corolla white, 7-8 mm, petals all clawed; vexillum suborbicular, 4-4.5 mm, emarginate; wings 3.5-4 mm; keel slightly shorter. Stamens included. Ovary densely white hirsute. Pods knife-form, 9-11 cm, densely brown tomentose, 1-seeded. Seeds oblong,  $2 \times 1$  cm, purple-brown, shining.

Locality: New Territories. A. Henry 12780; F. W. Xing 9164; HK sheet 7904.

Distribution: Guangdong, Guangxi, Fujian, Yunnan.

Ecology: Forests in valleys. Flowering: Jun.; fruiting: Nov.-Dec.

Uses: Medicinal (folklore).

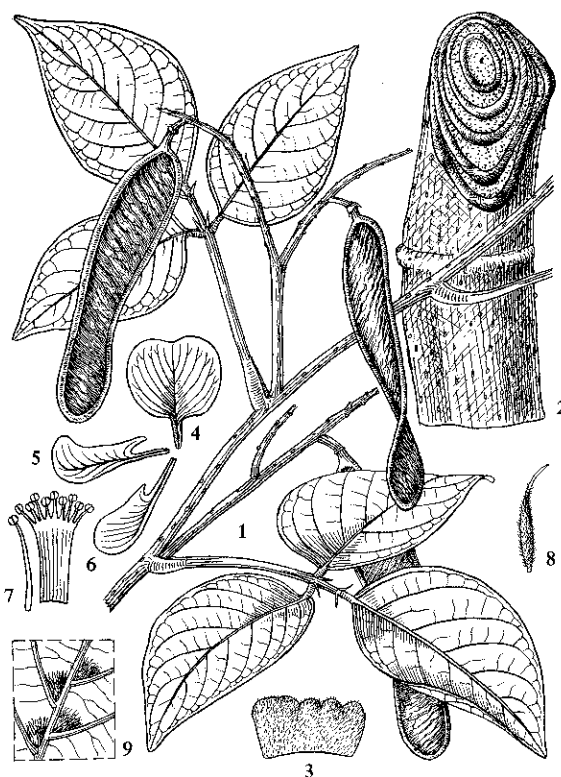


Figure 35. *Spatholobus suberectus* Dunn

1. fruiting branch; 2. a section of old stems; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. a portion of leaflet abaxially, showing barbate on vein axil. (drawn by H. P. Yu)

#### 4. *Mueuna* Adans. 蠶豆屬

Herbaceous or woody twiners. Stipules deciduous. Leaves pinnately 3-foliolate, often stipellate. Inflorescence racemose, rarely paniculate, axillary or borne on old leafless stems and branches. Bracts small or caducous. Calyx campanulate, 2-lipped, upper lip entire or 2-lobed, lower lip 3-lobed, longer than others. Corolla showy, purple, red, yellowish green or white, vexillum rounded, clawed and auriculate at base, usually smaller than other petals; wings oblong or ovate, incurved, often adherent to keel; keel linear-oblong, incurved, acute and hardened at tip, as long as or longer than wings; vexillary stamen free, remainder connate; anthers dimorphous, the longer ones sub-basifixed, the shorter ones versatile, often barbate. Ovary sessile, villous, few-ovuled; style filiform, not barbate, stigma small, terminal. Pods thick, ovate, oblong or linear, often clothed with irritant bristles, 2-valved, septate between seeds or filled, valves leathery, variously ribbed or nude. Seeds rounded or oblong, hilum short or linear, discoid, arillate or exarillate.

About 100 species distributed in tropical and subtropical regions; 15 species in China; three species in Hong Kong.

- 1a. Flowers white; pods without folds ..... 1. *M. birdwoodiana*  
1b. Flowers purple; pods with oblique folds.  
2a. Leaves glabrous abaxially; flowers 7.5 cm ..... 2. *M. macrobotrys*  
2b. Leaves silky abaxially; flowers 5 cm ..... 3. *M. championii*

**1. *Mucuna birdwoodiana* Tutchter** 白花油麻藤 (勃氏蠶豆)

(Fig. 36; Photo 102)

J. Linn. Soc. Bot. 37: 65. 1904; FKH 83. 1912; FRPS 41: 179. 1995; FGD 5: 299. 2003.

Large woody climber; flowing white juice first then become red soon when hurt, transverse section of stem red-brown, with 3-4 obliquely concentric circles. Leaves pinnately 3-foliolate, subleathery, glabrous or sparsely pubescent; terminal leaflets elliptic, ovate or  $\pm$  obovate,  $3-16 \times 2-6$  cm, base rounded or cuneate, apex caudate-acuminate; acumen 1.3-2 cm; lateral leaflets oblique at base. Racemes axillary or borne on old branches, 20-38 cm. Flowers 2-3 on each node. Calyx campanulate, rusty pubescent on both surfaces; calyx-tube 1-1.5 cm, the upper 2 teeth connate, the lowest tooth longest, 5-15 mm. Corolla greyish white, vexillum ovate-orbicular, 3.5-4 cm; wings 6-7 cm; keel 7.5-8.7 cm, narrowly winged, brown pubescent. Stamen-tube 5.5-6.5 cm. Ovary densely brown pubescent. Pods leathery, loriform,  $30-45 \times 3.5-4$  cm, 5-13-seeded, densely rusty-pubescent, with 2 narrow wings along sutures, slightly constricted between seeds. Seeds suborbicular,  $2.8-3 \times 2-2.5$  cm, purple-black, shining.

Locality: Common in Hong Kong. Y. S. Lau 1106, 2852.

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Jiangxi, Fujian.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Nov.

Uses: Medicinal, ornamental, seed poisonous.

Notes: The type specimen (*Herb. HK. Bot. Gard. n. 980*) was collected from Mount Parker by W. J. Tutcher in 1903.

**2. *Mucuna macrobotrys* Hance 大球油麻藤 (長荚蠶豆)**

*Ann. Bot. Syst.* 2: 422. 1851; *FKH* 87. 1861 (sphalm. "*macrobotrya*"); *FKH* 83. 1912; *FRPS* 41: 174. 1995; *FGD* 5: 297. 2003.

Large woody climber. Stems rusty-pubescent or glabrous. Leaves pinnately 3-foliolate, glabrous; terminal leaflets elliptic or obovate-elliptic, 9.5–11 × 4.2–5.5 cm, base obtuse or rounded, apex acuminate; acumen 5–7 mm or longer; lateral leaflets very oblique, slightly smaller, lateral veins 4–5 pairs. Racemes axillary, 7–27 cm, on a very long peduncle. Flowers often 3 on each node. Calyx broadly campanulate, densely sericeous; tube 10 mm; teeth unequal, the lowest tooth longest, up to 10 mm. Corolla dark purple; vexillum rounded, 3.7–4.5 cm; wings 6–7 cm; keel 7.5–9 cm, with a hard beak. Stamens tube 6.5–7 cm. Ovary 3-ovuled. Pods oblong, 16–17 × 4.5–5 cm (including wings), 2–3-seeded, pubescent, winged on both sutures, valves purple-black, reticulate, with 12–16 pieces of oblique folds, folds 6–15 mm wide. Seeds reniform, 1.2 cm.

Locality: Causeway Bay.

Distribution: Guangxi, Yunnan.

Ecology: Climbing on trees in forests.

Uses: Ornamental.

Notes: The type specimen was collected near Buddhist Temple, Causeway Bay by Hance before 1851, but the plants perhaps are introduced (Bentham, 1861).

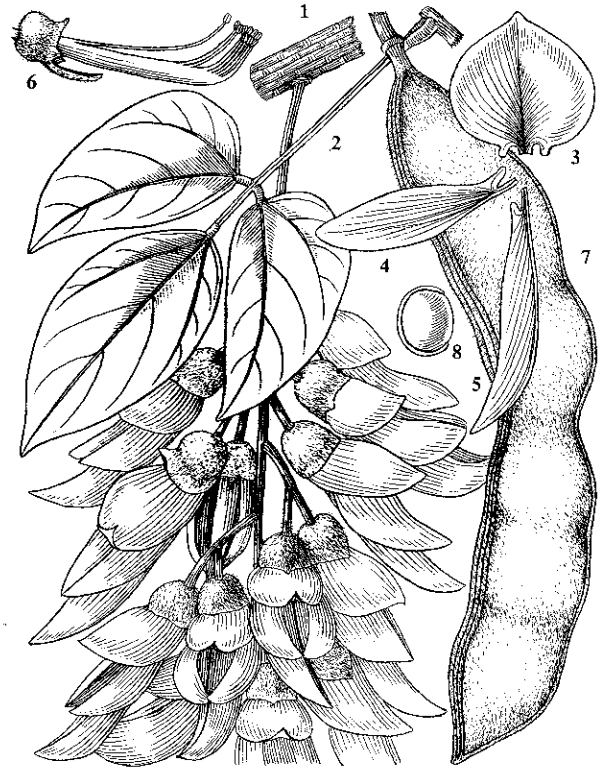


Figure 36. *Mucuna birdwoodiana* Tutcher

1. flowering branch; 2. leaf; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pod; 8. seed. (drawn by H. P. Yu)

**3. *Mucuna championii* Benth. 港油麻藤 (香港蠶豆)**

(Photo 103)

*Hooker's J. Bot. Kew Gard. Misc.* 4: 49. 1852; *FKH* 87. 1861; *FKH* 83. 1912; *FRPS* 41: 172. 1995; *FGD* 5: 298. 2003.

*Mucuna nigricans* var. *hongkongensis* Wilmot-Dear, *Kew Bull.* 39(1): 45. 1984.

Tall woody climber, up to 10 m or longer. Branchlets densely rusty pubescent when young, glabrescent in age. Leaves pinnately 3-foliolate; terminal leaflets broadly ovate, ovate-elliptic or elliptic, 5–10.5 × 3.5–5.5 cm, base obtuse or rounded, apex acute or obtuse, apiculate, lateral ones obliquely ovate, adaxial surface covered with golden-yellow silky hairs when young, rusty pubescent on abaxial surface, glabrescent on both surfaces in age. Racemes 8–20 cm. Flowers often 3 on each node. Calyx broadly campanulate, brownish hairy on both surfaces; tube 7–9 mm, the lowest tooth longest, 4–8 mm. Corolla purple; vexillum suborbicular or ovate-orbicular, 2.5 cm; wings 4–4.3 cm; keel as long as wings or slightly longer. Stamen-tube 3–3.2 cm. Ovary hairy, 4-ovuled. Pods leathery, obliquely oblong, 3–4-seeded, 15–17.5 × 5–5.8 cm (including wings), winged on both surfaces, valves reticulate, with 11–15 pieces of folds. Seeds red-brown to brown-black, reniform-elliptic, 2.5–2.8 × 2–2.5 cm.

Locality: Causeway Bay, Tai Po, She Shan Tsuen, Lam Tsuen Valley, Fung Yuen, Plover Cove, Kuk Po. *Y. S. Lau* 3337, 3386; *HK sheet* 39902.

Distribution: Guangxi, Fujian.

Ecology: Climbing on rocks and trees in forests. Flowering: Mar.–Aug.; fruiting: Sep.–Dec.

Uses: Medicinal (folklore), ornamental.

Notes: The type specimen was collected from Buddhist Temple, East Point by J. G. Champion between 1847 and 1850. Listed in *Rare and Precious Plants of Hong Kong*.

**5. *Wisteria* Nutt. 紫藤屬**

Deciduous twining shrubs. Stipules caducous. Leaves alternate, odd-pinnate; leaflets entire, pinnately-veined. Flowers in pendulous racemes. Bracts caducous; bracteoles absent. Calyx cup-shaped, 5-toothed, the upper 2 teeth short and ± connate, the lower teeth often longer. Corolla blue to purplish, rarely white; vexillum orbicular, usually with 2 callosities at base; wings oblong-falcate, auriculate, free from the keel, sometimes coherent at apex; keel incurved, obtuse. Stamens 10, diadelphous, vexillary stamen free or connate at middle with the others; filaments not dilated; anthers uniform. Ovary stipitate; style inflexed, glabrous, stigma small, terminal; ovules numerous. Pods stipitate, elongated, flattened, with several seeds, usually slightly constricted between the seeds, tardily dehiscent by 2-valves. Seeds reniform, without strophiole.

About ten species distributed in E Asia, N America and Atlantic; five species in China; one species in Hong Kong.



1. *Wisteria sinensis* (Sims) Sweet 紫藤 (Fig. 37; Photo 104)  
Hort. Brit. 121. 1827; FRPS 40: 184. 1994; FGD 5: 239, fig 132.  
2003.

*Glycine sinensis* Sims, Curtis's Bot. Mag. 44: t. 2083. 1819.

*Wisteria chinensis* DC., Prodr. 2: 390. 1825; FKH 77. 1912.

Large woody twiner. Leaves papery, odd-pinnate; leaflets 7–13, opposite or nearly so, ovate-elliptic or ovate-lanceolate, the terminal one large, the basal pair smaller, 5–8 × 2–4 cm, base obtuse to rounded or cuneate, sometimes oblique, apex acuminate to caudate, covered with appressed silky hairs on both surfaces when young, glabrescent at maturity. Racemes pendulous, 15–30 cm, rachis white-pubescent. Flowers fragrant. Calyx cup-shaped, 5–6 mm, densely sericeous. Corolla blue-violet, 2–2.5 cm; vexillum orbicular, emarginate, reflexed after anthesis, with 2 callosities at base; wings oblong; keel broadly falcate, shorter than wings. Stamens diadelphous. Ovary linear, tomentose, 6–8-ovuled. Pods oblanceolate, 10–15 × 1.5–2 cm, velvety-pubescent, 1–3-seeded. Seeds brown, orbicular, 5 cm in diam., flat, shining.

Locality: Cultivated. *H. C. Tang* 2349; *L. T. Lo* 377; *K. Y. Chan* 161.

Distribution: Areas S of Yellow River.

Ecology: Flowering: Apr.–May; fruiting: May–Aug.

Uses: Ornamental.

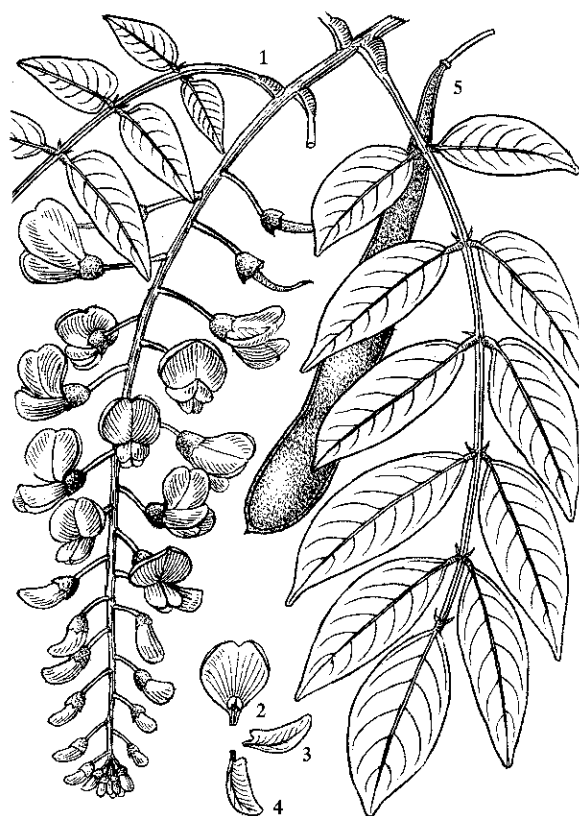


Figure 37. *Wisteria sinensis* (Sims) Sweet

1. flowering branch; 2. vexillum; 3. wing; 4. keel;  
5. pod. (drawn by H. P. Yu)

## 6. *Dalbergia* L. f. 黄檀属

Trees, shrubs or woody climbers. Stipules usually caducous; stipels absent. Leaves alternate, odd-pinnate; leaflets alternate.

Flowers small, in terminal or axillary panicles; bracts and bracteoles usually small and caducous. Calyx campanulate, 5-toothed, the upper 2 often partly connate. Corolla more or less exserted, white, yellow, purple or violet, often fragrant; vexillum orbicular, ovate to oblong, with well developed claw; wings free, oblong, narrowed or auriculate at base; keel obtuse, more or less connate at tip. Stamens 9 or 10, all united in a sheath open on the upper side, or into two equal bundles or only the vexillary one free. Anthers small, uniform, basifixed, opening at apex. Ovary stipitate, few-ovuled; style short, usually incurved; stigma small. Pods oblong or linear, usually thin, indehiscent, 1–few-seeded. Seeds reniform.

About 100 species distributed in tropical and subtropical regions; 28 species and one variety in China; six species in Hong Kong.

### 1a. Trees or shrubs.

2a. Leaflets 3–5, suborbicular or rhombic-obovate, 3.5–6 cm wide, apex caudate-acuminate..... 1. *D. sissoo*

2b. Leaflets 5–15, less than 2.5 cm wide.

3a. Scandent shrubs; leaflets (3–)5–7; pods crescent-shaped, 2–4 × 1–2 cm..... 2. *D. candanensis*

3b. Trees; leaflets 13–15; pods oblong, 5–6 × 2–2.5 cm..... 3. *D. assamica*

### 1b. Climbers.

4a. Leaflets 25–35, linear or narrowly oblong, 2–5 mm wide..... 4. *D. milletii*

4b. Leaflets 3–13, ovate to oblong, 0.5–3 cm wide.

5a. Leaflets 3–7, ovate or elliptic, 3–6 × 1.5–3 cm..... 5. *D. benthamii*

5b. Leaflets 7–13, 1–2 × 0.5–1 cm..... 6. *D. hancei*

### 1. *Dalbergia sissoo* Roxb. ex DC. 印度黄檀

Prodr. 2: 416. 1825; FRPS 40: 105. 1994; FGD 5: 225. 2003.

Tree, 10–25 m tall, much branched; bark grey, rough, deeply fissured. Branches spreading, white pubescent. Leaves odd-pinnate, 12–15 cm, rachis ± zigzag; leaflets 3–5, subleathery, suborbicular or rhombic-obovate, 3.5–6 × 3.5–5 cm, base cuneate, apex rounded, with a caudate acumen of 5–10 mm, initially appressed pubescent on abaxial surface, glabrescent. Panicles axillary, sub-corymbiform. Calyx campanulate, 6–7 mm, pubescent, teeth unequal in length, upper 2 suborbicular, lower ones lanceolate. Corolla creamy white; claws ca. 3 mm; vexillum obovate, 5–6 × 4 mm, emarginate; wings and keel oblanceolate, 4 × 1 mm. Stamens 9, monadelphous. Ovary oblong, white, pubescent; ovules 4–6. Pods 1–2(–3)-seeded, linear-oblong to loriform, 4–8 × 0.6–1.2 cm, prominently veined on the part covering the seeds. Seeds reniform, compressed.

Locality: Cultivated. *H. C. Tang* 1343, 1778; *HK Sheet* 8206.

Distribution: Hainan, Guangdong, Fujian (cultivated); native to India.

Ecology: Cultivated. Flowering: Mar.–Apr.; fruiting: May–Jun.

Uses: Ornamental, timber.

2. *Dalbergia candenatensis* (Dennst.) Prain

彎枝黃檀 (扭黃檀)

(Photo 105)

J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 70: 49. 1901; FRPS 40: 107. 1994; FGD 5: 222. 2003.

*Cassia candenatensis* Dennst., Schlüssel Hortus Malab. 32. 1818.

*Dalbergia torta* Graham, Numer. List 5873. 1832; FKH 86. 1912.

*Dalbergia monosperma* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 36. 1850; FHK 93. 1861.

Woody scandent shrub. Shoots glabrous, tip often contorted. Leaves odd-pinnate, 6–7.5 cm; leaflets (3–)5–7, obovate-oblong, 1.5–3 × 1–2 cm, base cuneate or subrounded, apex obtuse, sometimes emarginate, adaxially glabrous, minutely pubescent on abaxial surface. Panicles axillary, 2.5–5 cm; peduncles very short or almost obsolete. Flowers ca. 8 mm. Calyx campanulate, nearly glabrous, teeth nearly equal, the upper 2 subconnate. Corolla white, all petals clawed; vexillum oblong, reflexed; wings obovate-oblong, base hastate; keel oblong, curved dorsally, auriculate at base on inner side. Stamens 9–10, monadelphous. Ovary oblong, glabrous; ovules 1–2. Pods crescent-shaped, 2–4 × 1–2 cm, flat, valves hard-leathery. Seeds reniform, 6 × 3 mm, flat.

Locality: Aberdeen, Tai Tam Bay, Sha Tin, Yung Shue Au. *Y. S. Lau 675*; *P. S. Choi 452*; *Y. W. Lam 87*.

Distribution: Hainan, Guangdong, Guangxi; Asia, tropical Australia.

Ecology: Forests. Flowering: Jun.; fruiting: Jul.–Aug.

3. *Dalbergia assamica* Benth. 南嶺黃檀 (Fig. 38; Photo 106)

Pl. Jungh. 2: 256. 1852; C. Niyomdham, Thai Fores. Bull. (Bot.) 30: 126. 2002.

*Dalbergia balansae* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 70: 54. 1901; FRPS 40: 120. 1994; FGD 5: 226. 2003.

Tree, 6–15 m tall; bark greyish black, rough, longitudinally fissured. Leaves odd-pinnate, 10–15 cm; rachis and petioles pubescent; leaflets 13–15, papery, oblong or obovate-oblong, 2–4 × 2 cm, base broadly cuneate to rounded, apex rounded or nearly truncate, often emarginate, yellow brown pubescent when young, glabrescent at maturity. Panicles axillary, 5–10 cm. Calyx campanulate, 4–5 mm, sparsely net-veined, the upper 2 teeth subconnate, the lowest one longest, lanceolate. Corolla white, 6–7 mm, all petals clawed; vexillum orbicular, emarginate, with 2 appendages at base; wings obovate; keel sublunate. Stamens 10, diadelphous (5+5). Ovary hairy; ovules 3–4. Pods oblong, 5–6 × 2–2.5 cm, 1–2(–4)-seeded. Seeds reniform, 3.5 × 5 mm, flat.

Locality: Mount Parker, Stubbs Rd., Tsiu Hang, Tai Mo Shan, Kwu Tung, also cultivated. *Y. S. Lau 1618, 2034*; *Y. W. Lam 1480*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Zhejiang, Fujian; India, Myanmar, Laos, Vietnam and Thailand.

Ecology: Forests or thickets. Flowering: May–Oct.; fruiting: Sep.–Dec.

Uses: Ornamental.

Notes: The species was reported as *Dalbergia balansae* Prain previously (Check List HK Plants 142. 2002; 53. 2004).

4. *Dalbergia millettii* Benth. 香港黃檀 (Fig. 39; Photo 107)

J. Linn. Soc. Bot. 4(Suppl.): 34. 1860; FHK 92. 1861; FKH 86. 1912; FRPS 40: 105. 1994; FGD 5: 222. 2003.

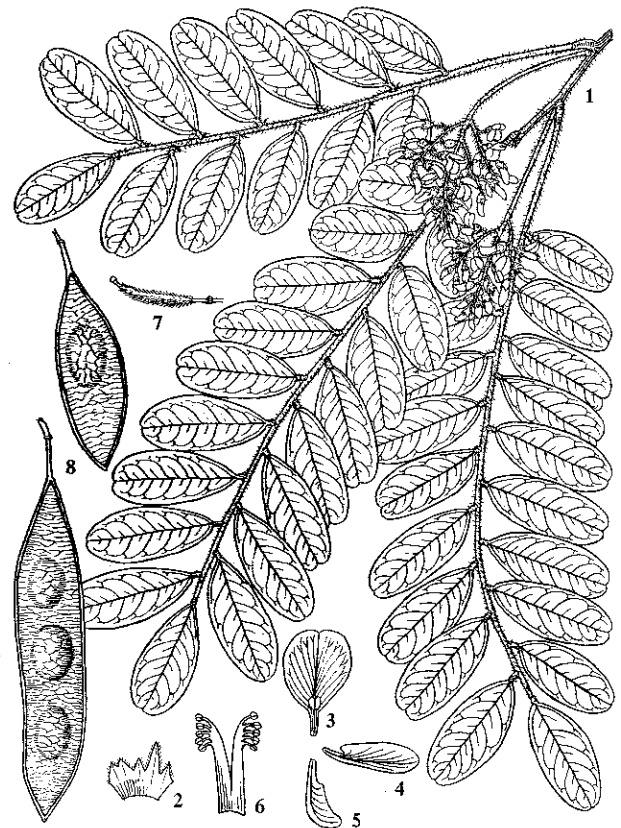


Figure 38. *Dalbergia assamica* Benth.

1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. pod. (drawn by H. P. Yu)

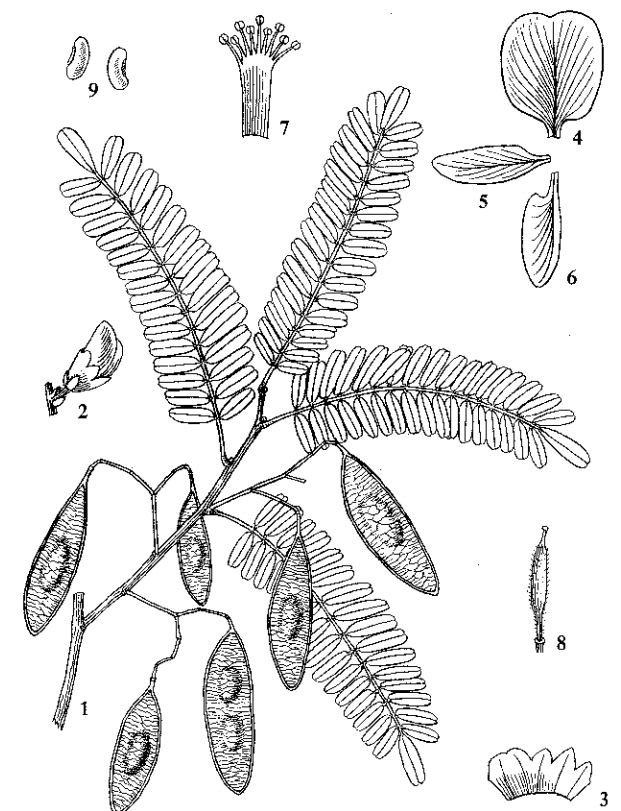


Figure 39. *Dalbergia millettii* Benth.

1. fruiting branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. seed. (drawn by H. P. Yu)

Woody climber. Branchlets glabrous. Leaves odd-pinnate, 4–5 cm; leaflets 25–35, linear or narrowly oblong, 0.6–2.5 × 0.2–0.7 cm, base rounded or obtuse, apex truncate, sometimes emarginate. Panicles axillary, 1–1.5 cm, rachis pubescent. Flowers minute. Calyx campanulate, ca. 1 mm, calyx 5-toothed. Corolla white, all petals shortly clawed; vexillum orbicular, emarginate; wings ovate-oblong; keel oblong. Stamens 9, monadelphous. Ovary sparsely pubescent; ovules 1–2. Pods usually oblong or loriform, 1.2–1.8 cm, compressed, 1(–2)-seeded. Seeds reniform, 8–12 × 6 mm, flat.

Locality: Common in Hong Kong. *Y. S. Lau 3102; H. C. Tang 2335, 2484.*

Distribution: Guangdong, Guangxi, Zhejiang.

Ecology: Forests. Flowering: May–Jun.; fruiting: Jun.

Notes: The syntype specimens (*Champion, Hance, Wright, Wilford s.n.*, K) were collected from Hong Kong between 1847 and 1858.

**5. *Dalbergia benthamii* Prain 兩廣黃檀 (Photo 108)**

J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 67(2): 289. 1898; FRPS 40: 109. 1994; FGD 5: 223. 2003.

*Dalbergia rubiginosa* auct. non Roxb.: Benth., FHK 93. 1861.

Woody climber, sometimes shrub-like. Shoots brown when dry. Leaves odd-pinnate, 12–17 cm; leaflets 3–7, subleathery, ovate or elliptic, 3–6 × 1.5–3 cm, base cuneate, subglabrous, apex obtuse, emarginate, subglabrous, minutely pubescent abaxially. Panicles axillary, 4 cm. Flowers fragrant, ca. 8 mm. Calyx campanulate, rusty-pubescent abaxially, calyx-teeth ovate-deltoid, nearly equal. Corolla white, all petals clawed; vexillum reflexed, auriculate at base; wings obovate-oblong, with incurved auricles on one side; keel sublunate, auriculate at inner side. Stamens 9, monadelphous. Ovary stipitate, glabrous, ovules 2–3. Pods thin-leathery, ligulate-oblong, 5–8 × 1.5–2 cm, clearly and thinly reticulately veined, 1–2-seeded. Seeds linear, 11–17 × 5 mm, very flat.

Locality: Common in Hong Kong. *P. S. Choi 175; Y. S. Lau 490, 964.*

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Thin forests. Flowering: Feb.–Apr.; fruiting: Apr.–May.

Notes: The type specimens were collected from Hong Kong Island in 1850s.

**6. *Dalbergia hancei* Benth. 藤黃檀 (Photo 109)**

J. Linn. Soc. Bot. 4(Suppl.): 44. 1860; FHK 93. 1861; FKH 86. 1912; FRPS 40: 108. 1994; FGD 5: 223, fig. 124. 2003.

Woody climber, shoots slender, sometimes hooked or contorted, ± pubescent when young. Leaves odd-pinnate, 5–8 cm; leaflets 7–13, oblong to obovate-oblong, 1–2 × 0.5–1 cm, base rounded or cuneate, apex rounded or obtuse, emarginate, adpressedly pubescent on both surfaces when young, glabrescent at maturity. Panicles axillary, 1.3–2 cm. Flowers fragrant. Calyx campanulate, ca. 3 mm, teeth obtuse, nearly equal. Corolla white, ca. 6 mm, all petals clawed; vexillum elliptic, emarginate, slightly reflexed; wings and keel falcate, oblong. Stamens 9, monadelphous, sometimes 10 (9+1), diadelphous. Ovary glabrous, shortly stipitate. Pods oblong or loriform, 3.7 × 0.8–1.4 cm, flat, usually 1(–4)-seeded, valves reticulate-veined. Seeds reniform, 8 × 5 mm, very flat.

Locality: Common in Hong Kong. *H. C. Tang 656, 1346, 2208.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Thickets on hillslopes or near valleys. Flowering: Apr.–May; fruiting: Jul.–Dec.

Uses: Medicinal (folklore).

Notes: The syntype specimens (*Hance Herb. no. 181, Wilford 368*, K) were collected from Hong Kong between 1857 and 1859.

**7. *Derris* Lour. 魚藤屬**

Woody twiners, rarely erect shrubs or trees. Leaves alternate, odd-pinnate; leaflets opposite, exstipellate. Racemes or panicles axillary or terminal. Bracts small, caducous; bracteoles sometimes persistent. Calyx campanulate or cup-shaped, truncate or very shortly 4- or 5-toothed. Corolla white, purple or pink, petals clawed; vexillum obovate or orbicular, without appendage, sometimes with a pair of callose thickenings near the base; wings obliquely oblong, slightly adhering to the keel; keel slightly incurved, united at the back; wings and keel auriculate. Stamens 10, monadelphous, vexillary stamen free at base, but connate from the middle with the others in a closed tube, rarely altogether free. Anthers versatile. Ovary sessile or shortly stipitate, with 1 or more ovules; styles filiform, incurved, stigma small, terminal. Pods obliquely orbicular, oblong or elongated, flat, indehiscent, the ventral suture or both sutures margined with a narrow wing. Seeds 1–3, flat, reniform or orbicular.

About 800 species distributed in tropical and subtropical Asia, S America, Oceania and Africa; 25 species and two varieties in China; three species in Hong Kong.

F. C. How (in *Acta Phytotax. Sin.* 3: 230. 1954) reduced *Derris chinensis* Benth. (J. Linn. Soc., Bot. 4(Suppl.): 104. 1860; FHK 94. 1861) to a synonym of *Millettia taiwaniana* Hayata (= *M. pachycarpa* Benth.).

- 1a. Pods winged along ventral (upper) sutures; inflorescence a raceme.....1. *D. trifoliata*  
 1b. Pods winged along both sutures; inflorescence a panicle.  
     2a. Leaflets 2–3 pairs, apex not emarginate; pods long-elliptic, 4–10 cm.....2. *D. fordii* var. *lucida*  
     2b. Leaflets 1–2 pairs, apex emarginate; pods obliquely ovate or obliquely oblong, 2–5 cm.....3. *D. alborubra*

**1. *Derris trifoliata* Lour. 魚藤 (Fig. 40; Photo 110)**

Fl. Cochinch. 433. 1790; FRPS 40: 196. 1994; FGD 5: 241, fig. 134. 2003.

*Derris uliginosa* Benth., Pl. Jungh. 2: 252. 1852; FHK 94. 1861; FKH 86. 1912.

Climbing shrub. Branches and leaves glabrous. Leaves 7–15 cm; leaflets 2 pairs, sometimes 1 or 3 pairs, ovate or ovate-oblong, 5–10 × 2–4 cm, base rounded or slightly cordate, apex acuminate, tip blunt. Racemes axillary, 5–10 cm. Calyx campanulate, 2 mm, teeth very short. Corolla white or pink, 10 mm; vexillum subrounded; wings and keel narrowly oblong. Stamens 10, monadelphous. Pods narrowly ovate, orbicular or broadly oblong, 2.5–4 × 2–3 cm, compressed, glabrous, ventral suture narrowly winged. Seeds 1–2.

Locality: Common in Hong Kong. *Y. S. Lau 2792*; *P. S. Choi 155*; *HK sheet 40685*.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; India, Malaysia, N Australia.

Ecology: Thickets near seashore. Flowering: Apr.–Aug.; fruiting: Aug.–Dec.

## 2. *Derris fordii* Oliv. var. *lucida* F. C. How 亮葉中南魚藤

*Acta Phytotax. Sin.* 3: 218. 1954; *FGD 5*: 243. 2003.

*Derris fordii* auct. non Oliv.: *FKH 86*. 1912.

Climbing shrub. Leaves 15–28 cm; leaflets 2–3 pairs, ovate-elliptic, ovate-oblong or elliptic, 3–8 × 1.5–3 cm, base rounded, apex acuminate, tip ± blunt, glabrous on both surfaces, lateral veins 6–7 pairs, slender; veinlets inconspicuous. Panicles axillary, brown-pubescent. Calyx campanulate, 2–3 mm, teeth short. Corolla white, 10 mm; vexillum broadly obovate-elliptic, shortly clawed; wings and keel auriculate. Stamens 10, monadelphous. Ovary sessile, white villose. Pods long-elliptic or ligulate-oblong, 4–10 × 1.5–2.3 cm, compressed, winged on both sutures. Seeds 1–4, brownish red, long-reniform, 14–18 × 10 mm.

Locality: Shek O Gap. *U. A. On 1997*; *HK sheet 8253, 8256*.

Distribution: Guangdong, Guangxi, Guizhou.

Ecology: Thin forests. Flowering: Apr.–Jun.; fruiting: Jul.–Oct.

## 3. *Derris alborubra* Hemsl. 白花魚藤

*Curtis's Bot. Mag.* 131, pl. 8008. 1905; *FKH 86*. 1912; *FRPS 40*: 203. 1994; *FGD 5*: 243. 2003.

Woody twiner, 6–7 m or longer. Leaves 2.5–3.5 cm; leaflets 2 pairs, sometimes 1 pair, elliptic, oblong or obovate-oblong, 5–8(–15) × 2–5(–7) cm, base broadly cuneate or rounded, apex obtuse, emarginate, glabrous. Panicles terminal or axillary, 15–30 cm. Calyx red, obliquely campanulate, 3–4 mm, teeth 5, brown-pubescent. Corolla white, 10–12 mm; vexillum suborbicular, emarginate; wings with 2 auricles at base. Stamens 10, monadelphous. Ovary sessile, yellow pubescent. Pods obliquely ovate or obliquely oblong, 2–5 × 2.2–2.5 cm, compressed, glabrous, winged on both sutures. Seeds 1–2.

Locality: Tai Po, Sheung Shui, Mai Po, Ha Hang, Nam Chung, Lai Chi Wo, Wu Kau Tang. *C. P. Lau 204*; *P. S. Choi 23*; *HK sheet 39270*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Vietnam.

Ecology: Thin forests and thickets. Flowering: Apr.–Jun.; fruiting: Jul.–Oct.

Notes: The type specimen was collected from Hong Kong by C. Ford around 1900.

## 8. *Millettia* Wight & Arn. 崖豆藤屬

Woody climbers or trees. Stipules caducous or persistent; stipels present or absent. Leaves odd-pinnate, usually evergreen; leaflets 2–many pairs, usually opposite, entire. Panicles terminal or axillary; calyx campanulate, 5-toothed, the upper 2 sometimes subconnate. Corolla purple, rose or white; vexillum large, spreading or reflexed; wings oblong, free from keel, auriculate or clawed at base; keel incurved, obtuse, clawed at base. Stamens 10, monadelphous, vexillary stamens free at base. Anthers uniform. Ovary with or without disk around the base. Pods linear, oblong to globular, flat or thick, leathery or woody, 2-valved or tardily dehiscent. Seeds 1–few, orbicular or reniform.

About 250 species distributed in Africa, Asia and Atlantic; 35 species in China; nine species in Hong Kong.

A worldwide revision of the genus was conducted by Dunn (*J. Linn. Soc., Bot.* 41: 123–243. 1912) where all species recognized here have been treated.

1a. Trees or shrubs.

2a. Leaflets 6–9 pairs, lateral veins 4–6 pairs ..... 1. *M. pulchra*

2b. Leaflets 4–6 pairs, lateral veins 6–7 pairs ..... 2. *M. oraria*

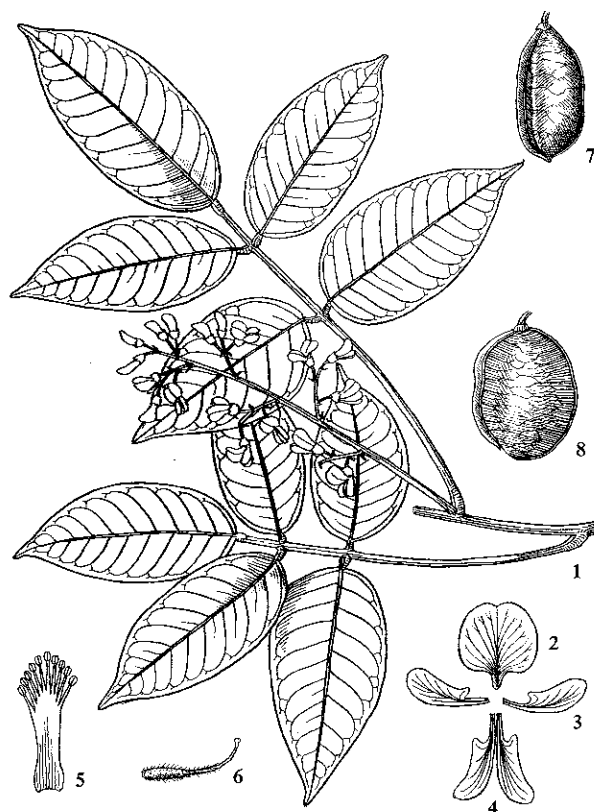


Figure 40. *Derris trifoliata* Lour.

1. flowering branch; 2. vexillum; 3. wing; 4. keel; 5. stamens; 6. pistil; 7–8. pods. (drawn by H. P. Yu)

(Photos 111–112)

- 1b. Vines or scandent shrubs.
- 3a. Leaflets 3–8 pairs.
- 4a. Leaflets 3–4 pairs..... 3. *M. reticulata*
- 4b. Leaflets 6–8 pairs.
- 5a. Leaflets 10–18 × 3.5–4.5 cm; flowers purplish; pods 4 cm wide, densely dotted with yellow tubercles..... 4. *M. pachycarpa*
- 5b. Leaflets 4–8 × 2–3 cm; flowers white, yellow to pink; pods 1–2 cm wide, densely brown tomentose..... 5. *M. speciosa*
- 3b. Leaflets 2 pairs.
- 6a. Vexillum with 2 callosities at base.
- 7a. Leaflets 8–20 × 4–8 cm, densely villose abaxially, lateral veins 7–12 pairs..... 6. *M. oosperma*
- 7b. Leaflets 5–11 × 2–4 cm, glabrous or rarely pubescent abaxially, lateral veins 5–6 pairs..... 7. *M. nitida*
- 6b. Vexillum without callosities at base.
- 8a. Leaflets ovate or ovate-oblong, 3–7 × 1.5–3 cm; flowers white, occasionally with red spots.... 8. *M. championii*
- 8b. Leaflets lanceolate, elliptic or ovate-oblong, 4–15 × 1.5–6 cm; flowers purple-red..... 9. *M. dielsiana*

**1. *Millettia pulchra* (Benth.) Kurz 印度崖豆(印度雞血藤)**

(Photo 113)

J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42(2): 69. 1873; Dunn, J. Linn. Soc. Bot. 41: 150. 1912; FKH 77. 1912; FRPS 40: 156. 1994; FGD 5: 231. 2003.

*Mundulea pulchra* Benth., Pl. Jungh. 2: 248. 1852.

*Tephrosia tutcheri* Dunn, J. Bot. 47(6): 197. 1909.

Shrub or small tree, 3–8 m tall; bark rough. Leaves odd-pinnate, 8–20 cm; leaflets 13–19, lanceolate or lanceolate-elliptic, 2–6 × 0.7–1.5 cm; base attenuate or obtuse, apex acute, sparsely pubescent adaxially, adpressed pubescent abaxially. Panicles racemiform, axillary, 6–15 cm, densely yellow-pubescent. Flowers 3–4 on nodes of rachis. Calyx campanulate, ca. 4 mm, densely pubescent. Corolla 9–12 mm, pinkish to purple; vexillum oblong, emarginate, base truncate; wings oblong, auriculate; keel oblong-falcate. Stamens 10, monadelphous, vexillary stamen free at base. Ovary densely pubescent, without disk, 5-ovuled. Pods 5–10 × 1–1.5 cm, compressed. Seeds 1–4, brown, elliptic, ca. 1 cm wide.

Locality: Shek O, Deep Water Bay, Aberdeen, Tai Po Kau, Lam Tsuen, Lantau Island. *Y. S. Lau 2851*; *H. C. Tang 2100*; *HK sheet 1290*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan; India, Myanmar, Laos.

Ecology: Ravines. Flowering: Apr.–Aug.; fruiting: Jun.–Oct.

Notes: The type specimens of *Tephrosia tutcheri* Dunn were collected from Hong Kong Island (behind Aberdeen, near Little Hongkong, and near Shek O) and Lantau Island by W. J. Tutcher and U. A. On between 1905 and 1888 respectively.

**2. *Millettia oraria* (Hance) Dunn**

香港崖豆(香港崖豆藤)

(Fig. 41; Photo 114)

J. Linn. Soc. Bot. 41: 149. 1912; FRPS 40: 159. 1994; FGD 5: 232. 2003.

*Tephrosia oraria* Hance, J. Bot. 24: 17. 1886.

Shrub or small tree; bark smooth. Branchlets densely grey-tomentose. Leaves odd-pinnate, 15–20 cm; leaflets 9–13, elliptic or broadly ovate, 4–5.5 × 2–3 cm, base rounded or subcordate, apex rounded, pubescent adaxially, densely tomentose abaxially, lateral veins 6–7 pairs. Panicles racemiform, axillary, 6–15 cm, densely yellow-pubescent. Flowers 1–3 on each node. Calyx campanulate, 3 mm, tomentose. Corolla purple, 8–11 mm; vexillum suborbicular, pubescent; wings oblong-falcate; keel broadly ovate, base truncate. Stamens diadelphous. Ovary densely sericeous; ovulus 2–4. Pods 5–9 × 1–1.5 cm, compressed, densely brown velutinous, later deciduous. Seeds 2–3, orange, orbicular, caruncle white.

Locality: Tai Long Wan, Cape D'Aguilar, Mount Kellett, Lantau Island. *Y. W. Lam 792*; *K. L. Yip 4497*; *HK sheet 40322*.

Distribution: Guangdong, Guangxi.

Ecology: Flowering: May–Jul.; fruiting: Nov.

Notes: The type specimen was collected from Cape D'Aguilar, Hong Kong Island by C. Ford in Dec. 1884.

**3. *Millettia reticulata* Benth. 雞血藤**

(Photo 115)

Pl. Jungh. 2: 249. 1853; Dunn, J. Linn. Soc. Bot. 41: 154. 1912;

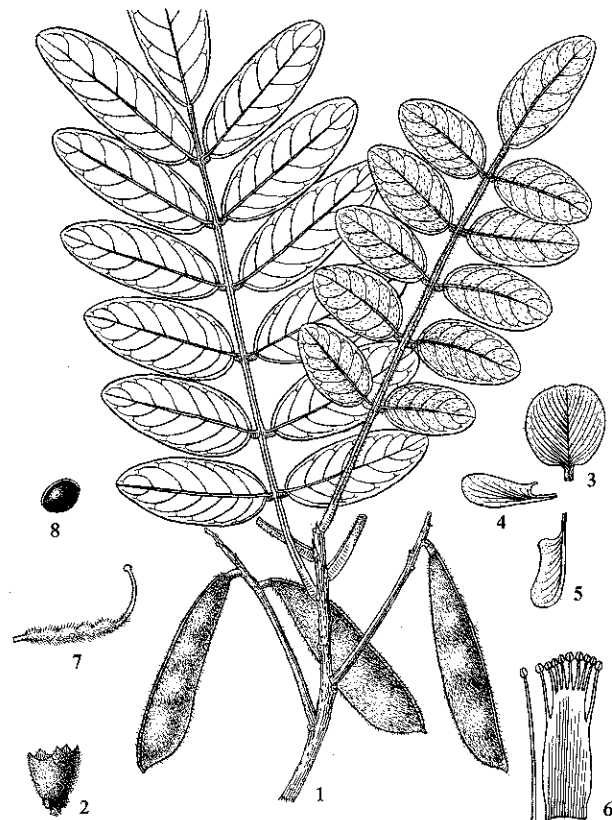


Figure 41. *Millettia oraria* (Hance) Dunn

1. fruiting branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. seed. (drawn by H. P. Yu)

FKH 77. 1912; FRPS 40: 164. 1994; FGD 5: 235. 2003.

Woody climber. Branchlets initially yellowish brown-pubescent, glabrescent. Stipules and stipels spiniform. Leaves odd-pinnate, 10–20 cm; leaflets 7–9, ovate-oblong or oblong, 3–6 × 1.5–4 cm, base rounded, apex obtuse, acuminate or emarginate, glabrous, lateral veins 6–7 pairs. Panicles terminal or axillary, 15–30 cm. Calyx campanulate to cup-shaped, 3–4 mm. Corolla purple, 13–17 mm; vexillum ovoid-oblong, without callosities at base; wings and keel slightly longer than vexillum. Stamens 10, diadelphous; disk tubiform; ovules numerous. Pods linear, 15–9 × 1–1.5 cm, compressed, valves ± woody. Seeds 3–6, oblong.

Locality: Common in Hong Kong. *L. T. Lo 483; Y. W. Lam 270, 1176.*

Distribution: SW to SE China; Vietnam.

Ecology: Thickets. Flowering: May–Oct.

Uses: Ornamental.

#### 4. *Millettia pachycarpa* Benth. 厚果崖豆藤 (厚果雞血藤)

(Photos 116–117)

Pl. Jungh. 2: 250. 1855; Dunn, J. Linn. Soc. Bot. 41: 168. 1912; FRPS 40: 148. 1994; FGD 5: 232, fig. 129. 2003.

Large woody climber, up to 15 m. Branchlets initially yellow-tomentose. Leaves odd-pinnate, 30–50 cm; leaflets 13–17, oblong to oblong-lanceolate, 10–18 × 3.5–4.5 cm, base cuneate, apex acute, glabrous adaxially, tomentose abaxially, lateral veins 12–15 pairs. Panicles racemiform, 15–30 cm, densely brown-tomentose, with 2–5 flowers on each node. Calyx cup-shaped, 6 mm, densely-tomentose, obscurely toothed. Corolla purplish, 2–3 cm; vexillum ovate, with 2 auricles at base, without callosities; wings oblong, hooked on lower side; keel truncate and shortly hooked at base. Stamens 10, monadelphous, vexillary one free at base. Ovary linear, tomentose. Pods woody, oblong or globose, 5–23 × 4 cm, densely dotted with yellowish tubercules, indehiscent. Seeds 1–5, black-brown, reniform.

Locality: Shing Mun, Lam Tsuen. *Y. S. Lau 2850; HK sheet 33109.*

Distribution: SW to SE China; India, Nepal, Bhutan, Bangladesh, Myanmar, Laos, Thailand, Vietnam.

Ecology: Broadleaved forests. Flowering: Apr.–Jun.; fruiting: Jun.–Nov.

#### 5. *Millettia speciosa* Champ. ex Benth. 美麗崖豆藤 (美麗雞血藤)

(Fig. 42; Photo 118)

Hooker's J. Bot. Kew Gard. Misc. 4: 73. 1852; FHK 78. 1861; Dunn, J. Linn. Soc. Bot. 41: 155. 1912; FKH 76. 1912; FRPS 40: 162. 1994; FGD 5: 233, fig. 130. 2003.

Woody climber, bark brown. Branchlets initially tomentose. Leaves odd-pinnate, 15–25 cm; leaflets often 13, oblong-lanceolate to elliptic-lanceolate, 4–8 × 2–3 cm, base obtuse or rounded, apex obtuse or shortly acuminate, glabrous adaxially, rusty pubescent or glabrous abaxially, lateral veins 5–6 pairs. Panicles racemiform, axillary, up to 30 cm, densely tawny tomentose. Flowers fragrant. Calyx campanulate, 1.2 cm, silky-tomentose, teeth obtuse. Corolla yellow or pink; vexillum orbicular, ca. 2 cm in diam., base cordate, with 2 callosities; wings oblong, hooked-auriculate; keel falcate. Stamens 10, diadelphous. Ovary linear, densely tomentose; disk tubiform. Pods oblong, 10–15 × 1–2 cm, compressed, brown-tomentose, valves thick leathery. Seeds 4–6, ovate, flattened.

Locality: Common in Hong Kong. *Y. S. Lau 416, 1283; HK sheet 39049.*

Distribution: SW to SE China; Vietnam.

Ecology: Thickets and thin forests. Flowering: Jul.–Oct.; fruiting: Feb. of the following year.

Uses: Medicinal (folklore).

Notes: The type specimens (*Champion 261, 505, K*) were collected from Victoria Peak by J. G. Champion between 1847 and 1850.

#### 6. *Millettia oosperma* Dunn 皺果崖豆藤

(Photo 119)

J. Linn. Soc. Bot. 41: 157. 1912; FRPS 40: 169. 1994; FGD 5: 234. 2003.

Woody climber, up to 20 m. Branchlets brown, initially tomentose. Leaves odd-pinnate, 25–40 cm; leaflets 5, lanceolate-elliptic or ovate-oblong, 8–20 × 4–8 cm, base obtuse or cuneate, apex obtuse, rounded or rarely emarginate, glabrous or sparsely hairy adaxially, densely brown-villose abaxially, lateral veins 7–12 pairs. Panicles terminal, 10–20 cm, densely brown-tomentose. Calyx campanulate, 6 mm. Corolla red or pink, 1.5–2 cm; vexillum brown, ovate, densely sericeous, with 2 callosities at base; wings lanceolate, with 2 auricles at base; keel falcate. Stamens 10, diadelphous. Ovary densely sericeous; disk cup-shaped. Pods turgid, ovate when 1-seeded, cylindrical when several-seeded, 6–13 × 2–2.5 cm, tip beaked. Seeds 1–4, ovate,

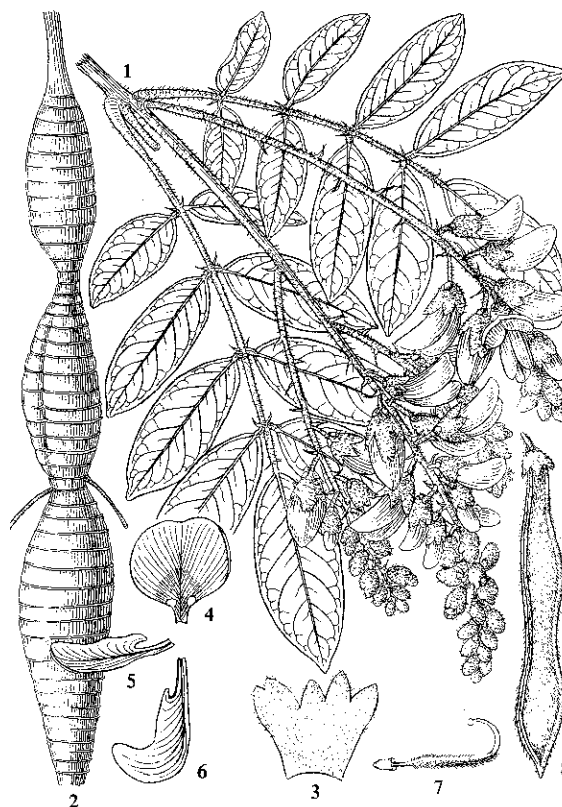


Figure 42. *Millettia speciosa* Champ. ex Benth.

1. flowering branch; 2. root; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. pistil; 8. pod. (drawn by H. P. Yu)

2–3 cm in diam.

Locality: Cape D'Aguilar. *HK sheet 32374, 40151, 40204.*

Distribution: Hainan, Guangdong, Hunan, Guangxi, Guizhou, Yunnan; Vietnam.

Ecology: Thin forests. Flowering: May–Jul.; fruiting: Aug.–Nov.

Notes: A syntype specimen was collected in Cape D'Aguilar in 1904.

**7. *Millettia nitida* Benth.** 亮葉崖豆藤 (亮葉雞血藤)

(Photo 120)

London J. Bot. 1: 484. 1842; FHK 78. 1861; FKH 76. 1912; Dunn, J. Linn. Soc. Bot. 41: 161. 1912; FRPS 40: 177. 1994; FGD 5: 234. 2003.

Woody climber. Branchlets initially rusty-pubescent. Leaves odd-pinnate, 15–20 cm; leaflets 5, oblong to ovate-lanceolate, 5–11 × 2–4 cm, base rounded or obtuse, apex obtusely acuminate, glabrous or sparsely pubescent, lateral veins 5–6 pairs. Panicles terminal, 10–20 cm, densely rusty tomentose. Calyx campanulate, 6–8 mm, tomentose. Corolla violet, 1.6–2.4 cm; vexillum oblong, densely sericeous, with 2 callosities at base; wings truncate at base; keel falcate. Stamens diadelphous; vexillary stamens free; disk discoid. Ovary linear, densely tomentose. Pods 10–14 × 1.5–2 cm, densely tomentose, tip beaked. Seeds 4–5, brown, shining, obliquely oblong, 10 mm.

Locality: Common in Hong Kong. *Y. S. Lau 3239; N. H. Li 190; Y. W. Lam 1033.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Jiangxi, Fujian.

Ecology: Thickets and thin forests. Flowering: May–Sep.; fruiting: Jul.–Nov.

Notes: The syntype specimens were collected from Hong Kong Island by R. B. Hinds and C. Millett around 1840.

**8. *Millettia championii* Benth.** 綠花崖豆藤

(Photo 121)

Hooker's J. Bot. Kew Gard. Misc. 4: 74. 1852; FHK 79. 1861; FKH 76. 1912; Dunn, J. Linn. Soc. Bot. 41: 152. 1912; FRPS 40: 166. 1994; FGD 5: 235. 2003.

Woody climber. Leaves odd-pinnate; leaflets 5 or 7, ovate or ovate-oblong, 3–7 × 1.5–3 cm, base rounded, apex obtusely acuminate, glabrous, lateral veins 5–7 pairs, conspicuous. Panicles racemiform, terminal, 5–15 cm. Calyx broad-campanulate, 2 mm. Corolla white, 12 mm; vexillum marked with green spots at base, orbicular, 9 mm in diam., glabrous, without callosities; wings erect, with 2 auricles at base; keel oblong. Stamens 10, diadelphous; vexillary stamens free. Ovary linear; disk tubiform. Pods elongated, 6–12 × 0.5–1.2 cm, compressed. Seeds 2–3, brown, lenticular.

Locality: Mount Gough, Mount Parker, Sha Tin, Ma on Shan, Nam Chung. *Y. S. Lau 883; HK sheet 39264, 39708.*

Distribution: Guangdong, Guangxi, Fujian.

Ecology: Thickets in valleys and by streams. Flowering: Jun.–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

Notes: This species is nearest to *M. reticulata*, but readily distinguished from that species when growing by its slender habit and smaller pale green flowers. The type specimen (*Champion 263, K*) was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

**9. *Millettia dielsiana* Harms** 香花崖豆藤 (山雞血藤) (Fig. 43)

Bot. Jahrb. Syst. 29(3–4): 412. 1900; FKH 76. 1912; Dunn, J. Linn. Soc. Bot. 41: 160. 1912; FRPS 40: 180. 1994; FGD 5: 237. 2003.

Woody climber, 2–5 m. Young branches subglabrous. Leaves odd-pinnate, 15–30 cm; leaflets 5, elliptic or ovate-oblong, 4–15 × 1.5–6 cm, base obtuse or rounded, apex acute to acuminate, glabrous or adpressed pubescent abaxially, lateral veins 6–9 pairs. Panicles large, 15–40 cm. Calyx campanulate, 3–5 mm, puberulent. Corolla purple, 1–1.5 cm; vexillum broad-ovate to broad-obovate, densely rusty sericeous, base slightly cordate, without callosity; wings 5–8 mm, auriculate; keel falcate. Stamens 10, diadelphous. Ovary linear, densely tomentose; disk discoid. Pods narrowly oblong, 7–12 × 1.5–2 cm, compressed, grey tomentose. Seeds 3–5, oblong, lenticular, 8 × 6 mm.

Locality: Common in Hong Kong. *P. S. Choi 488, 489; S. C. Ng 3231.*

Distribution: SW to SE China, Shaanxi, Gansu; Vietnam, Laos.

Ecology: Forests or thickets on hillslopes. Flowering: May–Sep.; fruiting: Jun.–Nov.



Figure 43. *Millettia dielsiana* Harms

1. flowering branch; 2. bracts; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pod; 9. seeds. (drawn by H. P. Yu)

### 9. *Dendrolobium* (Wight & Arn.) Benth. 假木豆屬

Shrubs or small trees. Stipules striate, caducous; stipels present. Leaves pinnately 3-foliolate or reduced to 1-foliolate; leaflets entire or undulate. Flowers in axillary umbels. Bracts stipule-like. Calyx narrowly turbinate-campanulate, 4–5-lobed, the upper 2 lobes entirely united in appearance of 4-toothed, or partly united and ± 2-lobed, the lower lobes longer. Corolla white or pale yellow; vexillum obovate, elliptic or suborbicular; wings oblong; keel rather straight, long-clawed. Stamens monadelphous. Ovary sessile, 2–8-ovuled; style glabrous; stigma capitate. Pods subfalcate, with 1–8 squared or orbicular-truncate joints, indehiscent.

About 14 species distributed in tropical and subtropical Asia and Africa; four species in China; one species in Hong Kong.

#### 1. *Dendrolobium triangulare* (Retz.) Schindl. 假木豆

(Fig. 44)

Repert. Spec. Nov. Regni Veg. 20(561–576): 279. 1924; FRPS 41: 5. 1995; FGD 5: 263. 2003.

*Hedysarum triangulare* Retz., Observ. Bot. 3: 40. 1783.

*Desmodium cephalotes* (Roxb.) Wight & Arn., Prodr. 224. 1834; FKH 79. 1912.

*Hedysarum cephalotes* Roxb., Hort. Bengal. 57. 1814.

*Desmodium triangulare* (Retz.) Merr., J. Arnold. Arb. 23: 170. 1942.

Shrub, 1–2 m tall. Young branches triangular, densely covered with white appressed long sericeous hairs. Leaves pinnately 3-foliolate; terminal leaflets obovate-oblong, 7–15 × 3–6 cm, base obtuse, slightly oblique, apex acuminate, lateral ones smaller, glabrous adaxially, covered with long sericeous hairs abaxially, lateral veins 10–17 pairs, conspicuous. Umbels axillary, 20–30-flowered. Calyx 5–9 mm, sericeous. Corolla white or yellowish; petals clawed, 8–12 mm; vexillum broadly elliptic; wings and keel orbicular. Stamens 8–12 mm. Ovary hairy. Pods 2–2.5 cm, slightly curved, constricted on both sutures, 3–6-jointed, densely sericeous. Seeds elliptic, 2.5–3.5 mm.

Locality: Tuen Mun. *P. S. Choi* 10, 46.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Taiwan; tropical and subtropical Asia and Africa.

Ecology: Thickets on hillslopes. Flowering: Aug.–Oct.; fruiting: Oct.–Dec.

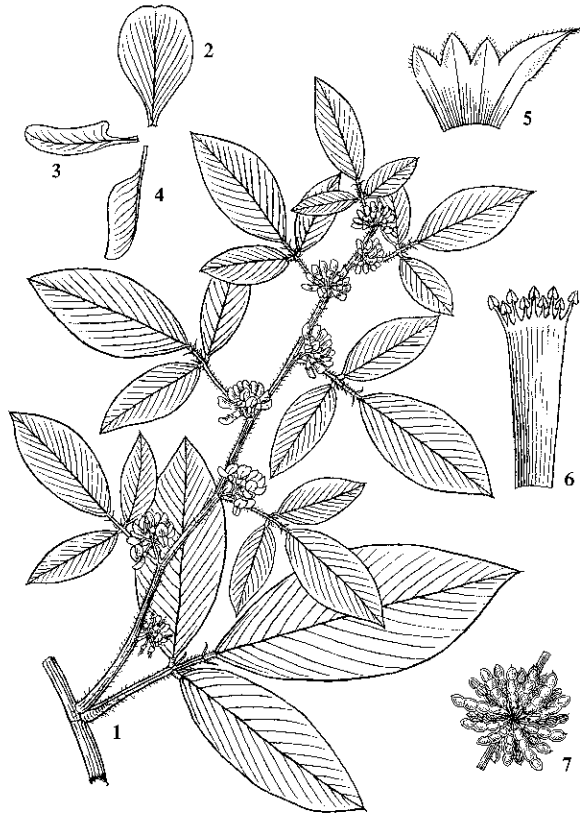


Figure 44. *Dendrolobium triangulare* (Retz.) Schindl.

1. flowering branch; 2. vexillum; 3. wing; 4. keel; 5. calyx; 6. stamens; 7. infructescence. (drawn by H. P. Yu)

### 10. *Phyllodium* Desv. 排錢草屬

Shrubs or subshrubs. Stipules striate; stipels present. Leaves pinnately 3-foliolate; leaflets entire or repand. Panicles racemiform, composed of umbels enclosed in opposite, orbicular, persistent leafy bracts. Calyx campanulate, 5-lobed, the upper 2 usually united into one, the lower 3 longer than the upper ones. Corolla white or yellowish, rarely purple; vexillum obovate or broad-obovate, base clawed or attenuate; wings narrowly elliptic, smaller than keel, auriculate and clawed; keel incurved, auriculate, long-clawed. Stamens monadelphous, or the vexillary stamen more or less free. Ovary longer than stamen. Disk present. Pods 2–7-jointed; joints orbicular-truncate, flat. Seeds arillate.

Six species distributed in S Asia and N Australia; four species in China; two species in Hong Kong.

- 1a. Leaflets pinnately-veined, almost glabrous adaxially but sparsely pubescent abaxially; pods usually 3-jointed, very densely covered with silver-grey silky hairs; lower calyx-lobes distinctly longer than other lobes ..... 1. *P. elegans*
- 1b. Leaflets reticulate-veined, densely villous on both surfaces; pods usually 2-jointed, sparsely covered with pale yellow silky hairs on the lateral surface; lower calyx-lobes a little longer than other lobes ..... 2. *P. pulchellum*

#### 1. *Phyllodium elegans* (Lour.) Desv. 毛排錢草

(Fig. 45; Photo 122)

Mem. Soc. Linn. Paris 4: 324. 1825; FRPS 41: 12. 1995; FGD 5: 265. 2003.

*Hedysarum elegans* Lour., Fl. Cochinch. 2: 450. 1790.

*Desmodium elegans* (Lour.) Benth., FHK 83. 1861, non DC. (1825) nec Schlecht. (1838); FKH 79. 1912.

Shrub, 0.5–1.5 m tall. Stems, branchlets and petioles densely yellow-villous. Leaves 3-foliolate; terminal leaflets ovate or rhomboid, 7–10 × 3–4 cm, lateral ones obliquely ovate, smaller, densely villous on both surfaces, margin repand, lateral veins 9–10 pairs, pinnately branched reaching margin. Umbels 4–9-flowered, enclosed in leafy bracts, forming terminal or axillary panicles. Calyx campanulate, 3–4 mm, grey-white-pubescent. Corolla white or greenish; vexillum oblong, 6–7 × 3–4 mm, base obscurely clawed; wings linear, 5–6



× 1 mm, base auriculate and clawed; keel 7–8 mm, clawed. Stamens monadelphous. Ovary sessile, linear, hairy. Pods 10–12 × 3–4 mm, ventral suture straight or repand, dorsal suture undulate, 3–4-jointed; joints suborbicular, flat.

Locality: Kowloon Reservoir, Shing Mun, Yuen Tun Ha, Tai Po Kau, Lam Tsuen, Fanling, Sha Tau Kok. *H. C. Tang 1049; Y. S. Lau 1677, 2310.*

Distribution: Hainan, Guangdong, Fujian.

Ecology: Grassy hillslopes, thickets. Flowering: Jul.–Aug.; fruiting: Oct.–Nov.

**2. *Phyllodium pulchellum* (L.) Desv.** 排錢草 (Photo 123)  
Mem. Soc. Linn. Paris 4: 324. 1826; FRPS 41: 11. 1995; FGD 5: 264, fig. 143. 2003.

*Hedysarum pulchellum* L., Sp. Pl. 747. 1753.

*Desmodium pulchellum* (L.) Benth., FHK 83. 1861; FKH 79. 1912.

Shrub, 0.5–1.5 m tall. Branchlets white or grey pubescent. Leaves 3-foliolate; terminal leaflets ovate, elliptic or obovate, 6–12 × 2.5–4.5 cm, base rounded or obtuse, apex obtuse or acute, lateral ones smaller, base oblique, margin repand, subglabrous adaxially, sparsely pubescent abaxially, lateral veins 6–10 pairs, reticulate at the leaf margins. Umbels 5–6-flowered, enclosed in leafy bracts, forming terminal panicles; leafy bracts orbicular, 1.5 cm in diam., pubescent and ciliate. Calyx white or yellowish. Petals clawed; vexillum 5–6 mm, base attenuate; wings linear, 5 × 1 mm, base auriculate; keel 6 × 2 mm, auriculate. Stamens monadelphous. Ovary sessile, linear. Pods oblong, 6 × 2.5 mm, margin ciliate, slightly constricted on both suture; joints 2, ciliate at edges only.

Locality: Common in Hong Kong. *Y. S. Lau 1675; L. T. Lo 147; HK sheet 39273.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangxi, Fujian, Taiwan; tropical Asia, Australia.

Ecology: Grassy hillslopes, thickets. Flowering: Jul.–Sep.; fruiting: Oct.–Nov.

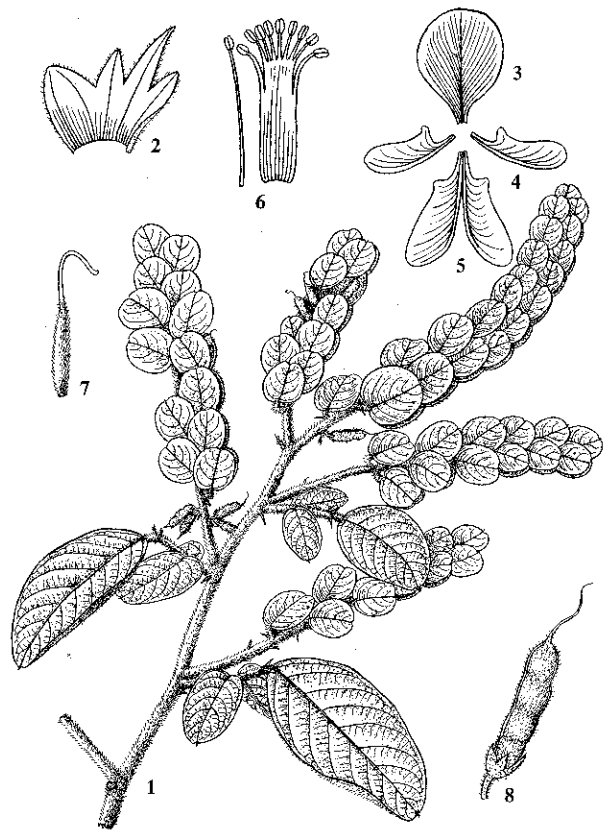


Figure 45. *Phyllodium elegans* (Lour.) Desv.

1. fruiting branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. pod. (drawn by H. P. Yu)

### 11. *Flemingia* Roxb. ex W. T. Aiton 千斤拔屬

Shrubs or subshrubs. Stems erect or scandent. Leaves digitately 3-foliolate, rarely 1-foliolate; leaflets covered with small glands particularly on abaxial surface. Flowers in racemes, panicles or globose heads, terminal or axillary. Bracts distichous; bracteoles absent. Calyx 5-lobed; lobes longer than tube, usually glandular. Corolla greenish or yellowish; petals clawed; vexillum oblong or elliptic, auriculate; wings very narrow, usually adherent to incurved keel. Stamens diadelphous (9+1), the one opposite to vexillary free; anthers uniform. Ovary ellipsoidal, 2-ovuled; style filiform, glabrous or slightly hairy at base. Pods ellipsoidal, inflated, not septate, styles oblique and persistent. Seeds 1–2, globose; hilum oval.

About 40 species distributed in tropical Asia, Africa and Australia, and about five species distributed from NE India to SE Asia; six species and one variety in China; two species in Hong Kong.

- 1a. Petioles narrowly winged; leaflets acute; pedicels 1–2 mm..... 1. *F. macrophylla*  
1b. Petioles wingless; leaflets obtuse at the apex; pedicels 3–4 mm ..... 2. *F. prostrata*

**1. *Flemingia macrophylla* (Willd.) Prain** 大葉千斤拔

(Photo 124)

*J. Asiat. Soc. Bengal* 66(2): 440. 1897; FRPS 41: 325. 1995; FGD 5: 340. 2003.

*Crotalaria macrophylla* Willd., Sp. Pl. 3(2): 982. 1802.

*Flemingia congesta* Roxb. ex W. T. Aiton, Hort. Kew. (ed. 2) 4: 349. 1812; FKH 85. 1912.

*Moghania macrophylla* (Willd.) Kuntze, Revis. Gen. Pl. 1: 199. 1891.

Erect shrub, 1–2 m tall. Young branches angulate, densely sericeous. Stipules lanceolate, 8–9(–20) mm, caducous. Leaves digitately 3-foliolate; petioles 3–9 cm, narrowly winged; terminal leaflets broad-lanceolate to elliptic, 8–15 × 4–7 cm, base cuneate, apex acuminate, pubescent on both surfaces, dotted with glands, especially on abaxial surface; lateral leaflets smaller, oblique. Racemes 3–8 cm, densely flowered, several-clustered in axil of leaves or forming terminal panicles. Bracts ovate, appressed sericeous, caducous. Calyx green, campanulate, sericeous; tube 2–3 mm; lobes lanceolate, 5–10 mm. Corolla pink; vexillum oblong, 10–12 × 5–8 mm, clawed and auriculate; wings narrowly elliptic, subauriculate, clawed; keel oblong, base long-clawed, auriculate on one side. Stamens diadelphous. Ovary sericeous. Pods brown, elliptic, 1–1.6 × 0.6–0.7 cm, slightly pubescent, beaked at tip. Seeds 1–2, globular.

Locality: Sai Kung, Shing Mun, Tai Mo Shan, Yuen Tun Ha, A Ma Wat. *H. C. Tang 1427; Y. S. Lau 1167, 1333.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Jiangxi, Fujian, Taiwan; tropical Asia.

Ecology: Grassy hillslopes, thin forests. Flowering: Jun. – Sep.; fruiting: Oct. – Dec.

Uses: Medicinal (folklore).

2. **Flemingia prostrata** Roxb. f. ex Roxb. 千斤拔 (Fig. 46)  
Hort. Bengal. 56. 1814, & Fl. Ind. ed. 2, 3: 338. 1832; FGD 5: 340. 2003.

*Flemingia philippinensis* Merr. & Rolfe, Philipp. J. Sci. 3(3): 103. 1908.

Scandent or erect shrub. Young branches triangular, densely grey-brown pubescent. Leaves digitately 3-foliolate; terminal leaflets oblong or ovate-lanceolate, 4–7(–9) × 1.7–3 cm, base rounded, oblique, apex obtuse, sometimes mucronate, sparsely pubescent abaxially, densely villose adaxially. Racemes axillary, 2–2.5 cm, densely greyish brown or greyish white villose. Calyx deeply 5-toothed, teeth lanceolate. Corolla purple, 8–9 mm; vexillum oblong, shortly clawed, obscurely auriculate; wings falcate, clawed, slightly auriculate on one side; keel elliptic, slightly incurved, clawed, acute-auriculate on one side. Stamens diadelphous. Ovary hairy. Pods elliptic, 7–8 × 5 mm, turgid. Seeds 2, subglobular, black.

Locality: Ping Chau. *Y. S. Lau 3193*; *Y. W. Lam 1135*.

Distribution: S, SW & E China; E Asia, Philippines.

Ecology: Grassy hillslopes. Flowering & fruiting: Summer to autumn.

Uses: Medicinal (folklore).

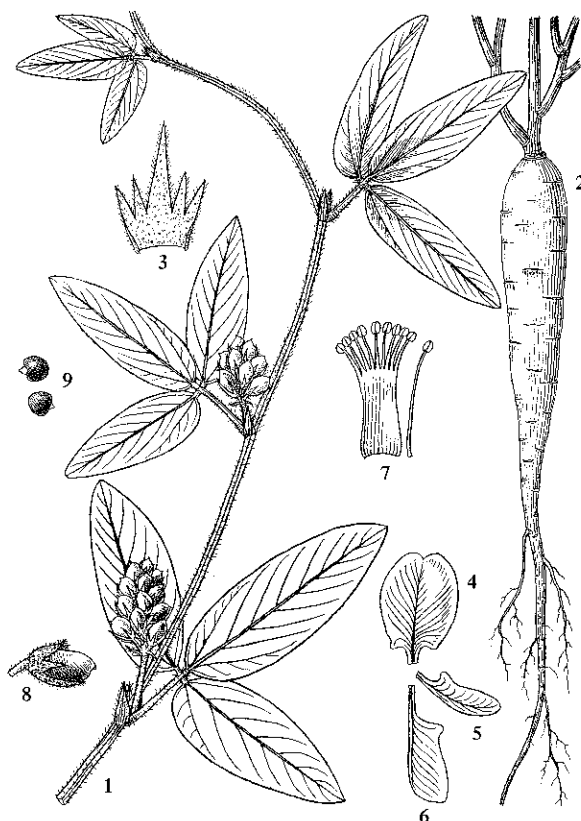


Figure 46. *Flemingia prostrata* Roxb. f. ex Roxb.

1. fruiting branch; 2. root; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pod; 9. seeds. (drawn by H. P. Yu)

## 12. *Lespedeza* Michx. 胡枝子屬

Perennial herbs, subshrubs or shrubs. Stipules small, subulate or linear, persistent or deciduous; stipels absent. Leaves pinnately 3-foliolate; leaflets entire, apex rounded and bristle-tipped, net-veined. Flowers in axillary racemes, often contracted into dense fascicles; the lower fascicles in many species often mixed with small apetalous cleistogamous flowers, producing nevertheless perfect pods. Bracts small, persistent. Calyx campanulate, 5-toothed or -lobed or the 2 upper teeth united into one. Petals clawed; vexillum obovate or oblong; wings oblong, adherent to keel or free; keel obtuse, incurved. Stamens diadelphous. Ovary sessile or stipitate, with a single ovule; style incurved, stigma small, terminal. Pods ovate, obovate or elliptic, plano-compressed, reticulate, indehiscent. Seed 1, suborbicular, eustrophiolate.

More than 60 species distributed in N America, E Asia to NE Australia; 26 species in China; three species in Hong Kong.

- 1a. Flowers purple, larger (>1 cm), without cleistogamous flower; leaves ovate, larger (to 6 × 3 cm), terminal petiolules and rachides 10–15 mm long, petiolules swollen ..... 1. *L. formosa*
- 1b. Flowers yellow or white, smaller (<1 cm), with cleistogamous flower; leaves oblong to linear, smaller (<4 × 1.5 cm); terminal petiolules and rachides <5 mm long, petiolules slightly or not swollen.
- 2a. Plants covered with white depressed hairs in all parts; leaves pinnately trifoliolate, widely-spaced along stem; leaflets obovate-oblong, 1.5–4 × 1–1.5 cm, terminal petiolules and rachides 3–4 mm long ..... 2. *L. chinensis*
- 2b. Plants with appressed hairs on abaxial leaf surface; leaves palmately trifoliolate, closely-spaced along stem; linear-lanceolate; leaflets cuneate or linear-cuneate, 1–3 × 0.2–0.5 cm, terminal petiolules and rachides to 1 mm long ..... 3. *L. cuneata*

### 1. *Lespedeza formosa* (Vogel) Koehne 美麗胡枝子

(Photo 125)

Deut. Dendro 1. 343. 1893; Akiyama & Ohba, Univ. Mus., Univ. Tokyo, Bull. No. 31: 225. 1988; Akiyama, Univ. Mus., Univ. Tokyo, Bull. No. 33. 1988; FRPS 41: 138. 1995; FGD 5: 289, fig. 156. 2003.

*Desmodium formosum* Vogel, Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 29. 1843.

*Lespedeza bicolor* Turcz. subsp. *formosa* (Vogel) Hsu, X. Y. Li & D. X. Gu, Acta Phytotax. Sin. 31: 314. 1983.

*Lespedeza viatorum* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 46. 1852; Forb. & Hemsl., J. Linn. Soc. Bot. 23: 183. 1887; FHK 56. 1861; FKH 81. 1912.

*Lespedeza wilfordii* Ricker, Lingnan Sci. J. 20 (2–4): 203. 1942; FRPS 41: 143. 1995.

Erect shrub, 1–2 m tall. Stems much branched. Branchlets pubescent. Leaves pinnately 3-foliolate; leaflets ovate (or oblong), 2.5–6 × 1–3 cm, emarginate or mucronate, sparsely pubescent adaxially, adpressed pubescent abaxially; petioles 3 cm; terminal petiolules and rachides 10–15 mm long, petiolules swollen. Racemes axillary or forming terminal panicles, 7–8 cm. Calyx campanulate, 5–7 mm,

5-lobed; lobes oblong-lanceolate. Corolla violet, 1–1.5 cm; petals clawed and auriculate at base; vexillum suborbicular; wings obovate-oblong, shorter than vexillum and keel, 7–8 mm. Pods obovate or obovate-oblong, 8 × 4 mm, reticulate and pubescent, 1-seeded.

Locality: Hong Kong Island, Tai Lam Chung, Castle Peak, Tai Mo Shan, Tai Long Sai Wan. *Y. S. Lau 1688, 2061; P. S. Choi 109.*

Distribution: Area S of Qinling and extending northward to Shaanxi and Gansu; India, Korea, Japan.

Ecology: Thickets, margins of forests. Flowering: Jul.–Sep.; fruiting: Sep.–Dec.

Notes: The type specimen of *Lespedeza viatorum* was collected from Little Hong Kong by J. G. Champion between 1847 and 1850 whereas the type specimen of *Lespedeza wilfordii* was collected from Hong Kong by C. Wilford between 1857 and 1858. These two formerly published species feature leaflets with obtuse-rounded or emarginate apex. Leaflets of *L. viatorum* are broadly obovate or broadly obovate, 1.5–4 × 1–3 cm and pods are 8–10 mm long, whereas leaflets of *L. wilfordii* are oblong-elliptic, 4–5 × 2.5–3.5 cm and pods are 10–12 mm long. *Lespedeza formosa* is a broadly-ranged species (from E Himalayas to China, Korea and Japan) and shows remarkable geographical variation in the shape and size of calyx and corolla. As shown in the studies by Hsu et al. (1983), Akiyama and Ohba (1988) and Akiyama (1988), the various forms within the geographical range should be recognized as subspecific entities. Akiyama (1988) synonymized *Lespedeza viatorum* and *L. wilfordii* under *L. formosa* subsp. *formosa*, the range of which includes SE China, Hong Kong, Macau and Taiwan.

## 2. *Lespedeza chinensis* G. Don 中華胡枝子

(Photo 126)

Gen. Syst. 2: 307. 1832; FRPS 41: 155. 1995; FGD 5: 292. 2003.

*Lespedeza cyrtobotrya* auct. non Miq.: FKH 81. 1912, “*cyclobotrya*”.

Erect or ascending small shrub, ca. 1 m tall, all parts covered with white depressed hairs. Leaves pinnately 3-foliolate, widely-spaced along stem; leaflets ovate-oblong or obovate, 1.5–4 × 1–1.5 cm, apex emarginate or obtuse (sometimes truncate), bristle-tipped, margin slightly revolute, glabrous or puberulous adaxially, densely adpressed white-pubescent abaxially; terminal petiolules and rachides 3–4 mm long. Racemes axillary, shorter than leaves. Calyx 5-lobed; lobes lanceolate, 3 mm. Corolla white or yellow; vexillum elliptic, 7 × 3 mm, clawed and with 2 auricles at base; wings narrowly oblong, 6 mm, long-clawed; keel 8 mm. Cleistogamous flowers on lower branches, axillary, without pedicels. Pods ovate, 4 × 2.5–3 mm, apex beaked, reticulate and adpressed white-pubescent.

Locality: Hong Kong Island, Sai Kung, Ham Tin, Ping Chau, Lantau Island. *Y. S. Lau 1625; P. S. Choi 537; Y. W. Lam 1213.*

Distribution: Guangdong, Hunan, Sichuan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Grasses and thickets. Flowering: Aug.–Sep.; fruiting: Oct.–Nov.

## 3. *Lespedeza cuneata* (Dum.-Cours.) G. Don 截葉鐵掃帚

(Fig. 47; Photo 127)

Gen. Syst. 2: 307. 1832; FKH 85. 1861; FRPS 41: 156. 1995.

*Anthyllis cuneata* Dum.-Cours. Bot. Cult. 6: 100. 1811.

*Lespedeza juncea* auct. non Pers.: Dunn & Tutcher, FKH 81. 1912.

Erect or ascending small shrub, up to 1 m tall. Leaves palmately 3-foliolate, closely-spaced along stem; leaflets linear-lanceolate, 10–30 × 2–5 mm, base cuneate, apex truncate, bristle-tipped, glabrous adaxially, appressed hairy abaxially; terminal petiolules and rachides to 1 mm long. Flowers 2–4-fasciculate, axillary. Calyx narrowly campanulate, 5-lobed; lobes narrowly lanceolate. Corolla yellowish or white, ca. 6 mm; vexillum whitish-yellow, violet-stripped at base; wings equal to vexillum; keel slightly longer. Cleistogamous flowers few, in axillary fascicles. Pods subglobular, 2.5–3.5 × 2.5 mm, sparsely silk-hairy.

Locality: Hong Kong Island, Castle Peak, Ping Chau, Lantau Island. *Y. S. Lau 1673; P. S. Choi 285; Y. W. Lam 1132.*

Distribution: Shandong, Gansu and widely spread over areas S of Changjiang River; Korea, Japan, India, Pakistan, Afghanistan, Australia.

Ecology: Roadsides, grassy fields. Flowering: Jul.–Aug.; fruiting: Sep.–Oct.

## 13. *Cajanus* DC. 木豆屬

Shrubs, subshrubs, woody or herbaceous twiners. Stipules and stipels small or caducous. Leaves pinnately or sometimes digitately 3-foliolate, alternate, with glandular dots on abaxial surface of leaflets. Racemes axillary or terminal; bracts caducous; bracteoles absent. Calyx campanulate, shortly 5-toothed, the upper 2 teeth united or slightly lobed at apex. Corolla persistent or not; vexillum

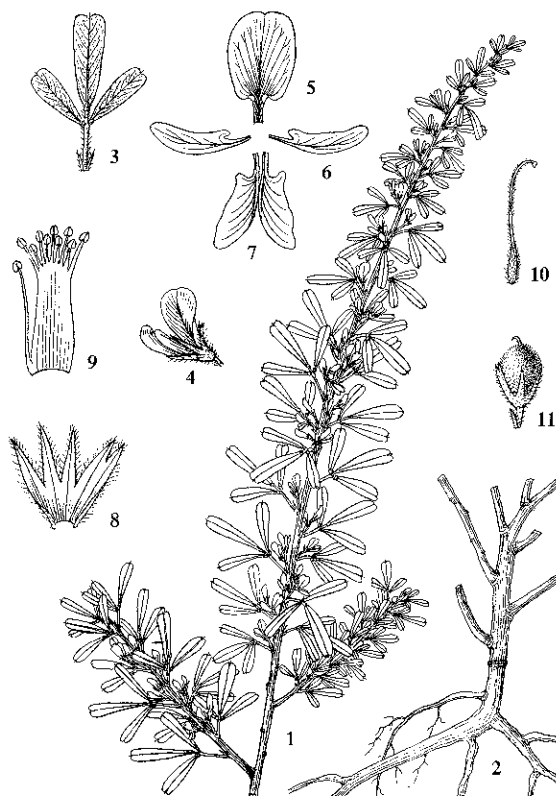


Figure 47. *Lespedeza cuneata* (Dum.-Cours.) G. Don  
1. flowering branch; 2. root; 3. leaf; 4. flower; 5. vexillum;  
6. wing; 7. keel; 8. calyx; 9. stamens; 10. pistil; 11. pod.  
(drawn by H. P. Yu)

suborbicular, obovate or obovate-elliptic, stipitate, with incurved auricles on both sides at base; wings narrowly or broadly elliptic, auriculate; keel oblique-orbicular, apex obtuse. Stamens diadelphous (9+1); anthers uniform. Ovary subsessile, 2-many-ovuled. Pods linear-oblong, flattened, with oblique indented lines between the seeds. Seeds reniform or subglobose, shining, marked with blotches of different colour.

About 32 species mainly distributed in tropical Asia, Pacific and Madagascar; seven species and one variety in China; two species in Hong Kong.

- 1a. Erect shrubs; pods  $4-7 \times 0.6-1.1$  cm ..... 1. *C. cajan*  
 1b. Herbaceous twiners; pods  $1.5-2 \times 0.6$  cm ..... 2. *C. scarabaeoides*

1. *Cajanus cajan* (L.) Millsp. 木豆

(Photo 128)

Publ. Field Columbian Mus., Bot. Ser. 2(1): 53. 1900; FRPS 41: 301. 1995; FGD 5: 334, fig. 184. 2003.

*Cytisus cajan* L., Sp. Pl. 739. 1753.

*Cajanus indicus* Spreng., Syst. Veg. 3: 248. 1826; FHK 89. 1861; FKH 84. 1912.

Erect shrub, 1–3 m tall, much branched; branchlets angulate, covered with short silky hairs. Leaves pinnately 3-foliolate; petioles 1.5–5 cm; leaflets elliptic to lanceolate, 5–10 × 1.5–2 cm, base cuneate, apex acuminate or acute, greyish pubescent especially on abaxial surface, glandular dots yellow, inconspicuous. Racemes 10–20-flowered, 5–15 cm, forming leafy panicles. Calyx campanulate, 7 mm, pubescent on the teeth. Corolla yellow or orange, brownish on back, varying into other color combinations; vexillum suborbicular, 1.3 cm, base clawed and auriculate; wings obovate, 15 mm, shortly auriculate; keel lunate, 12 × 5 mm. Stamens diadelphous. Ovary hairy. Pods linear-oblong, 4–7 × 0.6–1.1 cm, obliquely grooved between seeds. Seeds 3–6, subglobose, 6–7 mm, obscurely red, sometimes with brown spots.

Locality: Naturalized. *Y. S. Lau* 2069; *P. S. Choi* 500; *Y. W. Lam* 194.

Distribution: SW to SE China (cultivated); native to India, cultivated elsewhere.

Ecology: Flowering & fruiting: All year around.

Uses: Food, green manure, forage.

2. *Cajanus scarabaeoides* (L.) Thouars

蔓草蠶豆

(Fig. 48; Photo 129)

Dict. Sc. Nat. 6: 167. 1817; FGD 5: 335. 2003.

*Dolichos scarabaeoides* L., Sp. Pl. 720. 1753.

*Atylosia scarabaeoides* (Baill.) Benth., Pl. Jungh. 2: 242. 1852; FHK 90. 1861; FKH 85. 1912; FRPS 41: 306. 1995.

Herbaceous twiner. Stems slender, striate, brown-pubescent. Leaves pinnately 3-foliolate, terminal leaflets elliptic, obovate to oblong, 1.5–4 × 0.8–2(–3) cm, apex obtuse or rounded, lateral ones smaller, pale brown-pubescent especially abaxially. Racemes axillary, 1–5-flowered. Calyx campanulate, 7–10 mm, with narrowly triangular teeth. Corolla yellow. Petals clawed and auriculate, deciduous after anthesis; vexillum dark purple, striate, obovate, 8 × 7 mm; wings oblong, 7 mm, slightly incurved; keel lunate, 7 mm. Stamens diadelphous; anthers uniform. Ovary silky villose. Pods oblong, 1.5–2.5 × 6 mm, densely and softly pubescent, grooved almost at right angles to sutures. Seeds 5–6, oblong, ca. 4 mm, dark brown.

Locality: Hong Kong Island, Ap Lei Chau, Stonecutters Island, Tsuen Wan, Tai Lam Chung, Tuen Mun, Pak Nai, Sha Po. *H. C. Tang* 2070; *L. T. Lo* 36; *P. S. Choi* 67.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; Asia, Australia, Africa.

Ecology: Open fields and thickets. Flowering: Jan.

Uses: Medicinal (folklore).

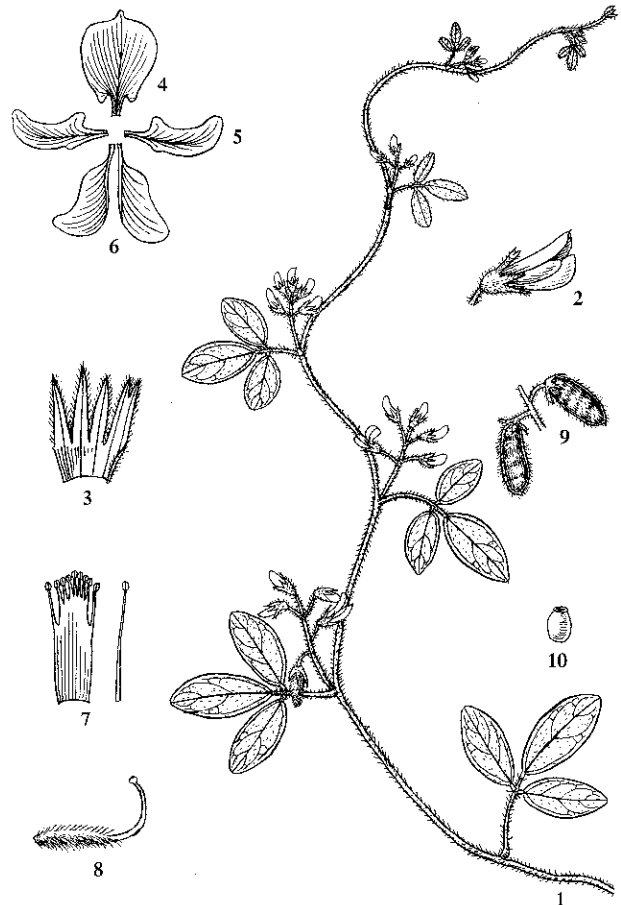


Figure 48. *Cajanus scarabaeoides* (L.) Thouars

1. flowering branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. pod; 10. seeds. (drawn by H. P. Yu)

14. *Erythrina* L. 刺桐屬

Trees or shrubs. Stems and branches often armed with thorns. Stipules small; stipels gland-like. Leaves pinnately 3-foliolate; indumentum sometimes stellate. Racemes axillary and leafless or terminal and leafy at base. Flowers very showy, often appearing before or with few new leaves, mostly scarlet, paired or clustered on the rhachis. Bracts and bracteoles small or absent. Calyx truncate, split or more or less 5-toothed; vexillum large or elongated, erect or spreading, subsessile or long-clawed, not appendaged; wings short, sometimes very small or absent; keel much smaller than vexillum, longer or shorter than wings. Stamens 10; vexillary stamens free or connate only at base, the remainder connate to the middle; anthers uniform. Ovary stalked; ovules numerous; style incurved, not barbate, stigma small, terminal. Pods stalked, linear, falcate, constricted or sinuate between the seeds, 2-valved or follicularly dehiscent by the ventral suture, rarely indehiscent. Seeds ovoid, hilum lateral, oblong, estrophiolate.

About 2000 species distributed in tropical and subtropical regions of both hemisphere; five species in China; three species in Hong Kong. *Erythrina caffra* Thunb. (南非刺桐) is also cultivated in Hong Kong.

- 1a. Leaflets 15–30 × 15–30 cm; calyx spatheform; vexillum 5–6 cm.; pods 15–30 cm ..... 1. *E. variegata*  
 1b. Leaflets 4–10 × 2.5–7 cm; calyx campanulate, vexillum ca. 4.5 cm; pods 10–15 cm.  
 2a. Leaflets rhombic-ovate, base broadly cuneate; apex caudate; seeds deep red, often with one black spot... 2. *E. corollodendron*  
 2b. Leaflets ovate or lanceolate elliptic, base rounded, apex obtuse; seeds blackish with brownish markings.... 3. *E. crista-galli*

1. *Erythrina variegata* L. 刺桐

(Fig. 49; Photo 130)

Herb. Amb. 10. 1754; FRPS 41: 167. 1995; FGD 5: 296. 2003.

Large tree, up to 20 m tall. Branches with conic brown or blackish spines. Leaves usually crowded towards apex of branchlets; leaflets membranous, broadly ovate or rhombic-ovate, 15–30 × 15–30 cm, base broadly cuneate or truncate, apex acuminate or obtuse, triveined. Calyx spatheform, 2–3 cm, laterally splitted. Corolla red, 6–7 cm; vexillum elliptic, 5–6 × 2.5 cm, apex rounded, shortly clawed; wings and keel subequal, ca. 1.5 cm. Stamens 10, monadelphous. Ovary puberulous. Pods black, 15–30 × 2–3 cm, slightly curved and constricted between seeds. Seeds 1–8, reniform, 1.5 × 1 cm, deep red.

Locality: Cultivated. *Y. S. Lau 1837, 3078; HK sheet 7796.*

Distribution: Hainan, Guangxi, Guangdong, Fujian, Taiwan; India, Vietnam, Laos, Cambodia, Malaysia, Australia, Pacific Islands, E Africa, naturalized elsewhere.

Ecology: Flowering: Mar.–May; fruiting: Jun.–Aug.

Uses: Ornamental, medicinal (folklore).

2. *Erythrina corollodendron* L. 龍牙花 (Photo 131)

Sp. Pl. 706. 1753; FRPS 41: 164. 1995; FGD 5: 295, fig. 158. 2003.

Shrub or small tree, 3–5 m tall. Stems and branches prickly. Leaflets rhombic-ovate, 5–10 × 3.5–7 cm, base broadly cuneate, apex acuminate, caudate, glabrous, sometimes with prickles on petioles and midvein of leaflet on abaxial surface. Racemes axillary, over to 30 cm. Flowers 2–3 in clusters. Calyx campanulate, ca. 9 mm, apex subtruncate, only with one small projection abaxially, glabrous. Corolla deeply red; vexillum oblong, ca. 4.2 cm, apex emarginate; wings ca. 1.4 cm, keel ca. 2.2 cm, both clawed. Stamens 10, diadelphous, filaments unequal. Ovary stalked, white pubescent. Pods ca. 10 cm, glabrous, stipitate, apex beaked, slightly constricted between seeds. Seeds deep red, often with one black spot.

Locality: Cultivated. *Y. S. Lau 1624, 1829; HK sheet 23393.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan (cultivated); native to W Indies, cultivated elsewhere.

Ecology: Flowering: May–Sep.

Uses: Ornamental.

3. *Erythrina crista-galli* L. 雞冠刺桐

Mantissa Plantarum 1: 99-100. 1767; FRPS 41: 166. 1995; FGD 5: 295. 2003.

Deciduous shrub or small tree, stems and petioles with few prickles. Leaflets ovate or lanceolate-elliptic, 4–10 × 2.5–6 cm, base round or cuneate, glabrous on both sides. Flowers appearing at same time with leaves. Flowers solitary or 2–3 together, forming leafy,



Figure 49. *Erythrina variegata* L.

1. Inflorescence; 2. leaf; 3. vexillum; 4. wing; 5. keel; 6. calyx; 7. stamens; 8. pod. (drawn by H. P. Yu)

loose, terminal racemes. Calyx campanulate, 10–12 mm, apex bifid. Corolla deep red, vexillum reflexed, nearly pipa-formed, 4.5–5 cm, wings very small, lanceolate 1 mm, keel curved, slightly shorter than vexillum. Stamens 10, monadelphous. Ovary thinly tomentose, stipitate. Pods 15 × 1.3 cm, constricted between seeds. Seeds blackish with brownish markings.

Locality: Cultivated. *HK sheet 7795; Y. S. Lau 1667.*

Distribution: Yunnan and Taiwan (cultivated); Native to Brazil.

Ecology: Flowering: Mar. –Jun.; fruiting: Apr. –Jul.

Uses: Ornamental.

### 15. *Pterocarpus* Jacq. 紫檀屬

Trees. Stipules deciduous; stipels absent. Leaves odd-pinnate; pedicels articulate; leaflets alternate. Racemes or panicles axillary or terminal. Bracts and bracteoles small, caducous. Corolla yellow, rarely whitish mixed with violet, usually showy. Calyx campanulate, slightly curved, with short teeth, the upper 2 teeth more or less connate. Petals long-clawed; vexillum orbicular or broadly ovate; wings obliquely obovate or oblong; keel as long as or shorter than wings. Stamens monadelphous or diadelphous (5+5) or (9+1); anthers dorsifixed. Ovary sessile or stipitate, generally 2-ovuled; styles filiform, incurved, not barbate; stigma small, terminal. Pods orbicular or ovate, rarely oval-oblong, more or less oblique or falcate, compressed, indehiscent, 1–2-seeded, surrounded by a more or less thickened horizontal wing.

About 50 species distributed in tropical regions; one species cultivated in China; it is also cultivated in Hong Kong.

**1. *Pterocarpus indicus* Willd. 紫檀 (Fig. 50; Photo 132)**  
Sp. Pl. 3(2): 904. 1802; FRPS 40: 122. 1994; FGD 5: 227, fig. 126. 2003.

Tree, 15–25 m tall; bark grey. Branches ascending, glabrous. Leaves odd-pinnate; leaflets 7–11, thinly leathery, alternate, ovate, 5–11 × 4 cm, base rounded, glabrous, apex shortly acuminate, main veins fine. Panicles axillary or terminal, many-flowered, brown-pubescent. Calyx campanulate, 5–7 mm, slightly curved, finely brown-silky pubescent; teeth broadly triangular, ca. 1 mm. Corolla yellow. Petals long-clawed; vexillum 10–13 mm wide, margin crisped; wings smaller, distally ± connate. Stamens 10, monadelphous initially, later divided into diadelphous (5+5). Ovary shortly stipitate, densely yellow-brown pubescent. Pods obliquely orbicular, compressed, except the wings covered with silky hairs and net-veined; wings up to 2 cm broad.

Locality: Cultivated. *Y. S. Lau 1944; L. T. Lo 153; Y. W. Lam 280.*

Distribution: Guangdong, Guangxi, Yunnan, Taiwan (cultivated); India, Philippines, Indonesia, Myanmar.

Ecology: Flowering: Feb. –Aug.; fruiting: Nov.

Uses: Timber.

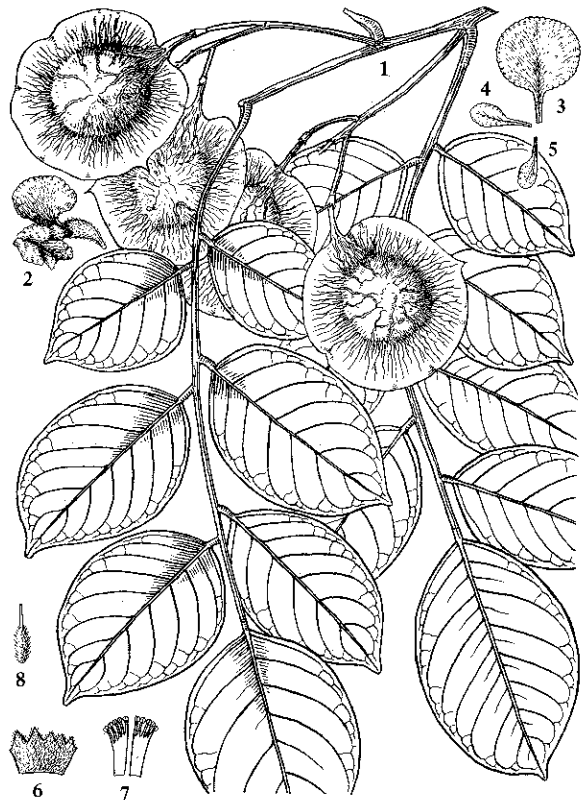


Figure 50. *Pterocarpus indicus* Willd.

1. fruiting branch; 2. flower; 3. vexillum; 4. wing; 5. keel; 6. calyx; 7. stamens; 8. pistil. (drawn by H. P. Yu)

### 16. *Sophora* L. 槐屬

Trees, shrubs, or rarely perennial herbs. Leaves odd-pinnate; leaflets numerous and small or few and larger; stipels setaceous or often absent. Flowers in terminal racemes or leafy panicles. Bracts linear, minute or absent; bracteoles often absent. Calyx-teeth short. Corolla white, yellow, or rarely blue-violet; vexillum broadly obovate or orbicular, erect or spreading, usually shorter (rarely longer) than keel; wings oblong, oblique; keel oblong, almost straight, overlapping or connate dorsally. Stamens 10, free, or rarely connate at base; anthers dorsifixed. Ovary shortly stipitate; ovules numerous; style incurved, stigma minute, terminal. Pods moniliform, terete or slightly compressed, fleshy to woody, indehiscent or opening very tardily by 2-valves. Seeds obovoid or globose, not strophiolate; cotyledons thick.

More than 70 species distributed in tropical to temperate regions; 21 species in China; two species in Hong Kong.

- 1a. Leaflets broadly elliptic to suborbicular, apex rounded or emarginate; pods tomentose ..... 1. *S. tomentosa*  
1b. Leaflets long-ovate to ovate-lanceolate, apex acuminate; pods glabrous ..... 2. *S. japonica*

**1. *Sophora tomentosa* L. 絨毛槐**

Sp. Pl. 1: 373. 1753; FKH 87. 1912; FRPS 40: 84. 1994; FGD 5: 219. 2003.

(Fig. 51; Photo 133)

Shrub or small tree, 2–4 m tall. Branches and branchlets greenish, tomentose. Leaves odd-pinnate, alternate, 12–18 cm; leaflets 11–15(–19), subleathery, broadly elliptic or suborbicular, rarely obovate, 2.5–5 × 2–3.5 cm, base rounded, apex rounded or emarginate, slightly oblique, glabrous adaxially, greyish tomentose abaxially. Racemes terminal, sometimes paniculate, 10–20 cm; pedicels articulate. Calyx campanulate, 6–7 mm, truncate, densely greyish tomentose abaxially. Corolla yellow; vexillum broadly ovate, 17 × 10 mm, claw 3 mm; wings oblong, as long as vexillum, claws 5 mm, slender; keel slightly shorter than vexillum and wings. Stamens 10, filaments free. Ovary hairy. Pods leathery, moniliform, 7–15 cm, densely tomentose, dehiscent when mature. Seeds 6–8, brown, globular, 6 mm in diam., shining.

Locality: Tai Long Sai Wan. *Y. S. Lau 1531*; *Y. W. Lam 493*.

Distribution: Hainan, Guangdong, Taiwan; widely distributed in tropical regions.

Ecology: Sandy beaches. Flowering: Aug.–Oct.; fruiting: Sep.–Dec.

## 2. *Sophora japonica* L. 槐

Mant. Pl. 1: 68. 1767; FHK 95. 1861; FKH 87. 1912; FRPS 40: 92. 1994; FGD 5: 220. 2003.

Tree, 15–26 m tall. Branches glabrous. Leaves odd-pinnate; petioles inflated at base and enveloping the bud; leaflets 9–15, opposite or subopposite, ovate-lanceolate, 2.5–5 × 1.2–1.8 cm, base obtusely rounded to broadly cuneate, asymmetric, apex acuminate, glabrous adaxially, pubescent abaxially at first, soon glabrescent. Panicles terminal. Calyx campanulate, ca. 4 mm, 5-toothed; teeth obtuse. Corolla white or yellowish, 10 mm. Petals subequal; vexillum broadly cordate, apex emarginate, purple-striate, shortly clawed; wings and keel oblong, clawed; keel narrower, ca. 4 mm wide. Stamens nearly free. Ovary subglabrous. Pods fleshy, moniliform, 2–5 cm, indehiscent. Seeds 1–6, reniform, 9 mm, slightly compressed.

Locality: Cultivated. *Y. S. Lau 2503, 2620, 2818*.

Distribution: Widely spread from N to S China; cultivated in E Asia, Europe and America.

Ecology: Flowering: Jul.–Aug.; fruiting: Aug.–Oct.

Uses: Environmental (ornamental), bee plants (honey), medicinal (folklore).

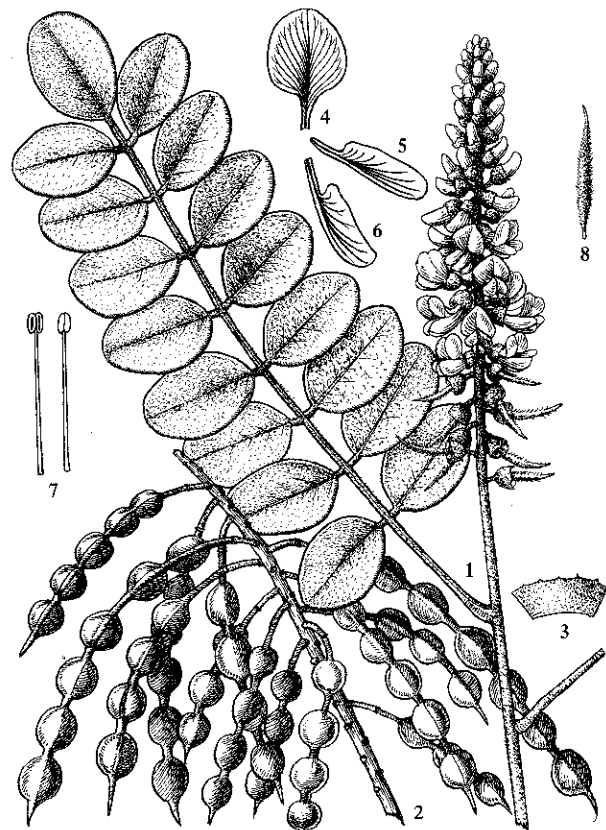


Figure 51. *Sophora tomentosa* L.

1. flowering branch; 2. fruiting branch; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil. (drawn by H. P. Yu)

4 mm wide. Stamens nearly free. Ovary subglabrous. Pods fleshy, moniliform, 2–5 cm, indehiscent. Seeds 1–6, reniform, 9 mm, slightly compressed.

## 17. *Ormosia* Jacks. 紅豆屬

Evergreen trees. Stipules small; stipels absent. Leaves odd-pinnate, rarely simple; leaflets opposite, leathery, entire. Racemes or panicles terminal or axillary, bracteolate. Calyx campanulate, 5-toothed, the upper 2 teeth more or less connate. Corolla white or purple. Petals clawed; vexillum orbicular; wings and keel oblique, obovate-oblong; keel free. Stamens 10, free, all fertile or 5 abortive; anthers dorsifixed. Ovary subsessile; style filiform, stigma lateral. Pods ellipsoidal or oblong, 2-valved, rarely indehiscent. Seeds 1–few, scarlet or 2-coloured.

About 100 species distributed in tropical America, SE Asia and NW Australia; 35 species in China; four species in Hong Kong.

- 1a. Branchlets, leaves, flowers and pods densely tomentose ..... 1. *O. pachycarpa*  
 1b. Branchlets, leaves, flowers and pods glabrous or sparsely pubescent.  
 2a. Pods suborbicular, 1.5–2 cm long, 1-seeded ..... 2. *O. semicastrata*  
 2b. Pods rhombic, obovate or oblong, 3–5.5 cm long, 1–4-seeded.  
 3a. Leaflets 3–7, long-obovate to elliptic, 3.4–8 × 2–3 cm, lateral veins 7–8 pairs ..... 3. *O. emarginata*  
 3b. Leaflets (5–)7–9, oblanceolate or narrowly elliptic, 2.5–6 × 0.7–2 cm; lateral veins 4–6 pairs ..... 4. *O. indurata*

### 1. *Ormosia pachycarpa* Champ. ex Benth. 葶莢紅豆

(Photo 134)

Hooker's J. Bot. Kew Gard. Misc. 4: 76. 1852; FHK 96. 1861; FKH 88. 1912; FRPS 40: 13. 1994; FGD 5: 208. 2003.

Tree, 12–15 m tall; bark greyish green. Young branches, petioles, abaxial surface of leaflets, panicles, calyces and pods thickly covered with whitish cottony wool. Leaves odd-pinnate, 20–25 cm; leaflets 5–9, elliptic-oblong to oblanceolate, 5–15 × 3–7 cm, base cuneate or obtuse, apex acute, glabrous adaxially, lateral veins 11–17 pairs. Panicles terminal, 17–30 cm, 5-toothed. Corolla white; petals clawed; vexillum oblate, ca. 1.2 cm wide; wings broadly elliptic, 9 mm, base auriculate; keel 7 mm, base auriculate on one side. Stamens 10, unequal, 6–10 mm. Ovary sessile, densely villose. Pods obovoid, hard, turgid, densely tomentose. Seeds 1–2, dark brown,

suborbicular or broadly ovoid, 1.5–2.4 cm, shining.

Locality: Victoria Peak, Wong Chuk Hang, Bowen Rd., Beacon Hill, Tsiu Hang, Tai Po, Shing Mun, Ta Tit Yan. *P. S. Choi 22; HK sheet 40144, 40681.*

Distribution: Guangdong.

Ecology: Forests. Flowering: Jun. – Jul.

Notes: The type specimen was collected from Happy Valley by J. G. Champion around 1850. Listed in *Rare and Precious Plants of Hong Kong*.

## 2. *Ormosia semicastrata* Hance 軟莢紅豆

(Photo 135)

*J. Bot.* 20(231): 78. 1882; *FKH* 88. 1912; *FRPS* 40: 22. 1994; *FGD* 5: 210. 2003.

Tree, up to 12 m tall; bark brown or grey. Branchlets sparsely tawny pubescent. Leaves odd-pinnate, 18–25 cm, rachis elongating from the apical pair of leaflets to 1.2–2 cm; leaflets 3–9(–11), ovate-elliptic, narrowly elliptic or lanceolate, 4–12 × 1–6 cm, base obtuse to rounded or cuneate, apex acuminate or acute, glabrous on both surfaces or pubescent along veins on abaxial surface, lateral veins 10–17 pairs. Panicles axillary, densely yellow-brown pubescent. Calyx campanulate, 4–5 mm, rusty pubescent abaxially, 5-toothed. Corolla white; petals clawed; vexillum suborbicular, 4 mm in diam.; wings linear-oblancoelate, 4.5 × 2 mm; keel oblong, equal to wings. Stamens 10, 5 fertile, 5 abortive. Ovary yellow-brown pubescent. Pods suborbicular, 1.5–2 cm in diam., leathery. Seed 1, scarlet, oblate, 9 mm.

Locality: Tai Tam, Wong Nai Chung, Tai Po Kau, Ma On Shan. *C. P. Lau 53; Y. S. Lau 2062; HK sheet 40785.*

Distribution: Hainan, Guangxi, Guangdong, Fujian, Jiangxi.

Ecology: Broadleaved forests. Flowering: Apr. – May.

Notes: The type specimen was collected from Wong Nai Chung, Hong Kong Island by C. Ford (*Hance Herb. No. 21018*) in April 1879.

## 3. *Ormosia emarginata* (Hook. & Arn.) Benth.

凹葉紅豆

(Fig. 52; Photo 136)

Hooker's *J. Bot. Kew Gard. Misc.* 4: 77. 1852; *FHK* 96. 1861; *FKH* 88. 1912; *FRPS* 40: 34. 1994; *FGD* 5: 212, fig. 119. 2003.

*Layia emarginata* Hook. & Arn., *Bot. Beechey Voy.* 183, pl. 38. 1833.

Small tree, 5–6(–12) m tall; glabrous throughout. Leaves odd-pinnate, 10–16 cm; leaflets 3–7, thick leathery, obovate-oblong or elliptic, 3.5–8 × 2–3 cm, base obtuse or broadly cuneate, apex obtuse or emarginate; lateral veins 7–8 pairs. Panicles terminal, 10–11 cm. Flowers fragrant. Corolla white or pink; vexillum oblate, 7 × 8 mm; claw 2 mm; wings with long claws, base auriculate; keel irregularly oblong, auriculate at one side. Stamens 10, unequal. Pods rhomboid or oblong, 3–5.5 × 1.7–2.4 cm, compressed. Seeds 1–4, scarlet, suborbicular or elliptic, 7–10 × 7 mm.

Locality: Common in Hong Kong. *H. C. Tang 368; Y. S. Lau 1883; HK sheet 40131.*

Distribution: Hainan, Guangxi, Guangdong; Vietnam.

Ecology: Mixed forests. Flowering: May–Jun.

Notes: The type specimen was collected from Happy Valley, Hong Kong Island by J. G. Champion between 1847 and 1850.

## 4. *Ormosia indurata* L. Chen 鞠莢紅豆

*Sarginetia* 3: 104. 1943; *FRPS* 40: 45. 1994; *FGD* 5: 214. 2003.

Tree, 5–9 m tall. Old branches purple-brown or yellowish brown, glabrous, with salient lenticels and leaf scars. Leaves odd-pinnate, 8–16 cm; leaflets (5–)7–9, leathery, oblanceolate or narrowly elliptic, 2.5–6 × 0.7–2 cm, base cuneate, apex obtuse, emarginate, margin slightly revolute, glabrous adaxially, sparsely pubescent or glabrous abaxially, lateral veins 4–6 pairs. Panicles terminal. Corolla white. Ovary densely grey-brown pubescent, 4-ovuled. Pods obovate or oblong, 3–4.5 × 2–2.5 cm, valves thickly woody. Seeds 1–4, red-brown, elliptic, 1 × 0.7 cm, nitid.

Locality: Mount Gough, Aberdeen, Mau Ping, Wu Kau Tang, Shing Mun, Wong Lung Hang. *Y. S. Lau 191; P. S. Choi 101; F. W. King 8638.*

Distribution: Guangdong, Fujian.

Ecology: Forests. Fruiting: Nov.

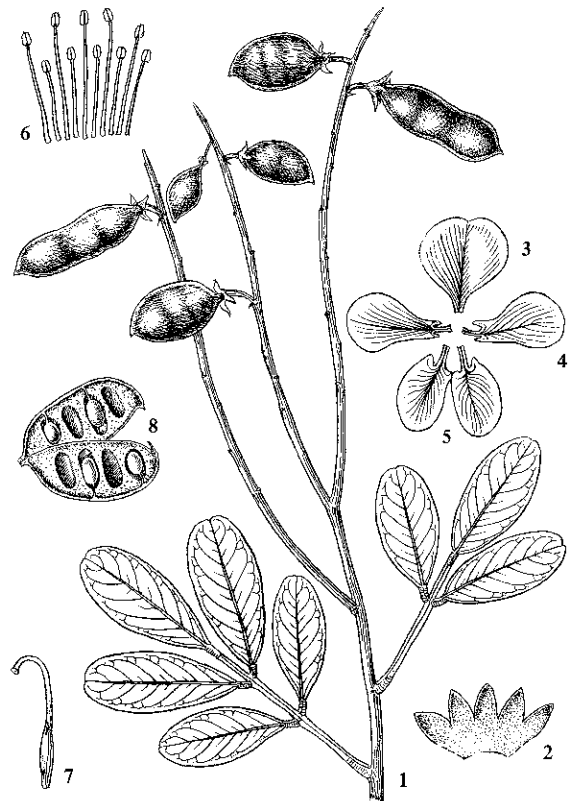


Figure 52. *Ormosia emarginata* (Hook. & Arn.) Benth.

1. fruiting branch; 2. calyx; 3. vexillum; 4. wings; 5. keel; 6. stamens; 7. pistil; 8. dehiscent pod. (drawn by H. P. Yu)



18. *Maackia* Rupr. 馬鞍樹屬

Deciduous trees or shrubs; buds axillary, free from petioles. Leaves alternate, odd-pinnate; leaflets mostly opposite, estipellate. Racemes or panicles terminal. Bracts deciduous. Flowers numerous and dense, bracteolate. Calyx campanulate, 4–5-toothed. Corolla white; vexillum recurved, thickened at base; wings obliquely oblong, base hastate; keel semi-sagittate, subcoherent dorsally. Stamens 10, very shortly connate at base; anthers versatile. Ovary subsessile, densely hairy, few-ovuled; style subulate, stigma minute, terminal. Pods subsessile, winged along the ventral suture or not, plano-compressed, scarcely dehiscent, hirsute. Seeds 1–5, oblong, compressed, testa thin, brown, astrophiolate.

About nine species distributed in E Asia; eight species in China; one species in Hong Kong.

1. *Maackia australis* (Dunn) Takeda

華南馬鞍樹

(Fig. 53; Photo 137)

Notes Roy. Bot. Gard. Edinburgh. 8: 102, t. 29, fig. 57–62. 1913; FRPS 40: 59. 1994; FGD 5: 217. 2003.

*Cladrastis australis* Dunn, FKH 86. 1912.

*Maackia ellipticocarpa* Merr., J. Arnold Arbor. 26(2): 163, fig. 1. 1945; FRPS 40: 60. 1994.

Shrub, ca. 2 m tall. Branchlet glabrous. Leaves odd-pinnate, 13–16 cm; leaflets 7–9, ovate or ovate-oblong, 2–5 × 1.2–2.5 cm, base cuneate or rounded, apex acute or acuminate, glabrous on both surfaces, lateral veins 7–8 pairs. Racemes 10–20 cm. Flowers fragrant, ca. 7 mm. Corolla white; vexillum long, elliptic-obovate. Ovary densely hairy. Pods compressed, elliptic or oblong, 2–3.5 × 1–1.5 cm, wing not more than 1 mm wide, without fruit neck. Seeds 1–3, broad-elliptic, 7–9 × 5 mm, compressed.

Locality: Sha Tau Kok, Lantau Island. Y. W. Lam 827; HK sheet 37861, 40534.

Distribution: Coastal Islands of Guangdong.

Ecology: Thickets. Flowering: Jul.

Notes: The type specimen of *Maackia ellipticocarpa* Merr. (Y. W. Taam 1693) was collected near Tung Chung, Lantau Island on 12 Sep. 1940.

19. *Pongamia* Vent. 水黃皮屬

Trees. Leaves odd-pinnate; leaflets opposite, exstipellate. Racemes axillary. Flowers whitish. Bracts caducous; bracteoles minute or absent. Calyx truncate, with obsolete teeth; vexillum thinly silky abaxially, suborbicular, with inflexed auricles at base; wings obliquely oblong, slightly adherent to keel; keel obtuse. Petals coherent at apex. Vexillary stamen free at base, but connate from middle into a closed tube; anthers versatile. Ovary subsessile, 2-ovuled; style filiform, incurved, stigma small, terminal. Pods obliquely oblong, flat, thickly leathery, subfleshy or almost woody, indehiscent, 1-seeded, beaked. Seeds reniform, rather thick, with a small hilum.

One species distributed in S to SE Asia and N Australia, S & SE China; it also occurs in Hong Kong.

1. *Pongamia pinnata* (L.) Merr. 水黃皮 (Fig. 54; Photo 138)

Interpr. Herb. Amboin. 271. 1917.

*Cytisus pinnatus* L., Sp. Pl. 741. 1753.

*Pongamia pinnata* (L.) Pierre, Fl. Forest Cochinch. t. 385. 1899, *nom. illeg.*; FRPS 40: 183. 1994; FGD 5: 238. 2003.

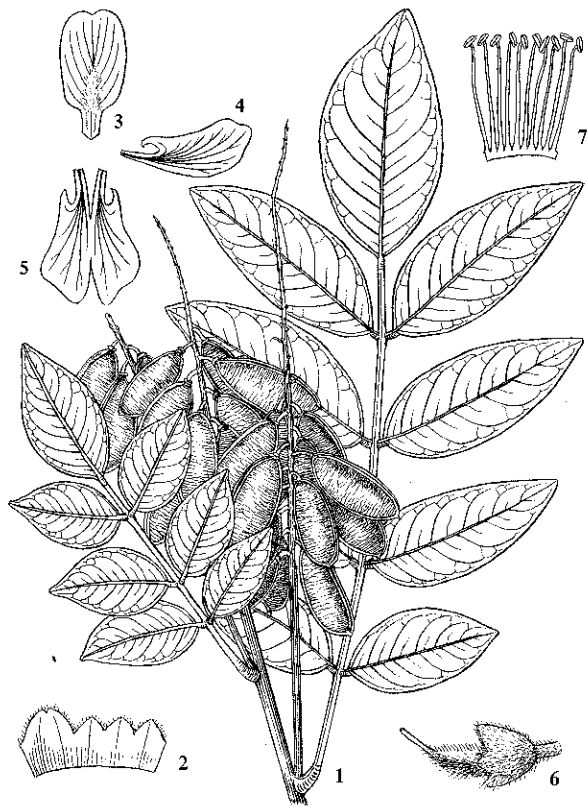


Figure 53. *Maackia australis* (Dunn) Takeda

1. fruiting branch; 2. calyx; 3. vexillum; 4. wings; 5. keel; 6. calyx and pistil; 7. stamens. (drawn by H. P. Yu)

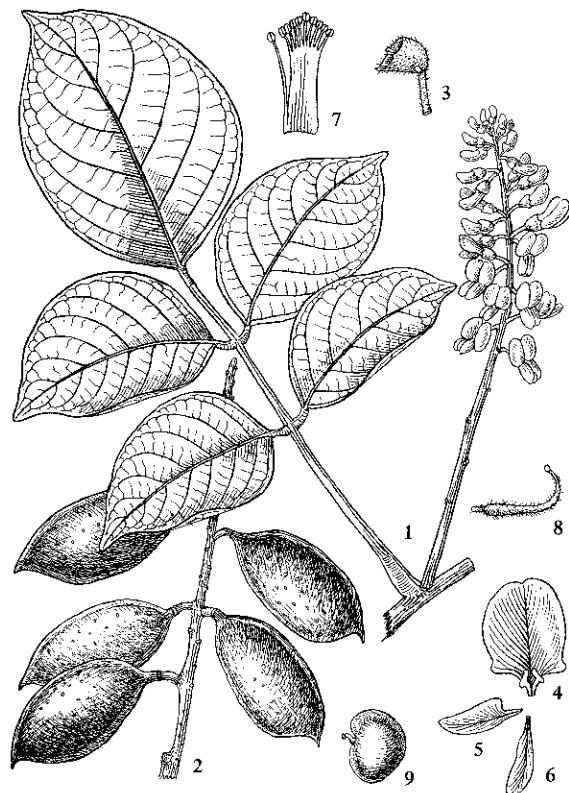


Figure 54. *Pongamia pinnata* (L.) Merr.

1. flowering branch; 2. inflorescence; 3. calyx; 4. vexillum; 5. wings; 6. keel; 7. stamens; 8. pistil; 9. seed. (drawn by H. P. Yu)

*Pongamia glabra* Vent., Jardin de la Malmaison 28, pl. 28. 1803; FHK 94. 1861; FKH 86. 1912.

Tree, 8–15 m tall. Young branchlets glabrous or puberulent, old branchlets densely grey-lenticellate. Leaves odd-pinnate, 20–25 cm; leaflets 2–3 pairs, ovate, broad-elliptic to oblong, 5–10 × 4–8 cm, base broadly cuneate, rounded or truncate, apex shortly acuminate or rounded. Racemes axillary, 15–20 cm. Flowers paired on nodes of rachis. Pedicels 5–8 mm; bracteoles 2. Calyx ca. 3 mm, teeth obtuse. Corolla white or pink, 12–14 mm; petals clawed; vexillum silk-hairy abaxially, margin involute; wings oblong; keel slightly curved. Pods elliptic, 4–5 × 1.5–2.5 cm, slightly verrucose, top with slightly curved beak. Seeds 1, brown, reniform.

Locality: Common in Hong Kong. Also cutlirated. *Y. S. Lau 2149, 2708, 2869.*

Distribution: Hainan, Guangdong, Fujian, Taiwan; India, Sri Lanka, Malaysia, Indonesia to Australia.

Ecology: Seashore, near streams and ponds. Flowering: May–Jun.; fruiting: Aug.–Oct.

Uses: Timber, ornamental.

## 20. *Alysicarpus* Desv. 鏈莢豆屬

Annual or perennial herbs. Stems erect or diffuse, branched. Leaves simple, rarely pinnately 3-foliolate; stipellate. Racemes axillary or terminal. Flowers small. Bracts scarious, deciduous. Calyx deeply 5-lobed, lobes hard, sometimes imbricate at base, upper 2 often connate to near apex. Corolla scarcely larger than calyx, shortly clawed; vexillum obovate or suborbicular, oblique oblong; wings adherent on keel; keel slightly curved, obtuse, base with membranous appendage. Stamens diadelphous, alternately long and short. Ovary many-ovuled. Pods compressed or terete, transversely constricted or dividing into 1-seeded segments, dehiscent or indehiscent.

About 30 species distributed in tropical regions; four species in China; two species in Hong Kong.

- 1a. Leaves linear to linear-lanceolate, 4–5 mm wide; flowers yellowish or yellow-green; pods 6–15 mm, segments 3–6, not reticulate ..... 1. *A. bupleurifolius*  
 1b. Leaves varied in form, 1–2 cm wide; flowers violet; pods 15–25 mm, segments 4–7, faintly reticulate ..... 2. *A. vaginalis*

### 1. *Alysicarpus bupleurifolius* (L.) DC. 柴胡葉鏈莢豆

(Photo 139)

Prodr. 2: 352. 1825; FHK 81. 1861; FKH 80. 1912; FRPS 41: 88. 1995; FGD 5: 286. 2003.

*Hedysarum bupleurifolium* L., Sp. Pl. 745. 1753.

Perennial herb. Stems erect or diffuse, 25–120 cm tall, many-branched, glabrous or nearly so. Leaves simple, linear to linear-lanceolate, 4–7 × 4–5 mm, lower ones shorter, base rounded or cuneate, apex acute, glabrous adaxially, sparsely pubescent along veins abaxially; lateral veins 10–13 pairs. Racemes terminal, 3–18 cm. Flowers 10–20-coupled at nodes of rachis, lax. Calyx 6–8 mm, 5-lobed, lobes lanceolate, dry and hard. Corolla slightly shorter than calyx, yellowish or yellow green. Pods 6–15 × 1.8 mm, exserted from calyx, segments 3–6, brown, glabrous; persistent calyx much longer than the first segment of pods.

Locality: Tai Hang, Kwai Chung. *Y. S. Lau 4, 2019; Y. W. Lam 856.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; SE Asia, Polynesia, Mauritius.

Ecology: Thickets. Flowering & fruiting: Sep.–Nov.

### 2. *Alysicarpus vaginalis* (L.) DC. 鏈莢豆 (Fig. 55; Photo 140)

Prodr. 2: 353. 1825; FHK 80. 1861; FKH 80. 1912; FRPS 41: 85. 1955; FGD 5: 286, fig. 154. 2003.

*Alysicarpus vaginalis* var. *diversifolius* Chun, FGZ 334. 1956.

Perennial herb, caespitose or many-branched at base. Stems erect, upper portion prostrate, 30–90 cm tall, glabrous or slightly pubescent. Leaves simple, varied in form, upper ones ovate-oblong, oblong-lanceolate to linear-lanceolate, 3–6.5 × 1–2 cm, lower ones cordate, suborbicular or ovate, 1–3 × 1 cm, glabrous adaxially, slightly pubescent abaxially; lateral veins 4–5(–9) pairs. Racemes axillary or terminal, 1.5–7 cm, 3–6-coupled at nodes of rachis. Calyx 5–6 mm, 5-lobed, lobes longer than calyx-tubes. Corolla violet, slightly exserted from calyx; vexillum broad, obovate. Ovary pubescent. Pods terete, 1.5–2.5 × 0.2–0.25 cm, pubescent; faintly reticulate, segments 4–7, 2.5–3 mm, dehiscent; persistent calyx slightly longer than first segment.

Locality: Common in Hong Kong. *Y. S. Lau 1666; S. P. Lau 183; Y. W. Lam 1264.*

Distribution: Hainan, Guangxi, Guangdong, Taiwan; tropics of the old world.



Figure 55. *Alysicarpus vaginalis* (L.) DC.

1. part of plant; 2. vexillum; 3. wings; 4. keel; 5. calyx; 6. stamens; 7. pistil; 8. pods. (drawn by H. P. Yu)

Ecology: Gassy and wastelands. Flowering & fruiting: May–Nov.

Uses: Green manure.

## 21. *Tadehagi* H. Ohashi 葫蘆菜屬

Subshrubs or shrubs. Stipules free or connate. Leaves 1-foliolate, stipulate; petioles winged. Racemes terminal and axillary, usually 2–3-flowered at a node. Bracts dimorphic; bracteoles present or absent. Calyx campanulate, 5-lobed; upper 2 lobes minutely 2-toothed or sometimes entire at apex. Petals with well developed veins; vexillum orbicular to transversely broadly elliptic or obovate; wings elliptic oblong, longer than keel, rounded at apex, conspicuously auriculate like an appendage at base of lamina, claw broad; keel acute or obtuse at apex. Stamens 10, diadelphous. Ovary sessile, with distinct disk around base, pubescent, 5–8-ovuled; styles glabrous; stigma capitate. Pods exserted, straight or slightly incurved, compressed, narrowly oblong, usually 5–8-segmented, ventral sutures nearly straight or slightly undulate, dorsal sutures shallowly to deeply constricted. Seeds transversely broadly to transversely elliptic, rim-arillate, concave at hilum.

Six species distributed in tropical Asia, Pacific Islands, New Caledonia and N Australia; two species in China; one species in Hong Kong.

### 1. *Tadehagi triquetrum* (L.) H. Ohashi

葫蘆菜

(Fig. 56; Photo 141)

*Ginkgoana* 1: 290. 1973; *FRPS* 41: 63. 1995; *FGD* 5: 279, fig. 149. 2003.

*Hedysarum triquetrum* L., *Sp. Pl.* 746. 1753.

*Pteroloma triquetrum* (L.) Desv. ex Benth., *Pl. Jungh.* 2: 220. 1852.

*Desmodium triquetrum* (L.) DC., *Prodr.* 2: 326. 1825; *FHK* 83. 1861; *FKH* 79. 1912.

Erect subshrub or shrub, 1–2 m tall. Young branchlets 3-angulate. Stipules lanceolate, 1.3–2 cm, striate. Leaves 1-foliolate; petioles 1–3 cm, winged, with 4–8 mm wide wings on each side; leaflets papery, narrow-lanceolate to ovate-lanceolate, 5.8–13 × 1.1–3.5 cm, base rounded or shallow cordate, apex acute, glabrous adaxially, pubescent on veins abaxially, lateral veins 8–14 on each side of midvein. Racemes terminal and axillary, 15–30 cm, covered with adpressed silky and hook-form hairs. Flowers 3–5 at each node. Calyx campanulate, 3 mm, lobes deltoid, lanceolate or linear. Corolla purplish or violet, 5–6 mm; vexillum suborbicular, emarginate; wings obovate, base auriculate; keel falcate. Stamens diadelphous. Pods oblong, 2–5 × 0.5 cm, densely yellow or white strigose, dorsal suture slightly constricted with 5–8 segments. Seeds broadly elliptic or elliptic, 2–3 × 1.5–2.5 mm.

Locality: Common in Hong Kong. *H. C. Tang* 2090; *Y. S. Lau* 20, 2051.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Jiangxi, Fujian; tropical Asia, N Australia.

Ecology: Grassy hillslopes, margins of forests. Flowering: Jun.–Oct.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).



Figure 56. *Tadehagi triquetrum* (L.) H. Ohashi

1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. pods. (drawn by H. P. Yu)

## 22. *Desmodium* Desv. 山螞蝗屬

Perennial herbs, subshrubs or shrubs. Stipules persistent or deciduous; stipels subulate or filiform. Leaves pinnately 3-foliolate or 1-foliolate. Racemes axillary or terminal, rarely with 1 or 2 axillary flowers. Bracts deciduous or persistent; bracteoles present or absent. Calyx campanulate, 5-toothed, the upper 2 more or less connate into a bidentate lip. Corolla white, yellow-white, green-white, pink or purple; petals clawed; vexillum oblong to orbicular; wings more or less adherent to keel. Stamens diadelphous, rarely monadelphous. Ovary sessile; ovules numerous; styles not bearded; stigma terminal. Pods compressed, ± constricted between seeds, indehiscent and breaking up into 1–2-seeded segments.

About 350 species mainly distributed in subtropical and tropical regions; 27 species and five varieties in China; ten species and one variety in Hong Kong.

1a. Leaves 1-foliolate.

2a. Leaflets orbicular or suborbicular, 2–4.5 cm long and wide ..... 1. *D. styracifolium*

- 2b. Leaflets not orbicular.
- 3a. Stipules lanceolate; flowers greenish white; pods undulated on both sides ..... 2. *D. gangeticum*
- 3b. Stipules broadly ovate-triangular; flowers purple or pink; pods undulated on one side ..... 3. *D. velutinum*
- 1b. Leaves 3-foliolate.
- 4a. Petioles winged ..... 4. *D. caudatum*
- 4b. Petioles not winged.
- 5a. Perennial herbs.
- 6a. Flowers yellow; pedicels more than 10 mm at flowering; pods constricted only on one suture ..... 5. *D. heterophyllum*
- 6b. Flowers pink; pedicels less than 10 mm; pods constricted on both sutures ..... 6. *D. microphyllum*
- 5b. Erect shrubs.
- 7a. Calyx less than 2 mm, lobes deltoid, scatteredly pilose.
- 8a. End leaflets narrowly ovate, ovate-elliptic or oblong, 3–5 × 1–2 cm; corolla pink to blue ..... 7. *D. reticulatum*
- 8b. End leaflets elliptic, long-elliptic or obovate, 2.5–6 × 1.3–3 cm; corolla purple or white ..... 8. *D. heterocarpon*
- 7b. Calyx 2.5–4 mm, lobes lanceolate, densely villose.
- 9a. Leaflets ovate-elliptic or orbicular-rhombic, 4–10 × 4–6 cm ..... 9. *D. sequax*
- 9b. Leaflets obcordate or obovate, 2.5 cm × 10 mm ..... 10. *D. triflorum*

**1. *Desmodium styracifolium* (Osbeck) Merr.** 金錢草 (Fig. 57)  
Amer. J. Bot. 3(10): 580. 1916 [1917]; FRPS 41: 34. 1995; FGD 5: 267, fig. 145. 2003.

*Hedysarum styracifolium* Osbeck, Dagbok Ostind. Resa 247. 1757.

*Desmodium retroflexum* (L.) DC., Prodr. 2: 336. 1825; FKH 79. 1912.

*Hedysarum retroflexum* L., Mant. 1: 103. 1767.

Erect shrubby herb, 30–100 cm tall, many-branched, densely white or yellowish hairy. Leaves usually 1-foliolate, sometimes 3-foliolate; leaflets subleathery, rounded or subrounded to broadly obovate, 2–4.5 cm diam., lateral ones (when present) much smaller than terminal one, glabrous adaxially, densely covered with adpressed silky hairs abaxially. Racemes terminal or axillary, 1–3 cm. Peduncles densely silky hairy. Flowers 2 at each node. Calyx 3.5 mm, densely covered with minute hooked hairs and mixed with silky hairs. Corolla purple, 4 mm; petals all clawed; vexillum obovate or subrounded; wings obovate; keel longer than wings, strongly incurved. Stamens diadelphous. Ovary linear, hairy. Pods linear, 10–20 × 2 mm, pubescent and mixed with small hooked hairs, ventral suture straight, dorsal suture undulate, segments 3–6, subquadrate, compressed, reticulate.

Locality: Ho Pui, Lantau Island. W. J. Tutcher 8150; HK sheet 7342, 7345.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; India to Malaysia.

Ecology: Hillslopes, grasslands or thickets. Flowering & fruiting: Jun.–Sep.

Uses: Medicinal (folklore).

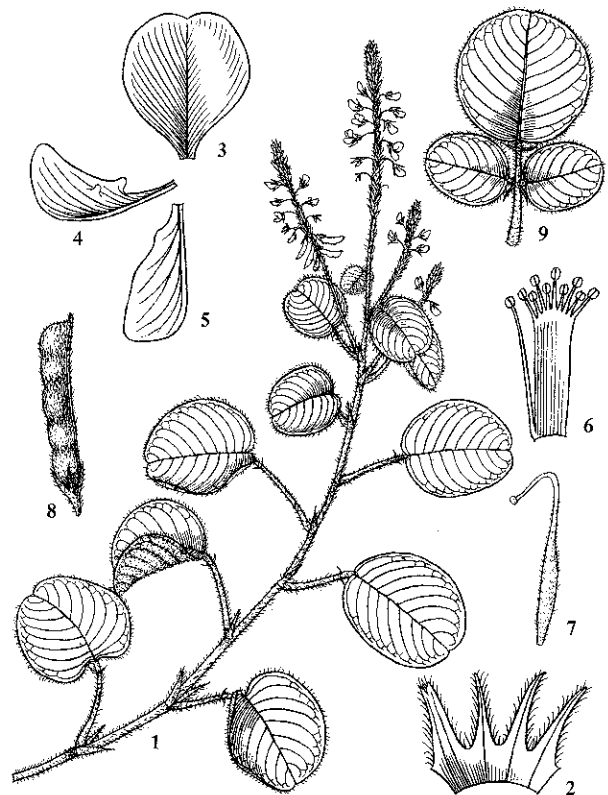


Figure 57. *Desmodium styracifolium* (Osbeck) Merr.

1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. pod; 9. leaf. (drawn by H. P. Yu)

**2. *Desmodium gangeticum* (L.) DC.** 大葉山蚂蝗

(Fig. 58; Photo 142)

Prodr. 2: 327. 1825; FHK 84. 1861; FKH 79. 1912; H. Ohashi, Ginkgoana 1: 184. 1973; FRPS 41: 26. 1995; FGD 5: 269. 2003.

*Hedysarum gangeticum* L., Sp. Pl. 746. 1753.

Erect or nearly erect subshrub, up to 1 m tall, many-branched. Branches slightly angulate, sparsely pubescent. Leaves 1-foliolate; leaflets papery, oblong-ovate, ovate or lanceolate, 3–13 × 2–7 cm, base rounded, apex acute-acuminate, glabrous except hairy midvein, sparsely grey pilose abaxially, lateral veins 6–10 on each side of midvein. Racemes axillary or terminal, sometimes paniculate, 10–30 cm. Flowers 2–6 at a node. Calyx campanulate, 2 mm, lobes lanceolate. Corolla green-white, 3–4 mm; vexillum obovate, base attenuate; wings oblong, base shortly clawed and auriculate; keel narrowly obovate, not auriculate. Stamens diadelphous, 3–4 mm. Ovary hairy. Pods slightly curved, 1.2–2 × 0.25 cm, ventral suture (upper edge) straight, dorsal sinuate; segments 6–8, suborbicular or broadly oblong, 2–3 mm, hooked pubescent.

Locality: Hong Kong Island, Tsuen Wan, Shing Mun, Tai Po, Tai Mo Shan, Lantau Island. *Y. S. Lau* 1015, 1653; *HK sheet* 40873.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; Asia, Africa, tropical Australia.

Ecology: Secondary forests. Flowering: Apr.–Aug.; fruiting: Aug.–Sep.

### 3. *Desmodium velutinum* (Willd.) DC. 絨毛山螞蝗

Prodr. 2: 328. 1825; FRPS 41: 27. 1995; FGD 5: 268. 2003.

*Hedysarum velutinum* Willd., Sp. Pl. 3(2): 1174. 1802.

*Desmodium latifolium* DC., Prodr. 2: 328. 1825; FKH 79. 1912.

Erect subshrub or small shrub, ca. 1 m tall. Young branches densely yellow-brown tomentose. Leaves usually 1-foliolate, rarely 3-foliolate; leaflets triangular-ovate, ovate-lanceolate or broadly ovate, 4–11 × 2.5–8 cm, base obtuse, truncate or slightly cordate, apex obtuse or acuminate, yellow tomentose on both surfaces, but hairs denser and longer on abaxial surface. Racemes axillary and terminal, the terminal one sometimes branched and paniculate, 4–10 cm. Flowers 2–5-clustered at nodes. Calyx campanulate, 2–3 mm, lobes triangular. Corolla purplish or pink, 4–6 mm; vexillum obovate-orbicular; wings oblong, auriculate; keel narrower, without auricle. Stamens diadelphous. Ovary densely strigose. Pods narrowly oblong, 1–2 × 0.2–0.3 cm, ventral suture straight, dorsal suture sinuate; segments 5–7, suborbicular, densely yellow pubescent and hooked-hairy.

Locality: So Kwun Po, Shing Mun, Wun Yiu, Lantau Island. *W. J. Tutcher* 4369; *Y. S. Lau* 961; *P. S. Choi* 56.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Taiwan; tropical Asia and Africa.

Ecology: Grasslands and thickets. Flowering & fruiting: Sep.–Nov.

### 4. *Desmodium caudatum* (Thunb.) DC. 小槐花(山螞蝗)

(Photo 143)

Prodr. 2: 337. 1825; H. Ohashi, Ginkgoana 1: 91. 1973; FRPS 41: 19. 1995; FGD 5: 270. 2003.

*Hedysarum caudatum* Thunb., Fl. Jap. 286. 1784.

*Hedysarum laburnifolium* Poir., Encycl. 6: 422. 1804.

*Desmodium laburnifolium* (Poir.) DC., Prodr. 2: 337. 1825; FKH 79. 1912.

Erect shrub, 1–2 m tall. Upper branches slightly pubescent. Leaves pinnately 3-foliolate; petiolules narrowly winged; leaflets subleathery or papery, terminal one lanceolate or oblong, 5–9 × 1.5–2.5 cm, lateral ones smaller, base cuneate, apex acuminate or acute, entire, sparsely pubescent adaxially at first, adpressed pubescent abaxially; lateral veins 10–12 on each side of midvein. Racemes axillary or terminal, 5–30 cm. Rachis and calyx densely pubescent, mixed with small hooked hairs and longer hairs. Calyx narrowly campanulate, 3.5–4 mm, lobes lanceolate. Corolla greenish white or yellow-white, 5 mm, striate. Petals auriculate; vexillum elliptic; wings obovate-oblong, 5 mm, distinctly auriculate at base, subacute at the apex, claw ca. 1.5 mm; keel oblong, 4.5–5 × 2–2.2 mm, with a claw ca. 1.5 mm. Stamens diadelphous. Ovary densely pilose on sutures. Pods linear, 5–7 cm, compressed, slightly curved, hooked hairy, constricted on both sutures; segments 4–8, oblong, 9–12 × 4–5 mm.

Locality: Sai Kung, Ma On Shan, Tai Po, Fanling. *W. J. Tutcher* 8155; *Y. S. Lau* 1051, 1336.

Distribution: Areas S of Changjiang River; Malaysia, Myanmar, Sri Lanka, India, Korea, Japan.

Ecology: Grassy hills and margins of forests. Flowering: Jul.–Sep.; fruiting: Sep.–Nov.

### 5. *Desmodium heterophyllum* (Willd.) DC. 異葉山螞蝗

(Photo 144)

Prodr. 2: 334. 1825; FKH 79. 1912; H. Ohashi, Ginkgoana 1: 239. 1973; FRPS 41: 37. 1995; FGD 5: 271. 2003.

*Hedysarum heterophyllum* Willd., Sp. Pl. 3(2): 1201. 1802.

Prostrate herb, to 70 cm or longer. Stems slender, many-branched, pubescent with spreading hairs when young. Leaves pinnately 3-foliolate, sometimes 1-foliolate at lower part of stem; leaflets papery, terminal one broadly elliptic or broadly elliptic-obovate, 1–3 × 0.8–1.5 cm; lateral ones oblong, elliptic or obovate-oblong, smaller, base obtuse, apex rounded or subtruncate, usually emarginate, glabrous or sparsely pubescent adaxially, margin entire; lateral veins 4–5 on each side of midvein. Flowers 1–2 axillary, or 2–3 on peduncle. Calyx campanulate, 3 mm, 5-lobed, lobes lanceolate. Corolla purple or white, 5 mm; vexillum broadly obovate; wings obovate or oblong, shortly auriculate; keel slightly curved, shortly clawed. Stamens diadelphous. Pods narrowly oblong, 12–18 × 3 mm, ventral suture straight, dorsal suture sinuate; segments 3–5, broadly oblong or subquadrate, 3.5–4 mm, compressed, reticulate, pubescent with

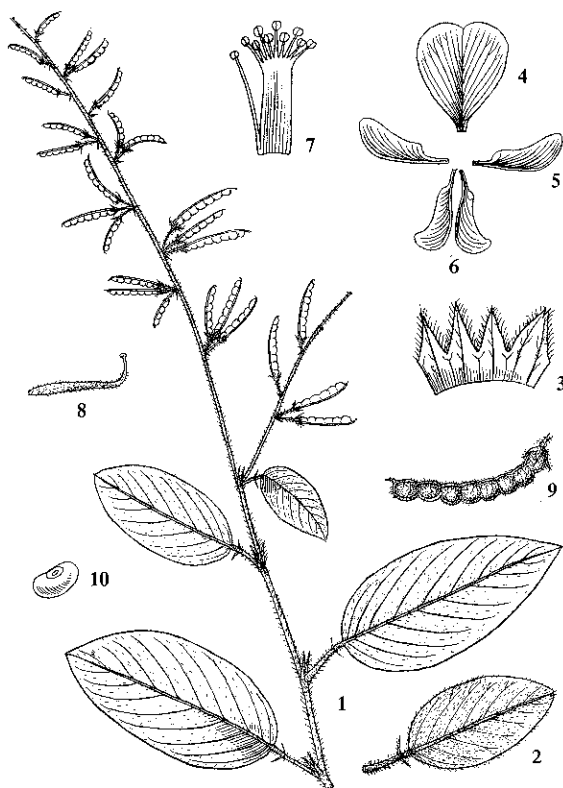


Figure 58. *Desmodium gangeticum* (L.) DC.

1. fruiting branch; 2. abaxial surface of leaf (viewing indumentum); 3. calyx; 4. vexillum; 5. wings; 6. keel; 7. stamens; 8. pistil; 9. legume; 10. seed. (drawn by H. P. Yu)

hooked hairs, glabrescent when mature.

Locality: Common in Hong Kong. *Y. S. Lau* 2244, 2280, 2783.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangxi, Anhui, Fujian, Taiwan; India, Sri Lanka, Vietnam, Myanmar, Thailand, Pacific Islands, Australia.

Ecology: Farmlands, grasslands and banks. Flowering & fruiting: Jul.–Oct.

### 6. *Desmodium microphyllum* (Thunb.) DC.

小葉三點金(中葉山綠豆)

(Fig. 59)

Prodr. 2: 337. 1825; H. Ohashi, *Ginkgoana* 1: 241. 1973; FRPS 41: 36. 1995.

*Hedysarum microphyllum* Thunb., *Fl. Jap.* 284. 1784.

*Desmodium parvifolium* DC., *Ann. Sci. Nat. (Paris)* 4: 100. 1825; FHK 84. 1861; FKH 79. 1912.

Perennial prostrate herb. Stems 15–60 cm or longer, many-branched, nearly glabrous. Leaves pinnately 3-foliolate, sometimes 1-foliolate, terminal leaflets obovate-oblong or oblong, 10–12 × 4–6 mm, lateral ones obovate or elliptic, 2–6 × 1.5–4 mm, base broadly cuneate or rounded, apex rounded, rarely emarginate, entire, glabrous adaxially, sparsely hirsute or glabrous abaxially; lateral veins 4–5 on each side of midvein. Racemes terminal or axillary, covered with yellow-brown spreading hairs, 5–6-flowered. Calyx 11 mm, 5-lobed, lobes linear-lanceolate. Corolla pink, 4 mm; vexillum obovate, shortly clawed; wings obovate, clawed and auriculate; keel oblong, longer than wings, curved. Stamens diadelphous, 5 mm. Ovary hairy. Pods 12 × 3 mm, indented on both sutures, segments 3–4, suborbicular, impressed, reticulate, pubescent.

Locality: Common in Hong Kong. *HK sheet* 7293, 33093.

Distribution: Areas S of Changjiang River; India, Sri Lanka, Nepal, Myanmar, Thailand, Vietnam, Malaysia, Japan, Australia.

Ecology: Wastelands and shrubby forests. Flowering & fruiting: Jul.–Oct.

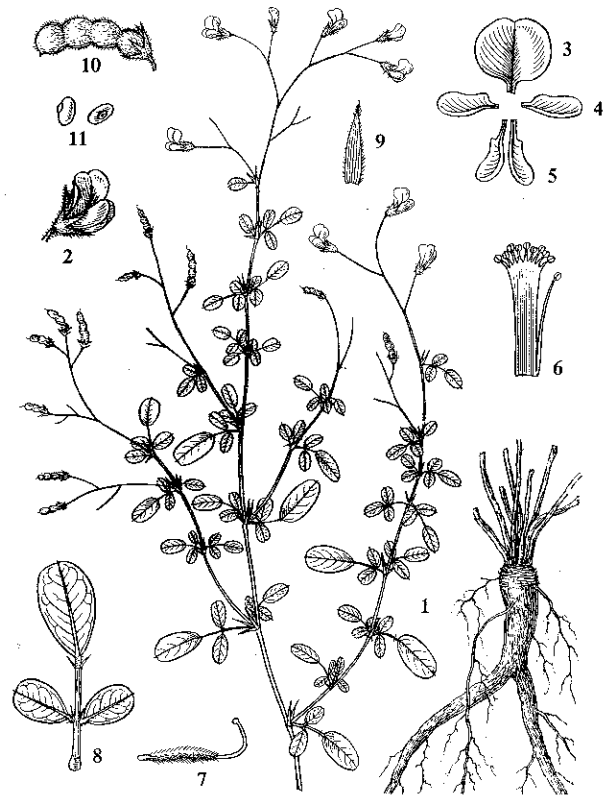


Figure 59. *Desmodium microphyllum* (Thunb.) DC.

1. branch; 2. flower; 3. vexillum; 4. wings; 5. keel; 6. stamens; 7. pistil; 8. leaf; 9. stipule; 10. pod; 11. seed. (drawn by H. P. Yu)

### 7. *Desmodium reticulatum* Champ. ex Benth. 羅脈山綠豆

(Photo 145)

Hooker's *J. Bot. Kew Gard. Misc.* 4: 46. 1852; FHK 84. 1861; FKH 79. 1912; FRPS 41: 31. 1955; FGD 5: 271. 2003.

*Desmodium polycarpum* var. *angustifolium* Craib, *Kew Bull.* 1911: 38. 1911.

*Desmodium heterocarpon* subsp. *angustifolium* (Craib) H. Ohashi, *Ginkgoana* 1: 212. 1973.

Erect subshrub, 30–60 m tall. Young branches sparsely adpressed pubescent, glabrous in age. Leaves pinnately 3-foliolate, sometimes 1-foliolate on lower portion of stem; leaflets thick papery, terminal one narrowly ovate, ovate-elliptic or oblong, 3–5 × 1–2 cm, lateral ones smaller, obtuse on both ends, or base cordate, glabrous adaxially, sparsely adpressed pubescent abaxially, lateral veins 5–7 on each side of midvein, very conspicuous on both sides, especially on abaxial surface. Racemes terminal, 10–15 cm or longer. Flowers 2 on each node. Calyx campanulate, 2 mm, 5-lobed, lobes triangular. Corolla pink at first, then becoming blue, 6 mm; vexillum ovate, apex rounded or emarginate; wings obovate-oblong; keel incurved at a right angle, apex obtuse. Stamens diadelphous, 5 mm. Ovary glabrous or hairy. Pods 10–20 × 2.5 mm, ventral suture straight, dorsal suture undulate, subglabrous or pubescent with hooked hairs; segments 3–7.

Locality: Tai Po Kau, A Shan, Lam Tsuen, Bride's Pool, Lantau Island. *Y. S. Lau* 1968; *P. S. Choi* 429; *Y. W. Lam* 905.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Myanmar, Thailand, Vietnam.

Ecology: Thickets, grassy slopes. Flowering: Jun.–Aug.; fruiting: Sep.–Oct.

Notes: The type specimen was collected by J. G. Champion in Hong Kong Island between 1847 and 1850.

### 8. *Desmodium heterocarpon* (L.) DC. 假地豆

(Photo 146)

Prodr. 2: 337. 1825; H. Ohashi, *Ginkgoana* 1: 210. 1973; FRPS 41: 30. 1995; FGD 5: 272. 2003.

*Hedysarum heterocarpon* L., *Sp. Pl.* 747. 1753.

Subshrub or small shrub, erect or prostrate, 30–150 cm tall. Stems strigose. Leaves pinnately 3-foliolate; leaflets papery, terminal one elliptic, narrowly ovate, oblong or broadly obovate, 2.5–6 × 1.2–3 cm, lateral ones smaller, base obtuse, apex rounded, emarginate, mucronate, glabrous adaxially, impressed white-pubescent abaxially, entire; lateral veins 5–10 on each side of midvein. Racemes terminal or axillary, 2.5–7 cm, densely flowered. Peduncles densely covered with yellowish spreading hooked hairs. Flowers 2 at each node. Calyx campanulate, 1.5–2 mm, 4-toothed, upper one bilobed. Corolla purple or white, 5 mm; vexillum obovate-oblong, base

shortly clawed, apex rounded or emarginate; wings obovate, auriculate and clawed; keel very curved, apex obtuse. Stamens diadelphous. Pods narrowly oblong, 12–20 × 2.5–3 mm, ventral suture straight or repand, dorsal suture indurate, hooked pubescent on both sutures; segments 4–7, squarish, 3–4 × 3 mm.

Locality: Wong Nai Chung Gap, Tai Hang Rd., Shing Mun, Sha Tin. *H. C. Tang 1377*; *Y. S. Lau 1670, 1983*; *T. Ying 296s* (E).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Jiangxi, Taiwan; Asia, Pacific Island and Australia.

Ecology: Thickets. Flowering: Jul.–Oct.; fruiting: Oct.–Nov.

**8a. *Desmodium heterocarpon* (L.) DC. var. *strigosum* Meeuwen** 糙毛假地豆

*Reinwardtia* 6: 95. 1916; *H. Ohashi, Ginkgoana* 1: 215. 1973; *FRPS* 41: 31. 1995; *FGD* 5: 272. 2003.

*Desmodium polycarpum* (Poir.) DC., *Prodr.* 2: 334. 1825, *pro typ. et partim.*; *FKH* 84. 1861; *FKH* 79. 1912.

*Hedysarum polycarpum* Poir., *Encyc. Meth. Bot.* 6: 413. 1805.

This variety is characterized by its peduncles covered with appressed white stiff hairs.

Locality: Common in Hong Kong. *Hayata s.n. (Aug. 14, 1917)* (TI); *Y. Kimura s.n. (Sep. 1942)* (TI); *Togashi & Murata s.n. (Jan. 15, 1964)* (TI, KYO); *M. Togashi s.n. (Oct. 11, 1966)* (TI); *Togashi s.n. (Oct. 12, 1966)* (TI).

Distribution: Areas S of Changjiang River, Taiwan; SE Asia, Australia.

Ecology: Thickets. Flowering: Jul.–Oct.; fruiting: Oct.–Nov.

Uses: Medicinal (folklore).

**9. *Desmodium sequax* Wall.** 長波葉山蚂蝗

*Pl. Asiat. Rar.* 2: 46, pl. 157. 1831; *FRPS* 41: 46. 1995; *FGD* 5: 270. 2003.

Erect shrub, 1–2 m tall, many-branched, densely brown pubescent. Leaves pinnately 3-foliolate; leaflets papery, rhomboid, terminal one 4–10 × 4–6 cm, lateral ones slightly smaller, base cuneate to obtuse, apex acute, margin undulate above middle, densely adpressed pubescent or glabrescent adaxially, adpressed pubescent and hooked hairy abaxially, lateral veins 4–7 on each side of midvein. Racemes terminal or axillary, the terminal often branched, paniculate, 10–15 cm. Flowers often 2 on each node, loosely arranged on rachis. Calyx 3 mm. Corolla purple, 8 mm; vexillum elliptic to broadly elliptic, apex emarginate; wings narrowly elliptic, clawed and auriculate; keel long clawed, slightly auriculate. Stamens monadelphous, 7.5–8.5 mm. Ovary linear, sparsely pubescent. Pods moniliform, 3–4.5 × 0.3 cm, segments 6–10, subquadrate, densely brown small hooked hairy.

Locality: Tai Po Kau. *Y. S. Lau 3043, 3204*; *HK sheet 34061*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hubei, Taiwan; Nepal, India, Myanmar, Indonesia, New Guinea.

Ecology: Grassy slopes, margins of forests. Flowering: Jul.–Sep.; fruiting: Sep.–Nov.

**10. *Desmodium triflorum* (L.) DC.**

三點金

(Fig. 60; Photo 147)

*Prodr.* 2: 334. 1825, *excl. syn.*; *FKH* 83. 1861; *FKH* 79. 1912; *FRPS* 41: 37. 1995; *FGD* 5: 271. 2003.

Perennial prostrate herb, 10–50 cm tall. Stems slender, many-branched, spreading villose. Leaves pinnately 3-foliolate; leaflets obcordate or obovate, 2.5–10 mm in diam., base cuneate, apex truncate and emarginate, glabrous adaxially, white pubescent abaxially, lateral veins 4–5 on each side of midvein. Flowers solitary or 2–3-clustered, axillary. Calyx 3.3 mm, teeth lanceolate. Corolla purplish; petals 3.5–4.5 mm, all clawed; vexillum obcordate, base attenuate; wings elliptic; keel slightly falcate, longer than wings. Stamens diadelphous. Ovary linear, hairy. Pods narrowly oblong, 5–12 × 2.5 mm, slightly incurved, compressed, ventral suture straight, dorsal suture undulate, segments 3–5, subquadrate, hooked hairy, reticulate.

Locality: Common in Hong Kong. *Y. S. Lau 2784*; *L. T. Lo 492*; *HK sheet 1371*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangxi, Zhejiang, Fujian, Taiwan; tropical Asia, Australia, and naturalized in several parts of tropical America.

Ecology: Grasslands. Flowering & fruiting: Jun.–Oct.

Uses: Medicinal (folklore).



Figure 60. *Desmodium triflorum* (L.) DC.

1. plant; 2. leaf; 3. calyx; 4. vexillum; 5. wings; 6. keel; 7. stamens; 8. pistil; 9. pod. (drawn by H. P. Yu)

23. *Codariocalyx* Hassk. 舞草屬

Shrubs. Leaves 3-foliolate; terminal leaflet large, petiolulate, lateral ones much smaller or obsolete; stipules caducous; stipels scarious. Inflorescences paniculate or racemose, terminal or axillary; bracts ovate, imbricate; bracteole absent. Calyx membranous, broadly campanulate, 5-lobed; upper 2 lobes connate, but distinctly 2-toothed at apex. Corolla much longer than calyx; standard often oblique, suborbicular, ± clawed at base; wings nearly half-deltoid, apex rounded, base auriculate, clawed; keel falcate, longer than wings. Stamens diadelphous. Gynoecia linear, 6–13-ovuled. Pods 5–9-jointed, dehiscing along the undulate dorsal suture, ventral suture straight, lateral surfaces not reticulate veined, with dense minute uncinulate and straight hairs. Seeds obliquely transversely elliptic, arillate.

Two species in SE Asia; two species in China; one species in Hong Kong.

1. *Codariocalyx gyroides* (Roxb. ex Link) Hassk. 圓葉舞草

Flora 25(2. Beibl. 4): 49. 1842; FRPS 41: 60, pl. 10: 11. 1995; FGD 5: 277, fig. 147. 2003.

*Hedysarum gyroides* Roxb. [Hort. Beng. 57. 1814, *nom. nud.*] ex Link, Enum. Alt. 2: 247. 1822.

*Desmodium gyroides* (Roxb. ex Link) DC., Prodr. 2: 236. 1826; FHN 2: 274. 1965.

Erect shrub, 1–3 m tall; stem terete, villose when young, later glabrescent. Leaves 3-foliolate; stipules narrowly triangular, 12–15 mm, white silky hairy at first, later glabrescent, margin white silky hairy; petioles 2–2.5 cm, sparsely pubescent; leaflets papery; terminal leaflet blade obovate or elliptic, 3.5–6 × 2.5–3.5 cm, base obtuse, apex rotund or emarginate, appressed pubescent on both surfaces; lateral leaflets much smaller than terminal one, 1.5–2 × 0.8–1 cm, adaxially sparsely pubescent, abaxially densely pubescent. Panicles or racemes terminal or axillary, 8–10 cm, densely flowered a upper half; bracts broadly ovate, 6–9.5 × 4–5.5 mm, white pilose abaxially, striate, margin ciliate. Pedicels 4–9 mm, densely yellow pubescent. Calyx broadly campanulate, 2–2.5 mm; tube 1.2–1.7 mm; upper lobe deeply 2-toothed at apex, ca. 1 mm, lower lobes ca. 0.8 mm. Corolla purple; standard 9–11 × 9–11 mm; wings 7–9 × 4–6 mm, base auriculate; keel 9–12 mm, long clawed. Stamens 9–11 mm. Gynoecia 1.2–1.4 cm; ovary linear, hairy. Pods falcate, 2.5–5 × 0.4–0.6 cm, dehiscing along dorsal suture when mature, densely yellow short-hooked hairy and villose.

Locality: Tai Po. *P. Chow s.n.* (HK sheet 38949); *S. Y. Hu & P. P. H. But 24070* (CUHK, HK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan; Vietnam, Laos, Cambodia, Thailand, India, Nepal, Sri Lanka, Malaysia, Philippines, Indonesia, New Guinea.

Ecology: Mountain slopes. Flowering: Sep.–Oct.; fruiting: Jan.

24. *Eriosema* (DC.) D. Don 雞頭薯屬

Erect or suberect herbs or subshrubs, roots often tuberous. Stems simple or little branched. Stipules linear or linear-lanceolate, stipels absent. Leaves pinnately 1–3-foliolate. Racemes very short, 1–2-flowered, axillary. Calyx campanulate, 5-toothed. Corolla extended out of calyx; vexillum obovate, auriculate at base, pubescent on abaxial surface; wings and keel shorter. Stamens diadelphous (9+1); anthers uniform. Ovary sessile, 2-ovuled; styles filiform, glabrous; stigma capitate, small. Pods compressed, rhomboid-elliptic or oblong. Seeds 1–2, oblique, funicle attached the end of linear hilum, estrophiolate.

About 130 species distributed in tropical and subtropical regions, mostly in tropical America and E Africa; two species in China; one species in Hong Kong.

1. *Eriosema chinense* Vogel 雞頭薯 (Fig. 61; Photos 148–149)

Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 31. 1843; FHK 91. 1861; FKH 85. 1912; FRPS 41: 341. 1995; FGD 5: 343, fig. 188. 2003.

Perennial herb. Stems 20–50 cm, generally unbranched, densely brown pilose and mixed with shorter hairs. Roots fusiform, fleshy. Leaves 1-foliolate, lanceolate, 3–7 × 0.5–1.5 cm, base rounded or sometimes slightly cordate, apex obtuse or acute, brown-pilose adaxially, grey tomentose abaxially, but brown pilose on midvein. Racemes very short, 1–2-flowered, axillary. Calyx campanulate, 3 mm, 3-toothed, brown silky pubescent. Corolla yellow, ca. 9 mm; vexillum obovate, base auriculate; wings obovate-oblong, auriculate at one side; keel shorter than wings. Stamens diadelphous. Ovary densely white hirsute. Pods rhomboid-elliptic, 8–10 × 6 mm, brown hirsute. Seeds 2, reniform, black, hilum linear.

Locality: Hong Kong Island, Kowloon Reservoirs, Fanling, Ho Pui, Tai Mo Shan, Lantau Island. *Y. S. Lau 635*; *H. C. Tang 956, 1813*.

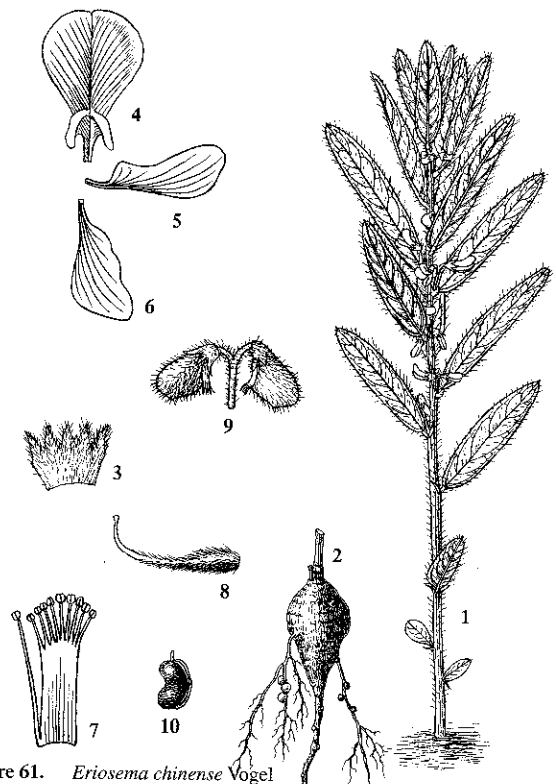


Figure 61. *Eriosema chinense* Vogel

1. upper portion of plant; 2. roots; 3. calyx; 4. vexillum; 5. wings; 6. keel; 7. stamens; 8. pistil; 9. pods; 10. seed. (drawn by H. P. Yu)



Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Jiangxi; India, Myanmar, Vietnam, Thailand, Indonesia.

Ecology: Grasslands. Flowering: May–Jul.; fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

## 25. *Crotalaria* L. 豬屎豆屬

Herbs, subshrubs or shrubs. Stems and branches terete or tetragonal. Stipules small or absent. Leaves simple, pinnately or digitately 3-foliolate. Racemes terminal, axillary, leaf-opposed, or in head-like clusters on apex of branches. Calyx 2-lipped or campanulate. Corolla yellow or deep blue; vexillum orbicular or oblong, often with 2 callosities at the base; wings oblong or obovate, shorter than vexillum; keel incurved and beaked. Stamens all united in a sheath, open on the upper side; anthers dimorphic, alternatively oblong, basifixed and ovoid, dorsifixed. Ovary usually sessile, 2–many-ovuled; styles long, base incurved; stigma small, oblique. Pods oblong, terete or ovoid-globular, rarely tetragonal, turgid. Seeds few to many, estrophiolate.

About 550 species distributed in tropical & subtropical regions; 40 species and three varieties in China; ten species in Hong Kong.

- 1a. Leaves trifoliolate.
  - 2a. Leaflets 1–2 cm; flowers smaller; vexillum 5 mm ..... 1. *C. uncinella*
  - 2b. Leaflets 3–10 cm; flowers larger; vexillum 10–12 mm.
    - 3a. Leaflets 6–10 cm; calyx glabrous ..... 2. *C. zanzibarica*
    - 3b. Leaflets 3–6 cm; calyx pubescent ..... 3. *C. pallida* var. *obovata*
- 1b. Leaves simple.
  - 4a. Corolla as long as or longer than calyx.
    - 5a. Leaflets oblong or oblanceolate, 3–8 × 1–3.5 cm, apex emarginate; vexillum orbicular or elliptic, 1–1.5 cm; pods 3–4 mm ..... 4. *C. retusa*
    - 5b. Leaflets oblanceolate, 1.5–4 × 0.3–1.7 cm, apex obtuse or rounded; vexillum obovoid-elliptic, 6–8 mm; pods 7–10 mm ..... 5. *C. albida*
  - 4b. Corolla shorter than calyx.
    - 6a. Stipules absent; pods enclosed by calyx.
      - 7a. Leaflets glabrous or slightly villose adaxially, densely hirsute abaxially; flowers 1–5 in racemes; pods 8–12 mm ..... 6. *C. chinensis*
      - 7b. Leaflets silky hairy on both surfaces; flowers more than 5 (up to 90) in racemes; pods 4–6 mm ..... 7. *C. linifolia*
    - 6b. Stipules present.
      - 8a. Flowers blue or violet; pods 1 cm ..... 8. *C. sessiliflora*
      - 8b. Flowers yellow; pods 1.5–3 cm.
        - 9a. Leaflets hairy on both surfaces; pods oblong, 2–3 cm ..... 9. *C. ferruginea*
        - 9b. Leaflets hairy only on midvein adaxially, pubescent abaxially; pods elliptic-terete, 1.5 cm ..... 10. *C. calycina*

### 1. *Crotalaria uncinella* Lam. 毬果豬屎豆(鈎狀豬屎豆)

(Photo 150)

Encycl. 2(1): 200–201. 1786; FRPS 42(2): 379. 1998; FGD 5: 363. 2003.

*Crotalaria elliptica* Roxb., Fl. Ind. ed. 1832, 3: 279. 1832; FHK 75. 1861; FKH 74. 1912.

Herb or subshrub, up to 1 m tall. Branches terete, pubescent at first. Leaves digitately 3-foliolate; leaflets elliptic or ovate-elliptic, 2.5–3 × 1–1.5 cm, terminal one larger, base slightly cuneate, apex obtuse, mucronate or sometimes emarginate, glabrous adaxially, slightly pubescent abaxially. Racemes terminal, axillary or leaf-opposed, 10–30-flowered. Calyx subcampanulate, 3–4 mm, 5-toothed. Corolla yellow; vexillum orbicular or elliptic, 5 mm; wings oblong; keel longer than vexillum, incurved, with contorted long beak. Ovary sessile. Pods ovoid-globular, 5 mm, pubescent. Seeds 2.

Locality: Hong Kong Island, Sha Tin, Tai Po, Sai Kung, Po Toi Islands. *L. T. Lo 509; Y. W. Lam 492, 1049.*

Distribution: Hainan, Guangdong, Guangxi; Africa, tropical and subtropical Asia.

Ecology: Roadsides. Flowering & fruiting: Aug.–Dec.

### 2. *Crotalaria zanzibarica* Benth. 光萼豬屎豆

Lond. J. Bot. 2: 584. 1843; FRPS 42(2): 350. 1998; FGD 5: 364. 2003.

Herb or subshrub, 1.5–2 m tall. Branches terete, pubescent, with longitudinal grooves. Leaves digitately 3-foliolate; leaflets oblong, 6–10 × 2–3 cm, acuminate on both ends, mucronate, glabrous adaxially, pubescent abaxially. Racemes terminal, up to 20 cm, 10–20-flowered. Calyx subcampanulate, 4–5 mm, 5-toothed, glabrous. Corolla yellow; vexillum orbicular, 12 mm in diam., apex aristulate, with 2 callosities at base; wings oblong, equaling vexillum in length; keel 15 mm, narrowed above middle. Ovary sessile. Pods oblong, 3–4 cm, pericarps black, with persistent filaments and calyx at base. Seeds 20–30, reniform, scarlet.

Locality: Cultivated. *Y. S. Lau 3307.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Fujian, Taiwan; widely distributed in tropical and subtropical regions.

Ecology: Open wastelands, roadsides. Flowering & fruiting: Apr.–Dec.

Uses: Green manure.

3. *Crotalaria pallida* Aiton var. *obovata* (G. Don) Polhill  
 豬屎豆 (Fig. 62; Photo 151)  
 Kew Bull. 22: 262. 1968; J. B. Gillett et al, Fl. Trop. E Afr. No. 61  
 (Legum. Part 4): 906. 1971; FTW 3: 112. 1977.

*Crotalaria pallida* Aiton, Hort. Kew 3: 20. 1789; FRPS 42(2):  
 349. 1998; FGD 5: 365, fig. 202. 2003.

Perennial herb or subshrub. Stems and branches terete, marked with slender longitudinal grooves, closely adpressed puberulent. Leaves digitately 3-foliolate; leaflets oblong or elliptic, 3–6 × 1.5–3 cm, base broadly cuneate, apex obtuse or emarginate and shortly mucronate, glabrous adaxially, slightly silky pubescent abaxially. Racemes terminal, ca. 25 cm, 10–40-flowered. Calyx subcampanulate, 4–6 mm, 5-toothed, densely pubescent. Corolla yellow; vexillum orbicular or elliptic, 10 mm in diam., with 2 callosities at base; wings oblong, 8 mm; keel 13 mm, incurved nearly at a right angle. Ovary sessile. Pods oblong, 3–4 × 0.5–0.8 cm, valves contorted after split. Seeds 20–30, reniform, ca. 3 mm.

Locality: Naturalized in Hong Kong. Y. S. Lau 1997, 2041; HK sheet 40830.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Hunan, Zhejiang, Fujian, Taiwan; tropical and subtropical regions.

Ecology: Wastelands. Flowering & fruiting: Sep.–Dec.

Uses: Green manure.

Notes: The species was reported as *Crotalaria pallida* Aiton previously (Check List HK Plants 141. 2002; 53. 2004).

4. *Crotalaria retusa* L. 吊裙草 (Photos 152–153)  
 Sp. Pl. 715. 1873; FHK 74. 1861; FKH 74. 1912; FRPS 42(2):  
 358. 1998; FGD 5: 370. 2003.

Erect herb, 60–120 cm tall. Branches terete, striate, pubescent. Leaves simple, oblong or oblanceolate, 3–8 × 1–3.5 cm, base cuneate, apex emarginate, glabrous adaxially, slightly pubescent abaxially, veins distinct. Racemes terminal, ca. 5 cm, 10–20-flowered. Calyx 2-lipped, 10–12 mm, teeth lanceolate, sparsely pubescent. Corolla yellow; vexillum orbicular or elliptic, 1–1.5 cm, with 2 callosities at base; wings oblong 1–1.5 cm; keel equal in length with wings, gradually narrowed into a long beak above middle. Pods oblong, 3–4 cm, glabrous, turgid; neck ca. 2 mm. Seeds 10–20, brown, elliptic, 2 mm.

Locality: Deep Water Bay, Beacon Hill, Chuen Lung, Tai Mo Shan, Lam Tsuen Valley, Tuen Mun, Long Ke, Lantau Island, Lamma Island. P. S. Choi 40, 509; K. Y. Tam 136.

Distribution: Hainan, Guangdong, Hunan (cultivated); Malaysia, Sri Lanka, Myanmar, Vietnam, India, tropical and subtropical regions of America, Africa, Australia.

Ecology: Wastelands and grasslands, sandy beaches. Flowering & fruiting: Nearly all year round.

Uses: Medicinal (folklore).

5. *Crotalaria albida* Heyne ex Roth  
 響鈴豆 (Fig. 63; Photo 154)  
 Nov. Pl. Sp. 333. 1821; FHK 74. 1861; FKH 74. 1912; FRPS 42(2):  
 369. 1998; FGD 5: 371. 2003.

Perennial herb, 20–70 cm tall, often woody at base. Branches slender, numerous, decumbent or ascending, adpressed pubescent. Leaves simple, oblanceolate, 15–40 × 0.3–1.7 cm, base cuneate, apex obtuse or rounded, mucronate, subglabrous adaxially, slightly pubescent abaxially. Racemes terminal or axillary, up to 20 cm,

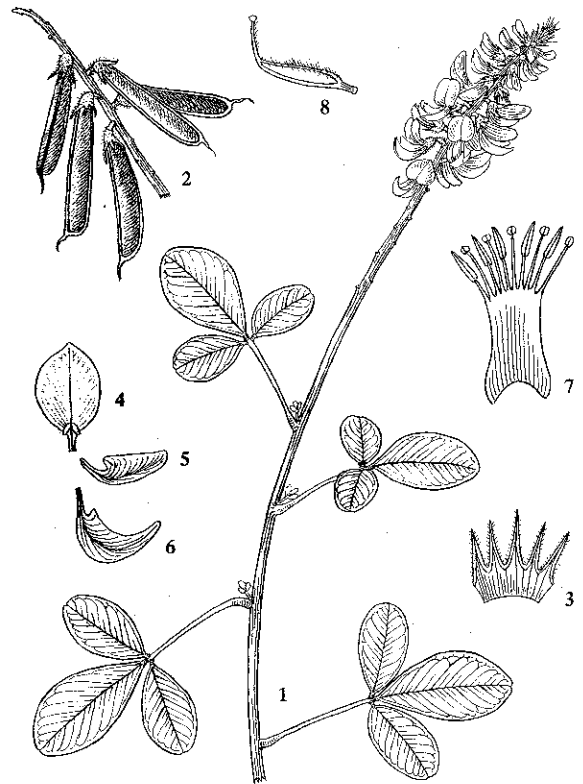


Figure 62. *Crotalaria pallida* var. *obovata* (G. Don) Polhill  
 1. flowering branch; 2. infructescence; 3. calyx; 4. vexillum;  
 5. wing; 6. keel; 7. stamens; 8. pistil. (drawn by H. P. Yu)

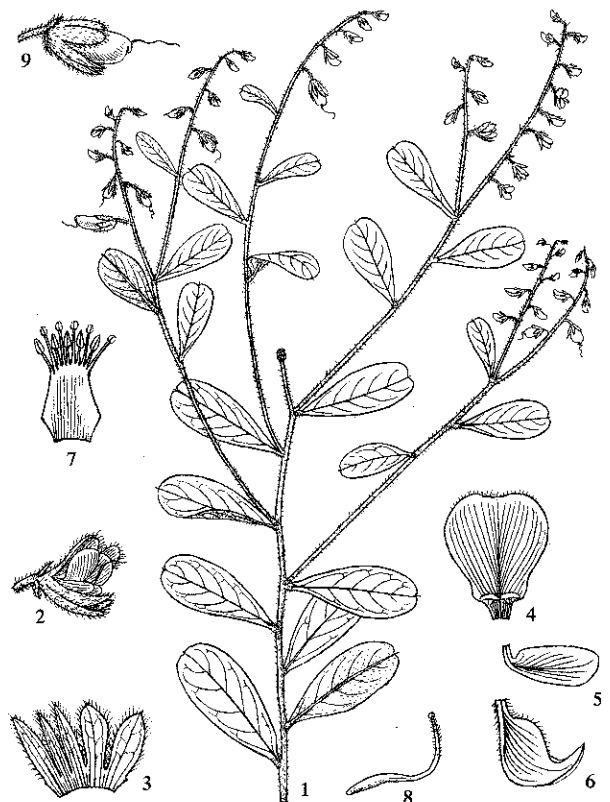


Figure 63. *Crotalaria albida* Heyne ex Roth  
 1. flowering and fruiting branch; 2. flower; 3. calyx;  
 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil;  
 9. pod. (drawn by H. P. Yu)

6–20-flowered. Calyx 2-lipped, 6–8 mm, finely appressed pubescent. Corolla yellowish; vexillum obovate-elliptic, 6–8 mm, base callose, apex fasciculate, pilose; wings obovate, 6–8 mm; keel curved almost at a right angle, narrowed above middle and forming a long beak. Ovary sessile. Pods terete, 7–10 mm, glabrous. Seeds 6–12.

Locality: Hong Kong Island, Kwai Chung, Tsuen Wan, Shing Mun, Tai Mo Shan, Lantau Island, Lamma Island. *P. S. Choi 59; Y. W. Lam 1113; K. Y. Tam 135.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Anhui, Fujian; S to SE Asia, Pacific Islands.

Ecology: Hillslopes and thin forests. Flowering & fruiting: May–Dec.

Uses: Medicinal (folklore).

#### 6. *Crotalaria chinensis* L. 中國豬屎豆

Syst. Nat. (ed. 10) 2: 1158. 1759; FKH 74. 1912; FRPS 42(2): 369. 1998; FGD 5: 367. 2003.

Herb, 15–60 cm tall. Stems terete, often woody at base, many-branched, densely brown-yellow pilose. Leaves simple, variable in shape, usually lanceolate, linear-lanceolate, linear or oblong-linear, sometimes oblong or ovoid, 2–3.5 × 0.4–1 cm, acuminate at both ends, subglabrous or very sparsely pubescent adaxially, densely hirsute abaxially, especially on veins and margins. Racemes terminal, 1–5-flowered. Calyx 2-lipped, 8–10 mm, deeply divided nearly to base. Corolla yellowish, as long as calyx; vexillum ovate or orbicular, 7–9 mm in diam., with callosities at base; wings oblong, 7–9 mm; keel nearly straight, narrowed into a beak above middle. Ovary sessile. Pods short terete, 8–12 mm, glabrous. Seeds 15–20, horseshoe-shaped, ca. 2.5 mm.

Locality: Fanling, Lantau Island, Ninepin group. *W. J. Tutcher 10543; S. P. Lau 138; HK sheet 6604.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian, Taiwan; S Asia, Indochina.

Ecology: Abandoned lands. Flowering & fruiting: Jun.–Dec.

#### 7. *Crotalaria linifolia* L. f. 線葉豬屎豆

Suppl. Pl. 332. 1781; FKH 74. 1912; FRPS 42(2): 375. 1998; FGD 5: 371. 2003.

Annual or biennial erect herb, 30–60 cm tall, often woody at base. Stems terete, densely pubescent. Leaves simple, oblanceolate or oblong, 2–5 × 0.6–1 cm, base attenuate, apex obtuse or emarginate, apiculate, silky hairy on both surfaces. Racemes terminal or axillary, many-flowered, 10–20 cm. Calyx 2-lipped, 8–9 mm, upper 2 connate, lower ones lanceolate, densely rusty-pubescent. Corolla yellow; vexillum orbicular, base callose, apex rounded or emarginate, 6–8 mm in diam.; wings obovate, 8–9 mm; keel 9–10 mm, suberect, narrowed into a beak above middle. Ovary sessile. Pods short terete, 4–6 mm, glabrous. Seeds 6–10.

Locality: Cultivated. *HK sheet 6622.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Taiwan; India, Malaysia, Australia.

Ecology: Lowland hills, roadsides. Flowering: May–Oct.; fruiting: Aug.–Dec.

Uses: Medicinal (folklore).

#### 8. *Crotalaria sessiliflora* L. 野百合

(Fig. 64)

Sp. Pl. ed. 2, 1004. 1763; FKH 74. 1912; FRPS 42(2): 366. 1998; FGD 5: 369. 2003.

*Crotalaria brevipes* Champ., Hooker's J. Bot. Kew Gard. Misc. 4: 44. 1852; FKH 74. 1861.

Erect herb, 30–100 cm tall, often woody at base. Stems simple or branched on upper parts, adpressed strigose. Leaves simple, variable in shape, usually linear or linear-lanceolate, 3–8 × 0.5–1 cm, acuminate at both ends, subglabrous adaxially, densely silky pubescent abaxially, subsessile. Racemes terminal or axillary, 2–20-flowered, sometimes head-like on apex of branches. Calyx 2-lipped, 10–15 mm, densely brown hirsute. Corolla blue or violet, as long as calyx; vexillum oblong, 7–10 × 4–7 mm, with 2 callosities at base, apex obtuse or emarginate; wings oblong or lanceolate-oblong, equal to vexillum; keel narrowed into a long beak above middle. Ovary sessile. Pods short terete, 1 × 0.5 cm, pendulous, glabrous, black when mature. Seeds 10–15.

Locality: Victoria Peak, Shing Mun, Ma On Shan. *Y. S. Lau 1564; P. S. Choi 61, 237.*

Distribution: Widely distributed in China; E Asia to SE Asia.

Ecology: Roadsides and hillslopes. Flowering & fruiting: May–Feb. of the following year.

Uses: Medicinal (folklore).

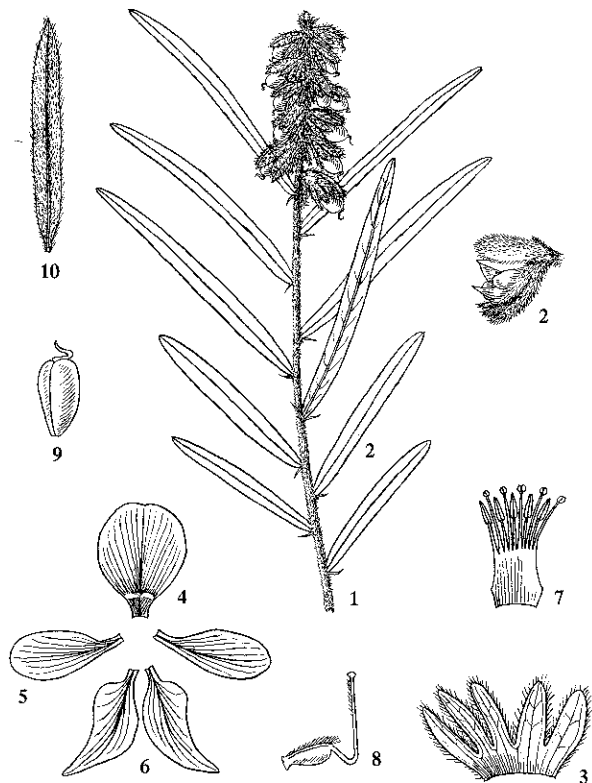


Figure 64. *Crotalaria sessiliflora* L.

1. fruiting branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. pod; 10. abaxial surface of leaf. (drawn by H. P. Yu)

**9. *Crotalaria ferruginea*** Graham ex Benth. 假地藍

Lond. J. Bot. 2: 476. 1843; FKH 74. 1912; FRPS 42(2): 362. 1998; FGD 5: 366. 2003.

Herb, 60–120 cm tall. Stems erect or decumbent, often woody at base, many-branched, brown pubescent with spreading hairs. Leaves simple, oblong, 2–6 × 1–3 cm, base cuneate, apex obtuse or acuminate, pubescent on both surfaces, but hairs denser on veins abaxially. Racemes terminal or axillary, 2–6-flowered. Calyx 2-lipped, 10–12 mm, deeply divided nearly to base, teeth lanceolate. Corolla yellow; vexillum oblong, 8–10 mm; wings oblong, 8 mm; keel equal to wings, narrowed into a long beak above middle. Ovary sessile. Pods oblong, 2–3 × 1 cm, glabrous, black when mature. Seeds 20–30.

Locality: Beacon Hill. *W. J. Tutchter 10583*.

Distribution: SW to SE China; S to SE Asia, Philippines.

Ecology: Grasslands. Flowering & fruiting: Jun.–Dec.

Uses: Medicinal (folklore), green manure, forage.

**10. *Crotalaria calycina*** Schrank 長萼豬屎豆

Pl. Rar. Hort. Monac., pl. 12. 1819; FHK 74. 1861; FKH 74. 1912; FRPS 42(2): 364. 1998; FGD 5: 368. 2003.

Perennial erect herb, 30–80 cm tall. Stems terete, densely brown hirsute. Leaves simple, sessile, oblong-linear or linear-lanceolate, 3–12 × 0.5–1.5 cm, base attenuate, apex acute, hairy along midvein adaxially, densely brown pilose abaxially. Racemes terminal, rarely axillary, 3–12-flowered. Calyx 2-lipped, 2–3 cm, deeply divided nearly to base, teeth lanceolate, densely brown pilose abaxially. Corolla golden yellow, shorter than calyx; vexillum obovoid or orbicular, 1.5–2.5 cm, base 2-callose; wings oblong; keel nearly straight, long beaked. Ovary sessile. Pods elliptic-terete, ca. 1.5 cm, black when mature. Seeds 20–30.

Locality: Shek O, Po Toi Islands, Cheung Chau. *Y. S. Lau 1199*; *Y. W. Lam 1644*; *HK sheet 6600*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Xizang, Fujian, Taiwan; tropical and subtropical regions of Asia, Africa, Australia.

Ecology: Wastelands. Flowering & fruiting: Jun.–Dec.

**26. *Zornia*** J. F. Gmel. 丁癸草屬

Annual or perennial herbs. Stipules foliaceous, base produced below insertion, peltate, exstipellate. Leaves digitately 2–4-foliolate; leaflets often pellucid-punctate. Racemes or spikes terminal or axillary, interrupted. Bracts paired, enclosing flowers; bracteoles absent. Calyx 2-lipped, upper 2 lobes connate nearly to apex. Flowers usually yellow. Petals subequal, exserted from calyx; vexillum suborbicular, clawed; wings obliquely obovate or oblong; keel incurved, subrostrate. Stamens monadelphous in a closed tube, with long, sub-basifixed and short, dorsifixed anthers alternately arranged. Ovary sessile; ovules numerous; styles filiform; stigma small, terminal. Pods compressed, ventral suture straight, dorsal suture sinuate; segments several, suborbicular, compressed, spinose or glabrous. Seeds orbicular-reniform, estrophilate.

About 80 species, distributed in tropical and subtropical regions; two species in China; one species in Hong Kong.

**1. *Zornia gibbosa*** Span. 丁癸草 (Fig. 65; Photo 155)  
 Linnaea 15: 192. 1841; FRPS 41: 358. 1995; FGD 5: 352, fig. 195. 2003.

*Zornia cantoniensis* Mohlenbr. 16(1): 124, fig. 45 & 84. 1961.

*Zornia diphylla* auct. non (L.) Pers.: FHK 80. 1861; FKH 78. 1912.

Perennial, slender, branched herb, 20–50 cm, glabrous, sometimes with robust rhizomes. Stipules lanceolate, 1 cm, produced below insertion. Leaves 2-foliolate; leaflets ovate-oblong, obovate-lanceolate, 0.8–1.5(–2.5) cm, base oblique, apex acute, glabrous on both surfaces, black or brown gland-dotted. Racemes axillary, 2–6 cm, 2–6(–10)-flowered. Bracts 2, ovate, 6–7(–10) mm, peltate, ciliate, 5–6-striate. Calyx 3 mm. Corolla yellow, ca. 1.2 cm; vexillum reniform, clawed; wings and keel smaller. Stamens monadelphous. Ovary sessile, 2(–4) mm in length and width, reticulate and spiny.

Locality: Hong Kong Island, Sha Tin, Ma Liu Shui, Ting Kok Rd., Lantau Island. *Y. S. Lau 2342*; *L. T. Lo 516*.

Distribution: Areas S of Changjiang River; India, Sri Lanka, Myanmar, Japan.

Ecology: Grassy lands. Flowering: Apr.–Jul.; fruiting: Jul.–Sep.

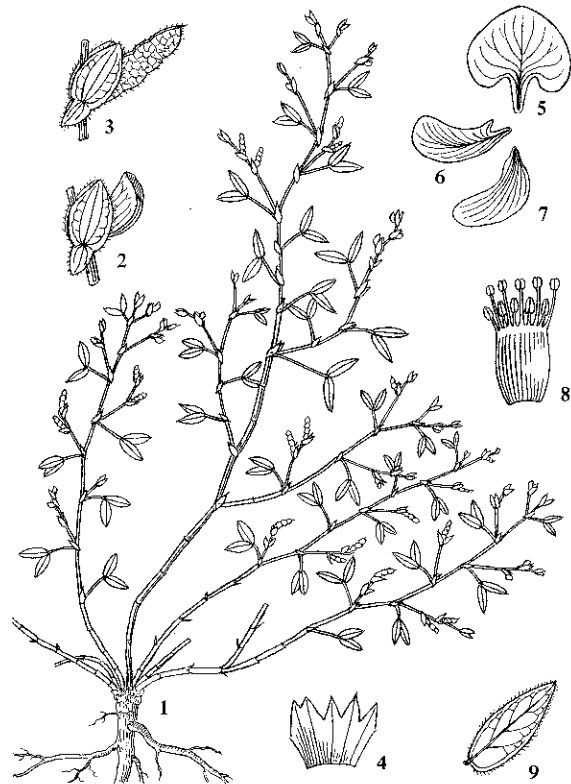


Figure 65. *Zornia gibbosa* Span.

1. whole plant; 2. bract and flower; 3. bract and fruit; 4. calyx; 5. vexillum; 6. wing; 7. keel; 8. stamens; 9. leaflet. (drawn by H. P. Yu)

27. *Sesbania* Scop. 田菁屬

Herbs or shrubs, rarely trees. Stipules small, basifixed, often caducous, stipels minute or absent. Leaves even-pinnate, rachis ending in a short stipules point; leaflets numerous, narrow, entire, often glaucous. Racemes axillary. Bracts and bracteoles setaceous, usually caducous. Pedicels slender. Calyx campanulate, shortly 5-toothed. Corolla yellow or spotted, rarely white, red or purple-black (sometimes very large, e.g. *S. grandiflora* Pers.). Petals all clawed; vexillum suborbicular, spreading or reflexed, with two ascending spurs at top of claw; wings falcate-oblong, longer than upcurved keel. Stamens 10, diadelphous; anthers uniform, dorsifixed. Ovary often stipitate; ovules numerous, style incurved, stigma capitate. Pods linear, terete, constricted and septate between seeds. Seeds numerous, cylindrical or subquadrate, without strophiole.

About 50 species distributed in tropical and subtropical areas of the world; five species in China; three species in Hong Kong.

- 1a. Branchlets and leaf-rachis prickly; leaflets usually glabrous; vexillum longer than broad ..... 1. *S. bispinosa*  
 1b. Branchlets and leaf-rachis not prickly; leaflets more or less pilose abaxially; vexillum broader than long.  
 2a. Inflorescence 2–6-flowered; corolla 10–12 mm long; pods 2.5–3.5 mm broad ..... 2. *S. cannabina*  
 2b. Inflorescence 5–12(–15)-flowered; corolla 18–20 mm long; pods 4–4.5 mm broad ..... 3. *S. javanica*

1. *Sesbania bispinosa* (Jacq.) W. F. Wight 刺田菁

(Photo 156)

U.S.D.A. Bur. Pl. Industr. Bull. 137: 15. 1909; FRPS 40: 235. 1994; FGD 5: 252. 2003.

*Aeschynomene bispinosa* Jacq., Ic. Pl. Rar. 3: 13. 1793.

Subshrub, 1–3 m tall. Branches usually sparsely prickly. Leaves even-pinnate; leaflets 20–40 pairs, linear-oblong, 10–16 × 2–3 mm, base rounded, apex obtuse, mucronate, densely purple-brown gland-spotted on both surfaces. Racemes axillary, 5–10 cm, 2–6-flowered. Peduncles up to 4 cm, prickly. Calyx campanulate; 4 mm, 5-toothed, teeth triangular, 1 mm. Corolla yellow; vexillum subovate, 10 mm, densely red-brown flecked abaxially, base clawed, apex emarginate, with triangular callosities; wing oblong, 9 mm, auriculate on one side; keel obovate-oblong, 7 mm, with teeth-like auricles at base. Stamens diadelphous, filament-tube 9–12 mm. Pods terete, 15–22 × 0.3 cm, straight or slightly curved, beak 10–12 mm, slightly constricted between seeds. Seeds 35–40, brown, subcylindric, 3 × 2 mm.

Locality: Hong Kong Island, Yuen Long, Castle Peak Beach, Tuen Mun, Sha Po, Peng Chau. *Y. S. Lau 1022; Y. W. Lam 1002, 1655.*

Distribution: Hainan (Xisha Islands), Guangdong, Guangxi, Yunnan, Sichuan; C & S Asia, Indochina, Malay Peninsula.

Ecology: Moist hillslopes. Flowering & fruiting: Aug.–Dec.

2. *Sesbania cannabina* (Retz.) Poir. 田菁

(Fig. 66)

Encycl. 7: 130. 1806; FRPS 40: 232. 1994; FGD 5: 251, fig. 139. 2003.

*Aeschynomene cannabina* Retz., Observ. Bot. 5: 26. 1789.

Annual herb. Branches glabrous at maturity. Leaves even-pinnate, 12–15 cm; leaflets opposite, 20–40 pairs, base rounded, apex obtuse to truncate, mucronate, asymmetric, adaxially glabrous, sparsely sericeous abaxially when young, dotted with minute purple glands on both surfaces, but more densely abaxially. Racemes axillary, 3–10 cm, 2–6-flowered. Calyx campanulate, 3–4 mm, glabrous, linear-appendiculate between teeth. Corolla yellow, all clawed; vexillum transverse-elliptic to suborbicular, 9–10 mm, sparsely purple-black spotted and striate, callosities pear-shaped; wings obovate-oblong, 9–10 mm, base auriculate; keel shorter than wings, triangular-broad-ovate. Stamens diadelphous. Pods terete, 12–22 × 0.2–0.4 cm, slightly curved, beak 5–7 mm, black-brown striate. Seeds 20–35, green-brown, shortly cylindric, 4 × 2–3 mm.

Locality: Cultivated or naturalized. *Y. W. Lam 1014.*

Distribution: S & E China (cultivated or naturalized); tropical regions of the Old World. Ecology: Flowering & fruiting: Jul.–Dec.

Uses: Green manure.

3. *Sesbania javanica* Miq. 沼生田菁

(Photo 157)

Fl. Ned. Ind. 1(1): 288. 1855; FRPS 40: 234. 1994.

*Sesbania cochinchinensis* DC., Prod. 2: 266. 1825.

Annual herb, 2–4 m tall. Stems terete, pith white; young branchlets sparsely pubescent. Stipules lanceolate, 5–6 mm. Leaves even-pinnate, 10–30 cm; leaflets 10–30 pairs, opposite or subalternate linear-oblong, 10–30 × 2–4 mm, the middle ones larger than others, base slightly unequal, apex obtuse. Racemes axillary, pendulous, 5–12-flowered. Bracts ovate to lanceolate,

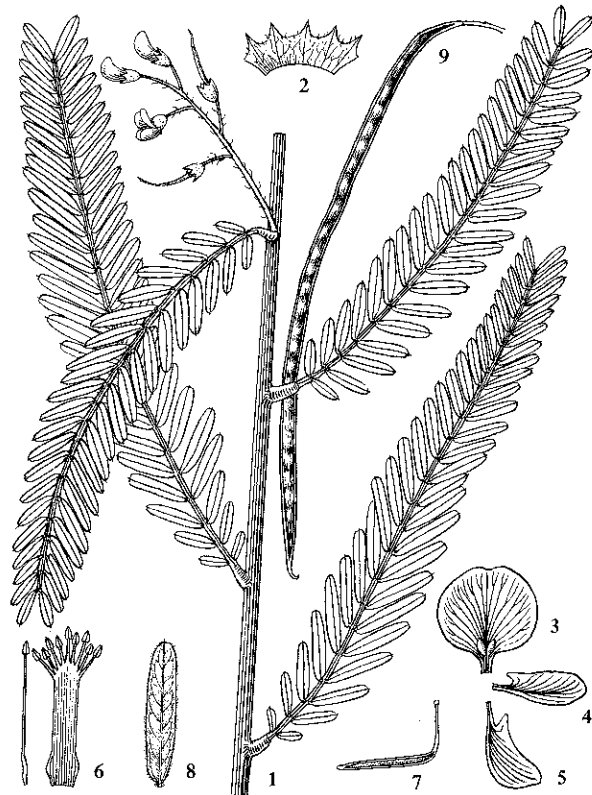


Figure 66. *Sesbania cannabina* (Retz.) Poir.

1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. leaflet; 9. pod. (drawn by H. P. Yu)

deciduous. Flowers 18–20 mm. Calyx campanulate, 6–7 mm, teeth deltoid, 1.5–2 mm. Corolla yellow or reddish, with dark striate and spots. Petals subequal; vexillum yellow adaxially, with fine dots abaxially, broadly ovate, 2–3 cm, base slightly cordate, erectly clawed; wings auriculate at base; keel deltoid-ovate, with slender auricles at base. Pods light brown, straight or submoniliform, 15–25 × 0.5 mm. Seeds 20–30, subglobular.

Locality: Lai Chi Kok, Shing Mun, Tuen Mun. *H. C. Tang 1028; Y. S. Lau 1973, 2279.*

Distribution: Taiwan; tropical Asia, Australia.

Ecology: Low-lying lands. Flowering: Jun.–Oct.

## 28. *Geissaspis* Wight & Arn. 睫苞豆屬

Annual herbs. Stipules membranous, produced below insertion, exstipellate. Leaves even-pinnate; leaflets 2–several pairs. Racemes axillary, long-pedunculate. Bracts large, membranous, imbricate, obliquely reniform, striate and ciliate, often covering flowers and fruit; bracteoles absent. Calyx membranous, 2-lipped, upper lip entire, lower lip obscurely toothed. Corolla 2–3 times as long as calyx; vexillum suborbicular, clawed; wings incurved, obtuse, smaller than vexillum. Stamens monadelphous; anthers uniform. Ovary stipitate; 1–2-ovuled; styles incurved; stigma small, capitate. Pods 1–2-segmented, medium turgid, margin compressed, reticulate, indehiscent. Seeds 1–2, orbicular-reniform, estrophiolate.

About three species distributed in tropical Asia and Africa; one species in China; it also occurs in Hong Kong.

### 1. *Geissaspis cristata* Wight & Arn.

睫苞豆 (雞冠苞覆花)

(Fig. 67; Photo 158)

*Prodr. Fl. Ind. Orient.* 1: 218. 1834; *FKH* 77. 1912; *FRPS* 41: 357. 1995; *FGD* 5: 350, fig. 194. 2003.

Annual herb. Stems procumbent, 15–60 cm tall, many-branched from base, branchlets slender, striate. Stipules lanceolate, distinctly spurred. Leaves even-pinnate; leaflets 2 pairs, obcordate or obovate, oblique, 5–7 × 3–4 mm, base cuneate, apex truncate or slightly emarginate and spinulose, lateral veins 3–5 on each side of midvein. Racemes terminal or axillary, in compact heads, 1.5–1.6 cm. Bracts 6–12, imbricate, suborbicular or obliquely reniform, 7–10 × 15 mm, yellow bristly ciliate. Corolla purple, 2.4–3 mm; vexillum ovoid-rounded, 5 mm wide, shortly clawed; wings and keels smaller, ovate. Pods 1–2-segmented; segments reniform, 4 mm, compressed emarginate, reticulate. Seeds 1–2, brown, 2 mm in diam.

Locality: Deep Water Bay, Tai Mong Tsai, Sai Keng, Lantau Island. *Y. S. Lau 800; L. T. Lo 333; F. W. Xing 8281.*

Distribution: Guangdong; Nepal, Sri Lanka, Myanmar, Thailand, Indonesia.

Ecology: Wet places near seashore. Flowering & fruiting: May–Aug.

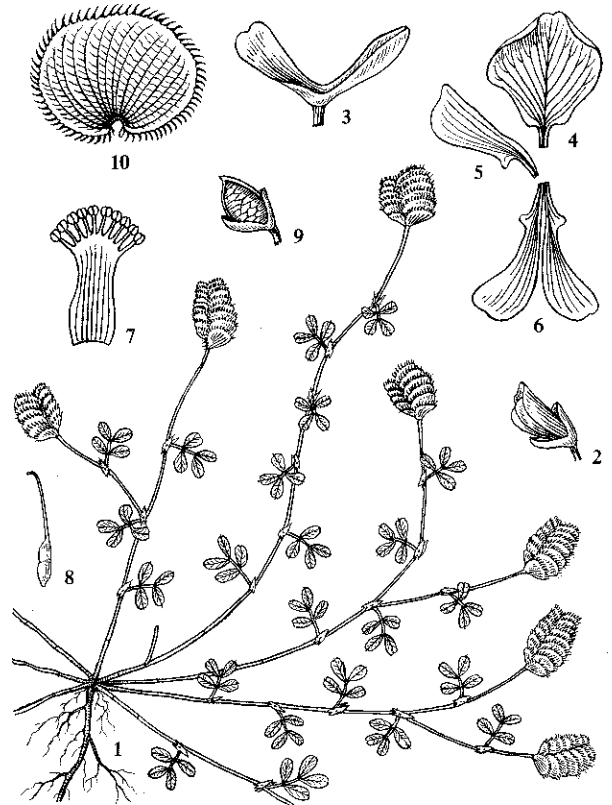


Figure 67. *Geissaspis cristata* Wight & Arn.

1. whole plant; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. pod; 10. bract. (drawn by H. P. Yu)

## 29. *Arachis* L. 落花生屬

Annual herbs. Stems erect or prostrate. Stipules elongated, partly adnate to petiole; exstipellate. Leaves even-pinnate; leaflets 2–3 pairs. Flowers solitary or several-fasciculate, sessile. Calyx slender, elongated following development, labiate, upper lip whole p4-toothed, lower one linear. Corolla yellow; vexillum suborbicular, clawed; wings oblong, clawed, auriculate; keel incurved, beaked. Stamens monadelphous, one stamen often absent; anther dimorphic, long and short alternately arranged. Ovary subsessile, 2–3(–6)-ovuled, after fertilization the torus elongating greatly and forcing the young fruit underground to ripen. Pods cylindrical, constricted but not septate between the 1–3(–6) seeds.

About 22 species distributed in tropical America; one species widely cultivated all over the world; it is also cultivated in Hong Kong.

### 1. *Arachis hypogaea* L. 落花生

(Fig. 68; Photo 159)

*Sp. Pl.* 741. 1753; *FKH* 78. 1912; *FRPS* 41: 361. 1995; *FGD* 5: 354. 2003.

Annual herb. Roots richly nodulose. Stems erect or prostrate, 30–80 cm, yellow-villose at first. Stipules lanceolate, 2–4 cm, united with petiole in lower leaf. Leaves even-pinnate; leaflets 2 pairs, ovate-oblong or obovate, 2.4 × 0.5–2 cm, base subrounded, apex obtuse, sometimes emarginate, hairy on both surfaces, margin ciliate, lateral veins ca. 10 on each side of midvein. Calyx-tube slender, 4–6 mm. Corolla yellow; vexillum 1.7 cm in diam., apex emarginate; wings free of keel, oblong or oblique-ovate; keel long ovoid, shorter than wings, incurved, beaked. Stamens monadelphous. Ovary ripens underground into a reticulate pod containing 1–3(–6) seeds. Seeds 1–4, ellipsoidal-ovoid, 10–15 mm.

Locality: Cultivated in Hong Kong. *Y. S. Lau 1141; HK sheet 7194, 40153.*

Distribution: Native to S America, widely cultivated.

Ecology: Flowering: Jun.; fruiting: Oct.

Uses: Oil, food.

### 30. *Smithia* Aiton 坡油甘屬

Annual or perennial herbs or subshrubs. Stipules scarious, long-ovate, medifixed, persistent; stipels absent. Leaves even-pinnate, rachis ending in a bristle, sensitive; leaflets 5–9 pairs, entire. Racemes or cymes axillary or terminal, more or less helicoids, sometimes flower solitary and axillary. Bracts small, caducous; bracteoles paired, sheathing at base of calyx, persistent. Calyx 2-lipped, lips subentire. Corolla exserted from calyx, yellow, blue or purple. Petals clawed; vexillum orbicular or oblong; wings and keels equal to vexillum; keel incurved, apex obtuse. Stamens diadelphous (5+5); anthers uniform. Ovary linear, 2–9-ovuled, styles incurved, stigma small, terminal. Pods compressed or turgid, consisting of several segments folded within persistent, accrescent calyx; segments suborbicular, indehiscent. Seeds reniform, smooth.

About 35 species distributed in tropical Africa and Asia; five species in China; two species in Hong Kong.

- 1a. Leaflets 3–6 pairs, oblong, 6–12 × 2–3 mm .... 1. *S. conferta*  
 1b. Leaflets 1–2 pairs, oblong-oblongate. 15–20 × 6–7 mm  
 ..... 2. *S. salsuginea*

**1. *Smithia conferta* Sm.** 密花坡油甘 (Fig. 69; Photo 160)  
 Cycl. 33: *Smithia* n. 2. 1816; FKH 77. 1912; FRPS 41: 353. 1995;  
 FGD 5: 349, fig. 193. 2003.

Annual herb, 15–90 cm tall. Stems slender, many-branched, glabrous, upper nodes congested into dense heads. Leaves even-pinnate; leaflets 3–6 pairs, oblong, 6–12 × 2–3 mm, base cuneate, apex obtuse, glabrous adaxially, sparsely yellow hirsute abaxially, lateral veins 5 on each side of midvein. Racemes axillary, densely congested. Calyx 2-lipped, 6–8 mm, lips bristly, entire. Corolla yellow, 12–16 mm; vexillum, oblong-obovate; wings and keel subequal, clawed, smaller than vexillum. Stamens diadelphous. Ovary shortly stipitate, hairy. Pods 4–6-segmented, turgid and papillose.

Locality: May Rd., Chuen Lung, Sai Kung, Fanling, Lantau Island. *Y. S. Lau 2063, 2345; Y. W. Lam 2153.*

Distribution: Guangdong; tropical Asia, Australia.

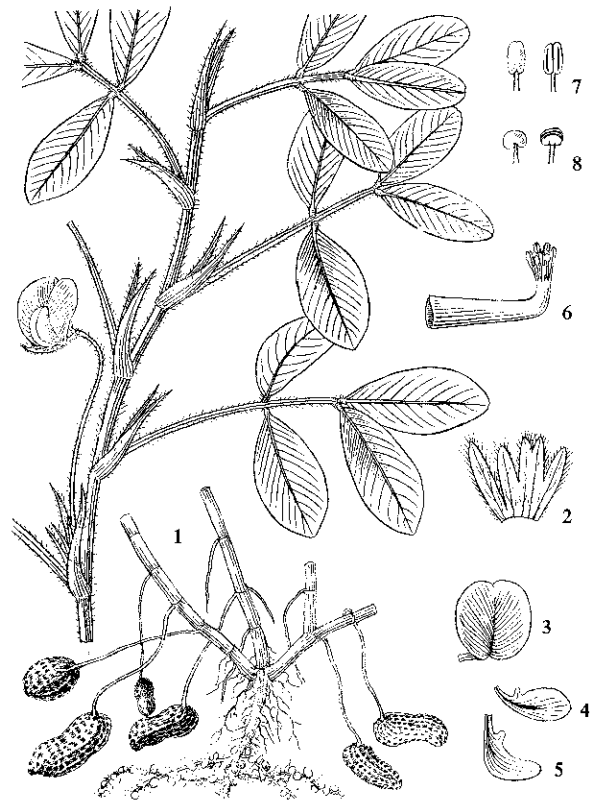
Ecology: Sandy places of hillsides, ravines and roadsides. Flowering & fruiting: Jul.–Oct.

**2. *Smithia salsuginea* Hance** 鹽鹼土坡油甘  
 J. Bot. 7(79): 164. 1869; FKH 77. 1912; FRPS 41: 355. 1995;  
 FGD 5: 350. 2003.

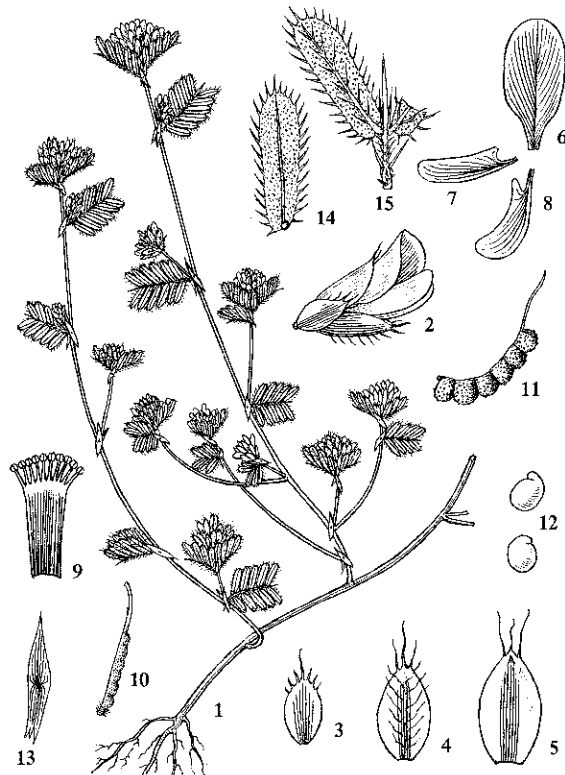
Annual herb, 30–45 cm. Stems slender, few-branched, sparsely bristly. Leaves even-pinnate; leaflets 1–2 pairs, oblong-obovate, 15–20 × 6–7 mm, glabrous on both surfaces. Racemes helicoids, 5–6-flowered. Calyx scarious, 10–12 mm, reticulate, subglabrous, upper lip longer, apex truncate or emarginate, lower one acute. Corolla yellow, 2.5–3 cm, adaxial surface with reticulate veins, abaxial surface with raised stripes. Stamens diadelphous. Ovary shortly stipitate; ovules several. Pods 10–12-segmented, segments orbicular, glabrous or papillose.

Locality: Kowloon (*vide* FKH 77. 1912).

Distribution: Endemic to Hong Kong.



**Figure 68.** *Arachis hypogaea* L.  
 1. whole parts of plant; 2. calyx; 3. vexillum; 4. wing;  
 5. keel; 6. stamens; 7. long anthers; 8. short anthers.  
 (drawn by H. P. Yu)



**Figure 69.** *Smithia conferta* Sm.  
 1. whole plant; 2. flower; 3. bracteoles; 4. lower lip of calyx;  
 5. upper lip of calyx; 6. vexillum; 7. wing; 8. keel; 9. stamens;  
 10. pistil; 11. pod; 12. seeds; 13. stipule; 14. leaflet (abaxial  
 surface); 15. leaflet (adaxial surface). (drawn by H. P. Yu)

Ecology: Wet places near seashores. Flowering & fruiting: Aug.–Oct.

Notes: The type specimen (*Sampson 15113*) was collected from Kowloon by Sampson in 1868.

### 31. *Vicia* L. 野豌豆屬

Herbs. Stems climbing or prostrate, rarely erect, slender, angulate, many-branched. Stipules absent. Leaves even-pinnate, ending in a simple or branched tendril or bristle; leaflets (1–)2–12 pairs. Racemes axillary, rarely flowers solitary or 2–20 in axillary clusters. Bracts small, deciduous; bracteoles absent. Calyx subcampanulate, 5-toothed, often oblique at base, teeth subequal or upper shorter than lower. Corolla pale blue, blue-black or purple, rarely yellow or white; petals clawed; wings obliquely oblong, adherent to middle of keel; keel shorter than wings. Stamens diadelphous or monadelphous; anthers uniform. Ovary sessile; ovules 2–7; styles pubescent at apex. Pods compressed, (except *V. faba*) non-septate, 2-valved. Seeds subglobose or compressed.

About 200 species distributed in N temperate zone with extensions to S America; 43 species in China; three species cultivated in Hong Kong.

- 1a. Leaflets large, usually 1–3 pairs, elliptic to obovate, 4–6(–10) × 1.5–4 cm ..... 1. *V. faba*  
 1b. Leaflets small, 3–9 pairs, linear, oblong or subcordate, 0.5–2.5 × 0.1–1 cm.  
 2a. Leaflets 4–8 pairs, linear, glabrous ..... 2. *V. hirsuta*  
 2b. Leaflets 3–9 pairs, oblong or subcordate, sparsely pubescent abaxially ..... 3. *V. sativa*

#### 1. *Vicia faba* L. 蠶豆

(Fig. 70; Photo 161)

Sp. Pl. 737. 1753; FRPS 42(2): 269. 1998; FGD 5: 355, fig. 197. 2003.

Annual herb, 0.3–1 m tall. Stems erect, 4-angular, glabrous. Leaves even-pinnate; leaflets 1–5 pairs, alternate, elliptic, oblong or obovate, rarely orbicular, 4–6(–10) × 1.5–4 cm, base cuneate, apex obtuse, apiculate, entire, glabrous. Racemes axillary, 2–4(–6)-flowered. Peduncle very short. Calyx campanulate, teeth lanceolate. Corolla white, with large purplish blotches, 2–3.5 cm; wings shorter than vexillum, but longer than keel. Stamens diadelphous (9+1). Ovary linear; ovules 2–4(–6). Pods turgid, 5–10 × 2–3 cm, tomentose, becoming black when mature. Seeds 2–5(–6), oblong, compressed, green, brownish, purplish, or black, hilum linear, black.

Locality: Cultivated. *L. T. Lo 623*.

Distribution: Widely cultivated; probably native to N Africa and SW Asia.

Ecology: Flowering: Apr.–May; fruiting: May–Jun.

Uses: Food (seeds).

#### 2. *Vicia hirsuta* (L.) Gray 小巢菜(翹搖)

Nat. Arr. Brit. Pl. 2: 614. 1821; FKH 81. 1912; FRPS 42(2): 265. 1998; FGD 5: 355. 2003.

Annual climbing herb. Stems 15–90(–120) cm, sparsely pubescent, slender, subglabrous. Stipules lanceolate, 2–3-lobed in lower half. Leaves even-pinnate; leaflets 4–8 pairs, linear, 5–15 × 1–3 mm, base attenuate, apex truncate and mucronate, glabrous. Racemes shorter than leaves. Peduncles 2.5–3 cm, 2–4(–7)-flowered. Calyx campanulate, 2 mm. Corolla white, pale violet or purplish; vexillum elliptic, ca. 3 mm, apex truncate, emarginate; wings equal to vexillum; keel shorter. Pods oblong, 0.5–1 × 0.2–0.5 cm, densely brown hirsute. Seeds 2, oblate, 1.5–2.5 mm in diam.

Locality: Cultivated. *HK sheet 1378, 34647*.

Distribution: Widely cultivated in China; E Asia, Europe, N America.

Ecology: Flowering & fruiting: Feb.–Jul.

Uses: Green manure, forage, medicinal (folklore).

#### 3. *Vicia sativa* L. 野豌豆

Sp. Pl. 736. 1753; FKH 81. 1912; FRPS 42(2): 268. 1998; FGD 5: 356. 2003.

Annual or biennial herb, 15–100 cm tall. Stems climbing or ascending, glabrous or sparsely pubescent at first. Stipules hastate, 2–4-toothed, with a distinct dark glandular blotch at middle. Leaves even-pinnate; rachis ending in a branched tendril; leaflets 3–9 pairs, linear, elliptic or oblanceolate, 1–4 × 0.2–1.5 cm, base cuneate, apex rounded or truncate, emarginate, mucronate, yellow pubescent on both surfaces. Flowers 1–2, axillary, sessile. Calyx campanulate, 8 mm, pubescent, teeth lanceolate. Corolla purple or red, ca. 1.6 cm;



Figure 70. *Vicia faba* L.

1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. pod; 7. seed. (drawn by H. P. Yu)



vexillum broadly ovate, 2–2.5 × 8–9 mm, apex rounded, emarginate, constricted at middle; wings oblong-obovate, with slender basal auricle, shorter than vexillum, longer than keel; keel curved, 4 mm. Ovary linear, sparsely pubescent. Pods narrowly oblong, 4–6 × 0.5–0.8 cm, constricted between seeds, dehiscent, valves contorted. Seeds 4–8, subglobose, ca. 2.5 mm in diam., globular, brown or dark brown.

Locality: Cultivated. *W. J. Tatcher 10940, 11430; P. S. Choi 72.*

Distribution: Widely cultivated and naturalized. The origin of this variety is unknown, but it is now widespread as an escape from cultivation throughout most temperate regions of the world.

Ecology: Flowering: Apr.–Jul.; fruiting: Jul.–Sep.

Uses: Food, green manure, forage.

### 32. *Hylodesmum* H. Ohashi & R. R. Mill 長柄山螞蝗屬

Perennial herbs, usually 0.3–1.5 m tall; rootstock more or less woody, often subtuberous or tuberous. Stems erect or often ascending, terete. Stipules scarious or thinly papery, striate, nearly glabrous or variously hairy; stipels scarious, filiform. Leaves 3-foliolate or (3–)5–7-foliolate, entire or undulate. Inflorescences terminal or terminal and axillary, sometimes a fertile shoot separately arising from basal part of main stems, pseudoracemose or lax-paniculate, lax-flowered, with 2–5 flowers at each node; primary bracts subtending secondary bracts; pedicels usually uncinat-hairy; bracteoles absent. Calyx broadly or very broadly campanulate, 4-lobed; upper lobe entire or minutely 2-toothed at apex; petals clawed. Stamens monadelphous. Ovary stipitate. Pods distinctly stipitate, 2–5-jointed, densely uncinat-hairy on lateral surfaces, nearly glabrous or entirely glabrescent on both sutures, dorsal suture distinctly thickened and straight or shallowly undulate, ventral suture very deeply incised. Seeds flat, obliquely depressed obovate, without rim-aril around hilum.

About 14 species distributed in Asia, few species in America; seven species in China; two species in Hong Kong.

- 1a. Leaflets lanceolate, acute, pubescent, veinlets prominent, without whitish spots on abaxial surface; pedicel 4–7 mm; segments of pod semiobovate, 6–7 mm ..... 1. *H. laterale*  
 1b. Leaflets ovate, acuminate, glabrous, veinlets obscure, with whitish spots on abaxial surface; pedicel 8–13 mm; segments of pod asymmetrically obtriangular, 12–18 mm ..... 2. *H. leptopus*

#### 1. *Hylodesmum laterale* (Schindl.) H. Ohashi & R. R. Mill 側序長柄山螞蝗

Edinburgh. *J. Bot.* 57(2): 177. 2000; FGD 5: 276. 2003.

*Desmodium laterale* Schindl., *Repert. Spec. Nov. Regni Veg.* 22(618–626): 258–259. 1926.

*Podocarpium laterale* (Schindl.) Y. C. Yang & P. H. Huang, *Bull. Bot. Lab. N.-E. Forest. Inst. Harbin* 4: 7. 1979; FRPS 41: 52. 1995.

Small slender herb. Stems angular, 25–30 cm tall, thinly pubescent. Stipules lanceolate, 5–7 mm, acuminate. Leaves 3-foliolate; petioles 3–5 cm; leaflets membranous or subleathery, pubescent or glabrous adaxially, sparsely hairy on veins abaxially, 3-veined at base, veinlets conspicuous, terminal leaflet narrow ovate, 5–10 × 1.5–3 cm, 2–3 times longer than broad, apex acute, lateral ones smaller. Pseudoracemes terminal, sometimes oblique. Peduncles slender, 20–40 cm. Flowers in clusters of 1–3; pedicels slender, 1–2 cm. Calyx-lobes shallow and rounded, 1 mm, slightly pubescent. Corolla pink, 5–7 mm; keel and wings with spur at base. Bracts ovate, acuminate, 1–3 mm, deciduous. Pods 1–2 cm, with stalk of 1 cm, 2–4-jointed, segments 9 × 4 mm, half-rhomboid, width half of length, covered with hooked-hairs, constricted nearly to ventral suture.

Locality: Tai Mo Shan. *L. T. Lo 407; Y. W. Lam 1145; HK sheet 40639.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; Japan (Rykyu Islands).

Ecology: Forests near streams. Flowering: Sep.–Oct.

#### 2. *Hylodesmum leptopus* (A. Gray ex Benth.) H. Ohashi & R. R. Mill 細長柄山螞蝗 (Fig. 71)

Edinburgh. *J. Bot.* 57(2): 179. 2000; FGD 5: 275, fig. 146. 2003; FGD 5: 275, fig. 146. 2003.

*Desmodium leptopus* A. Gray ex Benth., *Pl. Jungh.* 2: 226. 1852.

*Desmodium laxum* subsp. *leptopus* (A. Gray ex Benth.) H. Ohashi, *Ginkgoana* 1: 141. 1973.

*Podocarpium leptopus* (A. Gray ex Benth.) Y. C. Yang & P. H. Huang, *Bull. Bot. Lab. N.-E. Forest. Inst. Harbin* 4: 6. 1979; FRPS 41: 50. 1995.

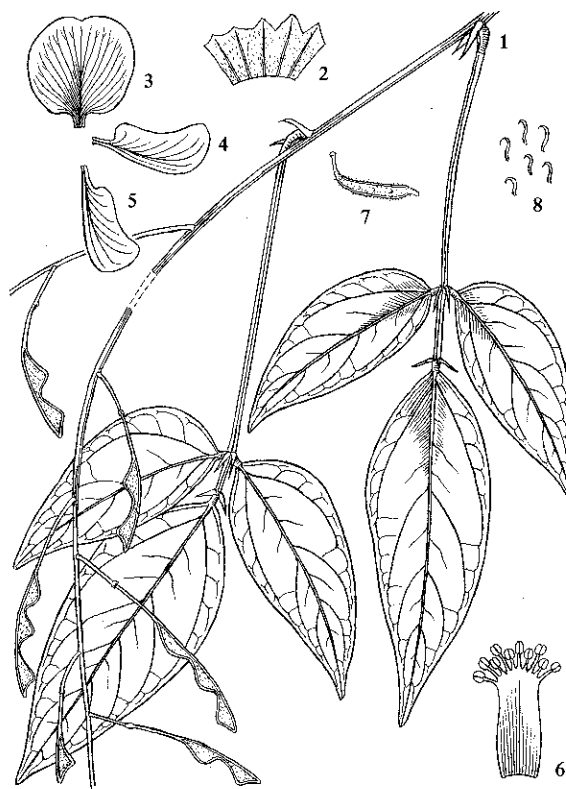


Figure 71. *Hylodesmum leptopus* (A. Gray ex Benth.) H. Ohashi & R. R. Mill

1. fruiting branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. hairs of pedicel and pod. (drawn by H. P. Yu)

Erect herb. Stems ca. 30 cm tall, thinly pubescent. Stipules lanceolate, 5–10 mm. Leaves 3-foliolate; petioles 5–8 cm; leaflets membranous, terminal one ovate or broadly ovate, 6–10 × 2.5–5 cm, base cuneate, apex acuminate, lateral ones smaller, bases slightly oblique, with 3 pairs of veins at base, adaxial surface glabrous, abaxial surface with whitish spots, only pubescent on veins. Pseudoracemes 10–30 cm, terminal. Flowers loosely arranged, 5–7 mm; pedicels 1–1.5 cm. Bracts linear, deciduous. Calyx campanulate, glabrous, 1–2 mm. Pods 2–5 cm × 5 mm, 2–3-jointed, long stalked; stalks 1 cm, with constrictions between joints; segments oblique, 13–16 mm.

Locality: Tai Mo Shan, Mau Ping. *L. T. Lo 336; Y. S. Lau 3029.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Hunan, Jiangxi, Fujian, Taiwan; Thailand, Vietnam, Philippines, Japan.

Ecology: Shady places in forests. Flowering & fruiting: Aug.–Sep.

### 33. *Christia* Moench 蝙蝠草屬

Erect or decumbent annual herbs or subshrubs. Stipules minute; stipels present. Leaves pinnately 3-foliolate, or often reduced to remain only a terminal leaflet. Racemes or panicles terminal or axillary. Flowers small. Calyx membranous, campanulate, accrescent in fruiting, 5-lobed; lobes ovate-lanceolate, subequal. Corolla rarely longer than calyx; petals clawed; vexillum broad, base attenuate, clawed; wings adherent to keel; keel obtuse. Stamens diadelphous; anthers uniform. Ovary several-ovuled; styles linear, incurved, stigma capitate. Pods 1–several-segmented; segments reticulate, folded on top each other within persistent calyx, indehiscent.

About 13 species distributed in tropical Asia and Atlantic; five species in China; one species in Hong Kong.

#### 1. *Christia obcordata* (Poir.) Bakh. f. 鋪地蝙蝠草

(Fig. 72; Photo 162)

*Reinwardtia* 6(1): 91. 1961; *FRPS* 41: 83. 1995; *FGD* 5: 285. 2003.

*Hedysarum obcordatum* Poir., *Encycl.* 6(2): 425–426. 1805.

*Lourea obcordata* (Poir.) Desv., *J. Bot. Agric.* 1: 122. 1813; *FHK* 82. 1861; *FKH* 80. 1912.

Perennial prostrate herb, 15–60 cm tall. Stems slender, grey pubescent. Leaves pinnately 3-foliolate, rarely 1-foliolate; leaflets membranous, terminal one reniform, obcordate or orbicular-deltoid, 5–15 × 10–20 mm, apex truncate, emarginate, lateral ones smaller, glabrous adaxially, pubescent abaxially, lateral veins 3–5 on each side of midvein. Racemes terminal, 3–18 cm. Calyx campanulate, hairy, 2 mm, 5-toothed, distinctly reticulate. Corolla violet or roseate, slightly longer than calyx. Pods enclosed by persistent calyx; segments 4–5, orbicular, 2.5 mm in diam., glabrous.

Locality: Hong Kong Island, Ping Chau. *Y. S. Lau 1917; L. T. Lo 491; Y. W. Lam 1133.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; S & SE Asia to N Australia.

Ecology: Open field. Flowering: Apr.–May; fruiting: May–Sep.

### 34. *Medicago* L. 苜蓿屬

Herbs, rarely shrubs. Stipules partly adnate to petiole. Leaves alternate, pinnately 3-foliolate; leaflets usually dentate, lateral veins running out into teeth. Racemes axillary, sometimes flowers in heads or solitary. Bracts smaller or absent; bracteoles absent. Flowers small. Calyx campanulate, equally 5-toothed. Corolla yellow (hybrids often purple, violet or brown); vexillum obovate or oblong, base narrowly reflexed; wings oblong, one side toothed; keel obtuse, shorter than wings. Stamens diadelphous; anthers uniform; styles short, stigma terminal. Ovary linear; ovules numerous, rarely 1. Pods spirally falcate or often shell-like, longer than calyx, angulate or prickly on sutures. Seeds 1–many, small, estrophiolate.

More than 70 species distributed in W and S Europe, C to W Asia, N and S Africa, everywhere in tropical regions; 13 species introduced to China; four species cultivated or naturalized in Hong Kong.

- 1a. Flowers purplish; pods 2–3-coiled; 1–8-seeded..... 1. *M. sativa*  
 1b. Flowers yellow.  
 2a. Pods 1.5–2.5(–6)-coiled, 4–6(–10) mm in diam., spiny, many-seeded..... 2. *M. polymorpha*  
 2b. Pods sickle-shaped or reniform, unarmed, 1–4-seeded.  
 3a. Pods sickle-shaped, 8–15 × 2.5–4 mm, 2–4-seeded..... 3. *M. falcata*  
 3b. Pods reniform, 3 × 2 mm, 1-seeded 4. *M. lupulina*

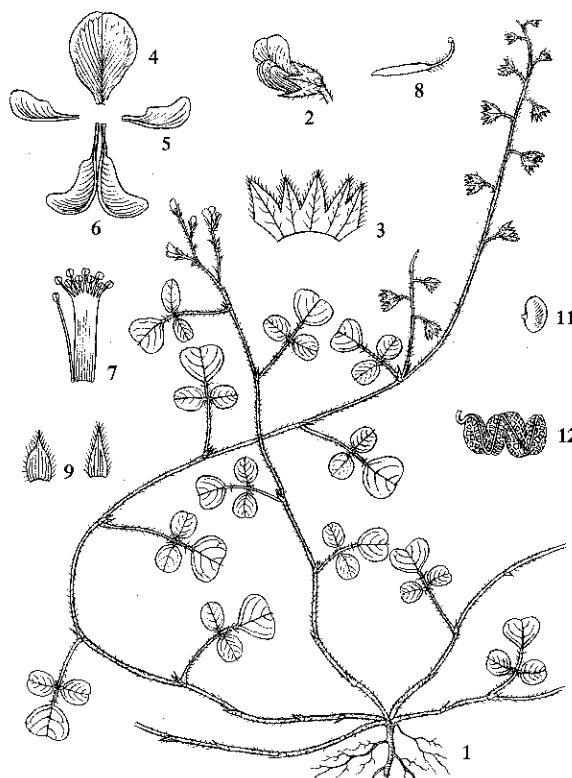


Figure 72. *Christia obcordata* (Poir.) Bakh. f.

1. whole plant; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. bract and bracteole; 10. pod; 11. seed. (drawn by H. P. Yu)

**1. *Medicago sativa* L. 紫苜蓿 (Fig. 73)**

Sp. Pl. 778. 1753; FRPS 42(2): 323. 1998; FGD 5: 360, fig. 201. 2003.

Perennial herb, 30–100 cm tall. Stems caespitose or prostrate, 4-angular, many-branched. Leaves pinnately 3-foliolate; leaflets obovate to oblanceolate, 10–25 × 3–10 mm, base cuneate, apex obtuse, terminal one often larger, margin denticulate on distal 1/3, lateral veins 8–10 pairs. Racemes or heads axillary, 1–2.5 cm, 5–30-flowered. Peduncles longer than leaves. Calyx campanulate, 3–5 mm. Corolla yellowish, deeply blue or dark purple; petals clawed; vexillum oblong, apex emarginate; wings longer than keel. Ovary linear, pubescent. Pods brown, 2–4-coiled, 5–9 mm in diam., slightly pubescent. Seeds 10–20, ovate, 1–2.5 mm.

Locality: Mount Gough. *W. J. Tutcher 5264; H. C. Tang 751.*

Distribution: Widely cultivated in China; native to Asia, widely cultivated elsewhere.

Ecology: Flowering: May–Jul.; fruiting: Jun.–Aug.

**2. *Medicago polymorpha* L. 南苜蓿**

Sp. Pl. 779. 1753; FRPS 42(2): 327. 1998; FGD 5: 361. 2003.

*Medicago hispida* Gaertn., *Fruct. Sem. Pl.* 2: 349, pl. 155. 1791.

Annual or biennial herb, 20–90 cm tall. Stems decumbent or erect, glabrous or sparsely pubescent, branched at base. Stipules conspicuously lacerate. Leaves pinnately 3-foliolate; leaflets obovate or broad-obovate, 7–20 × 5–15 mm, emarginate, base cuneate, apex obtuse or emarginate, mucronate, margin shallowly denticulate on distal 1/3, glabrous adaxially, sparsely pubescent abaxially. Heads 2–10-flowered. Peduncles usually shorter than leaves. Calyx campanulate, 2 mm, teeth lanceolate, as long as tube. Corolla yellow; vexillum obovate, apex emarginate; wings oblong, base auriculate and clawed; keel shorter than wings, base hooked-auriculate. Pods 1.5–2.5(–6)-coiled, 4–6 mm in diam., spinose. Seeds brown, 1–2 in each coil, reniform, 2.5 × 1.2 mm.

Locality: Cultivated. *W. J. Tutcher 11284; HK sheet 1259.*

Distribution: Areas S of Changjiang River, Shaanxi, Gansu, Yunnan, Guizhou; Europe, Asia, Africa, America, Australia (cultivated).

Ecology: Flowering: Mar.–May; fruiting: May–Jun.

**3. *Medicago falcata* L. 野苜蓿**

Sp. Pl. 779. 1753; FKH 74. 1912; FRPS 42(2): 321. 1998.

*Medicago sativa* L. subsp. *falcata* (L.) Arcang., *Comp. Fl. Ital.* 160. 1882.

Perennial herb. Stems 40–100 cm tall, prostrate or ascendent, copiously branched, subglabrous. Stipules lanceolate, base hastate. Leaves pinnately 3-foliolate; leaflets obovate or oblanceolate, 8–15 × 2–5 mm, terminal one larger, base cuneate, 1/4 of margin dentate, apex obtuse, aristate, glabrous adaxially, adpressed pubescent abaxially, lateral veins 12–15 pairs. Racemes axillary, 6–60-flowered. Calyx campanulate, ca. 4 mm, teeth setaceous. Corolla bright yellow, 6–9 mm; vexillum oblanceolate; wings equal to keel, but shorter than vexillum. Ovary linear, pubescent; ovules 2–5. Pods falcate, 10–15 × 3.5–4 mm, adpressed pubescent, fine venose. Seeds 2–4, yellow-brown, ovate-elliptic, 2 × 1.5 mm.

Locality: Cultivated and naturalized.

Distribution: NE, N, NW China; Europe, C Asia to Siberia.

Ecology: Flowering: Jun.–Aug.; fruiting: Jul.–Aug.

Uses: Herbage.

**4. *Medicago lupulina* L. 天藍苜蓿**

Sp. Pl. 779. 1753; FHK 75. 1861; FKH 74. 1912; FRPS 42(2): 314. 1998; FGD 5: 360. 2003.

Annual, biennial or perennial herb, 15–60 cm tall. Stems diffuse or ascendent, pubescent. Leaves pinnately 3-foliolate; leaflets obovate, ovate or suborbicular, 5–20 × 4–6 mm, base cuneate, apex truncate or emarginate, mucronate, margin denticulate on distal part, glabrous on both surfaces, lateral veins 10 pairs. Heads 10–20-flowered. Peduncles longer than leaves. Calyx campanulate, 3 mm, densely hairy. Corolla yellow; vexillum suborbicular, apex emarginate; wings and keel shorter than vexillum, obovate. Pods sickle-shaped, reniform, 3 × 2 mm, marked with much curved veins, black when ripe. Seed single, ovate, brown.

Locality: Cultivated and naturalized.



Figure 73. *Medicago sativa* L.

1. flowering branch; 2. leaflet; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. pods. (drawn by H. P. Yu)

Distribution: N & S China; naturalized in elsewhere.

Ecology: Flowering: May; fruiting: Aug.–Oct.

### 35. *Kummerowia* Schindl. 雞眼草屬

Annual prostrate or decumbent herbs. Stems many-branched, pubescent. Stipules 2, large, persistent. Leaves pinnately 3-foliolate. Flowers 1–2, axillary, often reduced and without petals. Bract 1; bracteoles 4, persistent. Calyx 5-toothed, teeth equal; vexillum subequal to wings, shorter than keel. Corolla and stamen-tube of flowers deciduous in fruiting, abortive or cleistogamous flowers persistent. Stamens diadelphous. Ovary 1-ovuled. Pods compressed, indehiscent, 1-seeded.

Two species distributed in E Asia; one species in Hong Kong.

**1. *Kummerowia striata* (Thunb.) Schindl. 雞眼草 (Fig. 74)**  
Repert. Spec. Nov. Regni Veg. 10(257–259): 403–404. 1912, *pro parte excl. syn.*; FGD 5: 293, fig. 157. 2003.

*Lespedeza stipulacea* Maxim., Prim. Fl. Amur. 85–86. 1859; FRPS 41: 159. 1995

*Hedysarum striatum* Thunb., Fl. Jap. 289. 1784.

*Lespedeza striata* Hook. & Arn., Bot. Beechey Voy. 262. 1841; FHK 85. 1861; FKH 81. 1912.

Annual prostrate or decumbent herb, 10–45 cm tall. Stems and branches white-pubescent. Leaves pinnately 3-foliolate; leaflets obovate or oblong, 6–15 × 3–8 mm, base subrounded or broad-cuneate, apex rounded, sometimes emarginate; lateral veins numerous and parallel. Flowers small, solitary or 2–3, axillary. Bracteoles 4, one of them smaller at pedicel-joint. Calyx campanulate, deep purple, 2.5–3 mm, 5-toothed, white pubescent. Corolla pink or purple; petals clawed, 5–6 mm; vexillum elliptic; wings oblong, shorter than keel. Pods orbicular or obovate, 3.5–5 mm, apex acute, minutely pubescent.

Locality: Hong Kong Island, Tsuen Wan, Ma Liu Shui. W. J. Tutchter 11218; H. C. Tang 2071; Y. S. Lau 2271.

Distribution: S, SW, NE China; Korea, Russia, Japan.

Ecology: Farmlands and grasslands on hillslopes. Flowering: Jul.–Sep.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore), forage, green manure.

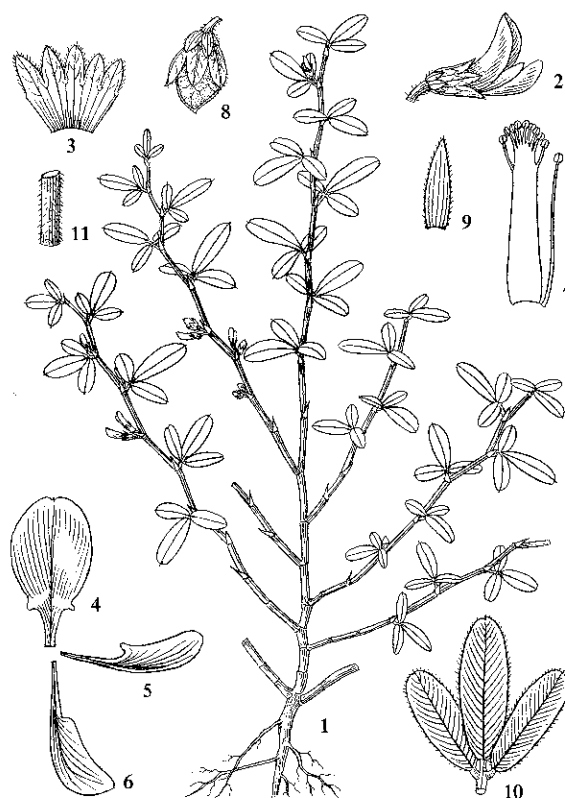


Figure 74. *Kummerowia striata* (Thunb.) Schindl.  
1. whole plant; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pod; 9. stipule; 10. leaf; 11. part of stem.  
(drawn by H. P. Yu)

### 36. *Canavalia* DC. 刀豆屬

Annual or perennial herbs. Stems twining, prostrate or suberect. Stipules small, wart-like or inconspicuous; stipels present, deciduous. Leaves pinnately 3-foliolate. Racemes axillary. Flowers purple-violet, rose, or whitish, solitary or 2–6-fasciculate on swollen nodes. Bracts and bracteoles minute, deciduous. Calyx campanulate, nodose; 2-lipped; upper lip larger, truncate or 2-lobed, lower lip small or minute, entire or 3-toothed. Corolla longer than calyx; petals shortly clawed; vexillum large, suborbicular, reflexed; wings narrow, falcate or subtwisted, free; keel broader than wings, incurved, obtuse or beaked, beak inflexed or spirally twisted, shorter than vexillum. Stamen monadelphous; anthers uniform. Ovary shortly stalked, many-ovuled; styles incurved, beardless. Pods large, loriform or oblong, compressed or slightly turgid, with prominent rib along ventral suture and extra rib parallel and close to it, dehiscing by twisted valves. Seeds 10–15, elliptic or oblong, hilum linear.

About 50 species distributed in tropical and subtropical regions; six species in China (including cultivated); three species in Hong Kong.

According to Dunn & Tutchter (1912), *Canavalia ensiformis* (L.) DC. was cultivated in Hong Kong, but it is uncommon now.

- 1a. Leaflets apex acuminate; pods 20–35 cm; seeds 2–3 cm long.....1. *C. gladiata*  
1b. Leaflets apex truncate or rounded, often emarginate; pods 6–12 cm.  
2a. Petiolules 8–10 mm; pods long elliptic, 6–10 × 2.5–3.5 cm; seeds ovate 1.7 × 0.7 cm .....2. *C. lineata*  
2b. Petiolules 5–8 mm; pods linear-oblong, 8–12 × 2–2.5 cm; seeds elliptic 1.3–1.5 × 1 cm.....3. *C. maritima*

**1. *Canavalia gladiata* (Jacq.) DC. 刀豆**

(Photo 163)

Prodr. 2: 404. 1825; FHK 88. 1861; Sauer, Brittonia 16: 149. 1964; FRPS 41: 208. 1995; FGD 5: 305, fig. 162. 2003.

*Dolichos gladiatus* Jacq., Collectanea 2: 276. 1788.

Climbing herb to several metres long. Leaves pinnately 3-foliolate; leaflets ovate, 8–15 × 8–12 cm, base rounded or oblique (lateral

ones), apex acuminate, acute, sparsely whitish pubescent on both surfaces at first. Racemes axillary, 10–20-flowered. Peduncles 20–25 cm. Flowers 2–3-fasciculate on node. Calyx 15–16 mm, slightly pubescent, upper lip with 2 broadly orbicular lobes, lower lip with 2(–3) small teeth. Corolla white or pink, 3–3.5 cm; petals clawed and auriculate; vexillum broadly elliptic, 3.5–4 × 2.5 cm, emarginate; wings and keel oblong, incurved, smaller than vexillum. Ovary linear, hairy. Pods loriform, thickly leathery, 20–35 × 3.5–5 cm, slightly curved, with extra rib. Seeds reddish-brown, elliptic-oblong, 3.5 × 2 cm; hilum ca. 1.5 cm.

Locality: Cultivated. *HK sheet 7903*.

Distribution: Widely cultivated in S China; plant originally cultivated in Far East, now widely cultivated in tropics.

Ecology: Flowering: Jul.–Sep.; fruiting: Oct.

Uses: Green manure, forage.

## 2. *Canavalia lineata* (Thunb.) DC. 狭刀豆

(Fig. 75; Photo 164)

Prodr. 2: 404. 1825; FRPS 41: 210. 1995; Sauer, Brittonia 16: 162. 1964; FGD 5: 306. 2003.

*Dolichos lineatus* Thunb., Fl. Jap. 280. 1784.

Perennial twining herb. Leaves pinnately 3-foliolate; leaflets hardly leathery, ovate or obovate, 6–14 × 4–10 cm, base truncate or cuneate, apex rounded or cuspidate, sparsely pubescent on both surfaces. Racemes axillary. Calyx 12 mm, pubescent, upper lip large, broadly 2-lobed, lower lip 3-toothed; teeth small, subtruncate. Corolla purplish-red; vexillum broadly ovate, 2.5 cm, emarginate, auriculate and with 2 callosities at base; wings linear-oblong, slightly falcate; keel obovate-oblong. Pods oblong, compressed, 6–10 × 2.5–3 cm, with extra rib ca. 3 mm from sutural rib. Seeds 2–3, brown, ovate, 1.7 × 7 mm, blotched.

Locality: Sha Tin, Sai Kung, Kei Ling Ha, Lantau Island. *Y. S. Lau 3254*; *Y. W. Lam 900*; *HK sheet 39828*.

Distribution: Guangdong, Guangxi, Zhejiang, Fujian, Taiwan; Japan, Korea, Philippines, Vietnam to Indonesia.

Ecology: Sandy beaches. Flowering & fruiting: Jun.–Oct.

## 3. *Canavalia maritima* Thouars 海刀豆 (Photo 165)

*J. Bot. Agric.* 1: 80. 1813; FGD 5: 306. 2003.

*Dolichos maritimus* Aubl., Hist. Pl. Guiane 765. 1775.

*Canavalia obtusifolia* (Lam.) DC., Prodr. 2: 402. 1825; FKH 84. 1912.

Perennial herbaceous twiner. Leaves pinnately 3-foliolate; leaflets obovate, ovate, elliptic or suborbicular, 5–8 × 4.5–6.5 cm, base cuneate or subrounded, apex rounded, truncate, emarginate or apiculate, lateral ones often oblique, villose on both surfaces, lateral veins 4–5 on each side of midvein. Racemes axillary, 30 cm including peduncles. Flowers 1–3-fasciculate on each node. Calyx campanulate, 1–1.2 cm, pubescent, upper lobes semiorbicular, lower ones smaller. Corolla purple-red; vexillum orbicular, ca. 2.5 cm, emarginate; wings falcate, auriculate; keel oblong, curved, auriculate. Ovary tomentose. Pods linear-oblong, 8–12 × 2–2.5 cm, adpressed pubescent at first, beaked at tip, with extra rib 0.3 mm from sutural rib. Seeds brown, elliptic, 13–15 × 10 mm; hilum ca. 1 cm.

Locality: Hong Kong Island, Ma Shi Chau, Ma Wan, Lantau Island. *Y. S. Lau 1378*; *HK sheet 34216, 40708*.

Distribution: SE to S China; tropical coastal areas. One of the commonest and most characteristic sea-coast plants.

Ecology: Sandy beaches.

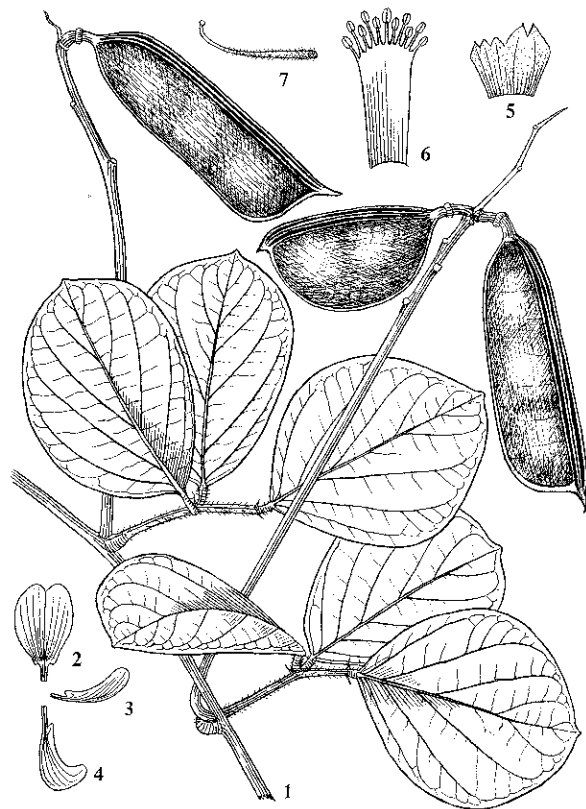


Figure 75. *Canavalia lineata* (Thunb.) DC.

1. fruiting branch; 2. vexillum; 3. wing; 4. keel; 5. calyx; 6. stamens; 7. pistil. (drawn by H. P. Yu)

## 37. *Pycnospora* R. Br. ex Wight & Arn. 密子豆屬

Subshrubs. Stipules free; stipels present. Leaves pinnately 3-foliolate, sometimes 1-foliolate; leaflets entire. Racemes terminal. Bracts scarious, caducous; bracteoles absent. Flowers small, often paired on rhachis. Calyx campanulate, deeply lobed, upper 2 lobes connate high up. Corolla quite exserted; petals subequal; vexillum suborbicular, base attenuate; wings obliquely oblong, adherent to keel; keel obtuse, slightly incurved with a narrow lateral appendage on each side. Stamens diadelphous; anthers uniform. Ovary sessile, with several ovules; styles filiform, incurved, stigma capitate. Pods oblong, turgid, transversely venose, 2-valved, continuous within. Seeds 6–10, small, subreniform.

Only one species, distributed in tropical Africa, Asia to E Australia; also in Hong Kong.

1. *Pycnospora lutescens* (Poir.) Schindl.

密子豆

(Fig. 76; Photo 166)

J. Bot. 64(762): 145. 1926; FRPS 41: 61. 1994; FGD 5: 278, fig. 148. 2003.

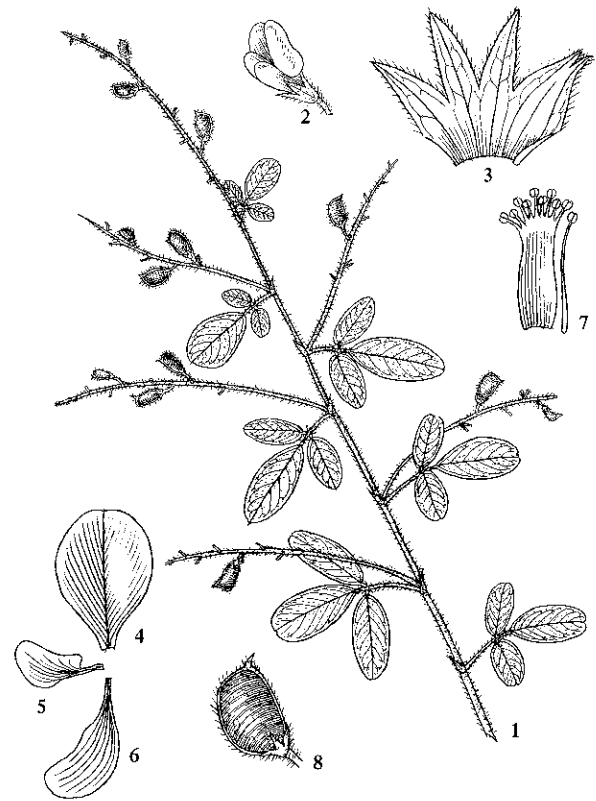
*Hedysarum lutescens* Poir., Encycl. 6: 417. 1804.*Pycnospora hedysaroides* R. Br., Prodr. 197. 1834, *nom. illeg.*; FHK 91. 1861; FKH 80. 1912.

Subshrub, 15–60 cm tall. Stems erect or prostrate. Branchlets grey pubescent. Leaves pinnately 3-foliolate; leaflets subleathery, obovate or obovate-oblong, terminal one 1.2–1.5 × 1–2.5 cm, base cuneate or slightly cordate, apex rounded or emarginate, lateral ones smaller, adpressed pubescent on both surfaces, lateral veins 4–7 on each side of midvein. Racemes terminal and axillary, 3–6 cm. Flowers paired on rachis. Calyx 2 mm, deeply lobed. Corolla purplish; vexillum elliptic, 4 mm, emarginate; wings and keel oblong, obtuse. Ovary tomentose. Pods oblong, 6–10 × 5–6 mm, turgid, thin hairy, marked with very fine transverse veins, black when mature. Seeds 6–8, small, reniform.

Locality: Pok Fu Lam, Shing Mun, Fung Yuen, Tai A Chau, Lamma Island. *L. T. Lo 313*; *Y. W. Lam 1023, 1182*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Jiangxi, Taiwan; tropical Asia, Australia.

Ecology: Grasslands. Flowering & fruiting: Aug.–Sep.

Figure 76. *Pycnospora lutescens* (Poir.) Schindl.

1. fruiting branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pod. (drawn by H. P. Yu)

38. *Glycine* Willd. 大豆属

Annual or perennial herbs. Stems twining, procumbent or erect. Stipules small, deciduous; stipels persistent. Leaves pinnately 3-foliolate; leaflets entire. Racemes axillary, sometimes flowers solitary. Bracts small, attached at base of pedicels; bracteoles 2, adnate to base of calyx. Calyx campanulate, 5-toothed, 2-lipped, upper 2 teeth connate up to middle, lower ones lanceolate to subulate. Corolla purple or white; petals clawed; vexillum large, suborbicular or obovate, weakly auriculate; wings narrow, adherent to keel; keel obtuse, shorter than wings. Stamens monadelphous or diadelphous. Ovary sessile; ovules several; styles slightly incurved, stigma capitate. Pods linear or oblong, weakly septate between seeds, dehiscent by twisted valves. Seeds 1–5, ovoid-elliptic, oblate or subglobular.

About nine or ten species in tropics and subtropics of the Old World; six species in China; one species cultivated in Hong Kong.

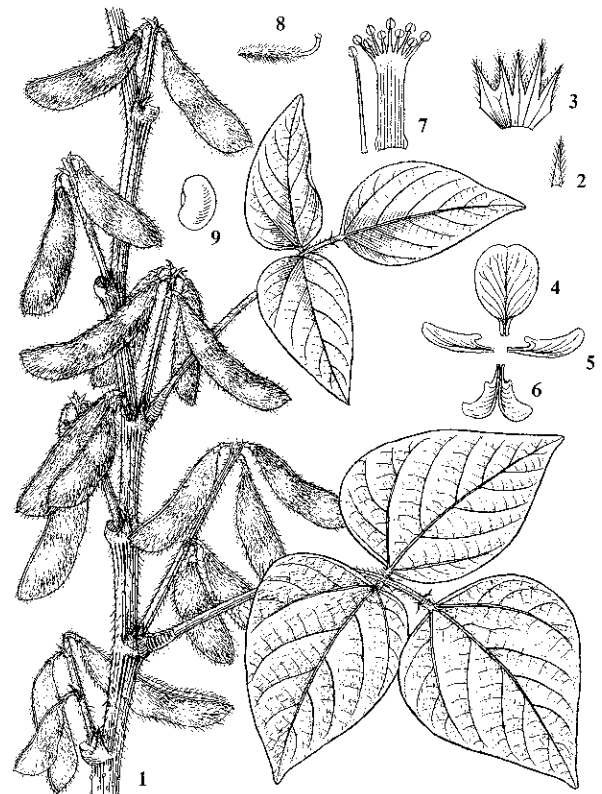
1. *Glycine max* (L.) Merr. 大豆 (Fig. 77; Photo 167)  
Interpr. Herb. Amboin. 274. 1919; FRPS 41: 234. 1995; FGD 5: 313. 2003.

*Phaseolus max* L., Sp. Pl. 725. 1753.

Annual herb, 30–90 cm tall. Stems erect, densely brown hirsute. Leaves pinnately 3-foliolate; leaflets rhomboid-ovate or broadly ovate, 7–13 × 3–7 cm, base broadly cuneate or rounded, apex acuminate, lateral ones smaller, usually sparsely hirsute on both surfaces or only on abaxial surface. Racemes axillary, 1–3.5 cm, 5–8-flowered. Calyx campanulate, 4–6 mm, brown hirsute, 5-toothed. Corolla purplish or white, 6–8 mm; petals clawed; vexillum obovate, emarginate, reflexed; wings and keel auriculate, shorter than vexillum. Stamens diadelphous. Ovary hairy. Pods oblong, 4–7.5 × 0.8–1.5 cm, slightly curved, densely yellow-brown hirsute. Seeds 2–5, greenish, yellow, elliptic, ovate to subglobular, 6–10 mm.

Locality: Cultivated. *L. T. Lo 617, 624*; *Y. S. Lau 3103*.

Distribution: Widely distributed in China; cultivated

Figure 77. *Glycine max* (L.) Merr.

1. fruiting branch; 2. bracteole; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. seed. (drawn by H. P. Yu)

elsewhere.

Ecology: Flowering: Jun.–Jul.; fruiting: Jul.–Sep.

Uses: Food (seeds).

### 39. *Aeschynomene* L. 合萌屬

Herbs or subshrubs. Stems erect or decumbent. Stipules medifixed caducous; stipels absent. Leaves even-pinnate; rachis ending in a short point; leaflets numerous, closely arranged, sensitive. Racemes axillary, several-flowered. Bracts paired, persistent; bracteoles adnate to calyx. Calyx usually 2-lipped, upper lip 2-lobed, lower lip 3-lobed. Corolla yellow, often lined with purple; petals clawed; vexillum large, orbicular; wings obliquely obovate or oblong, subequal to vexillum; keel slightly incurved, ± beaked. Stamens diadelphous (5+5), or connate at base; anthers uniform. Ovary stipitate, 2–many-ovuled; styles incurved; stigma terminal. Pods linear, stipitate, compressed, 2–many-segmented; segments flat or convex in middle, indehiscent or rarely dehiscent along dorsal suture.

Seed 1.

About 250 species distributed in tropical and subtropical regions all over the world; one species in China; it also occurs in Hong Kong.

**1. *Aeschynomene indica* L.** 合萌(田皂角)(Fig. 78; Photo 168)  
Sp. Pl. 2: 713. 1753; FHK 79. 1861; FKH 77. 1912; FRPS 41: 351. 1995; FGD 5: 347, fig. 192. 2003.

Annual herb or subshrub. Stems erect, 0.3–1 m tall, multibranched, glabrous. Leaves even-pinnate, rachis slender near base; leaflets 20–30 pairs, linear or oblong, 5–10 × 2–2.5 mm, base oblique, entire, apex obtuse or emarginate, mucronate, densely glandular adaxially, ± glaucous abaxially. Racemes axillary, 1.5–2 cm, 1–4-flowered. Calyx 4–6 mm, 2-lipped, glabrous. Corolla yellowish, lined with purple, 8–9 mm; vexillum suborbicular, 7–8 mm broad, shortly clawed; wings oblong, long-clawed; keel shorter than wings. Stamens diadelphous. Ovary linear. Pods linear, 3–4 × 0.3 cm, ventral suture straight, dorsal suture sinuate; segments 4–8(–10), smooth or finally papillose on face, indehiscent. Seeds black brown, reniform, 3–3.5 × 2.5–3 mm.

Locality: Common in Hong Kong. *H. C. Tang* 1989; *Y. S. Lau* 911, 1996.

Distribution: Widely distributed in China; pantropics.

Ecology: Wet and open places. Flowering: Jul.–Aug.; fruiting: Aug.–Oct.

Uses: Green manure, medicinal (folklore), seeds poisonous.

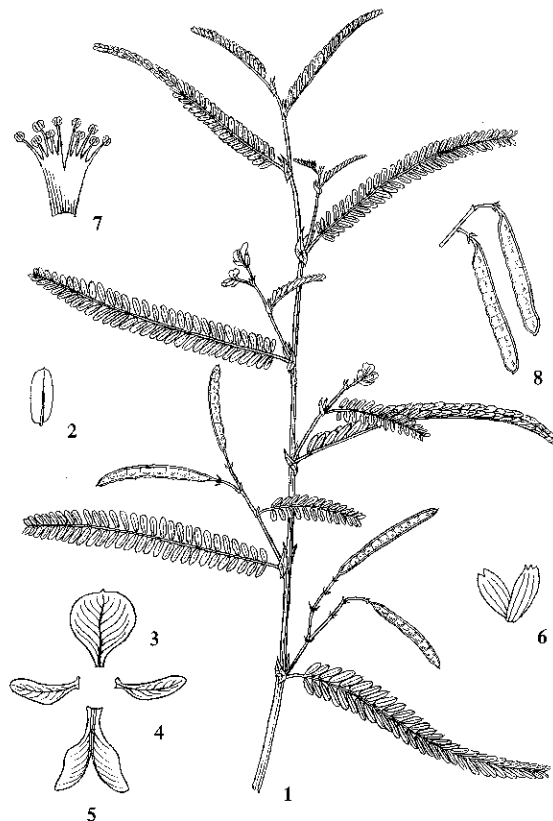


Figure 78. *Aeschynomene indica* L.

1. upper portion of plant; 2. leaflet; 3. vexillum; 4. wing;  
5. keel; 6. calyx; 7. stamens; 8. pods. (drawn by H. P. Yu)

### 40. *Indigofera* L. 木藍屬

Shrubs or herbs, rarely small trees, adpressed pubescent, with sparse medifixed (“T”-form) hairs, sometimes glandular hairy or with glands. Stipules deciduous or persistent; stipels present or absent. Leaves odd-pinnate, rarely digitately 3-foliolate or simple; leaflets usually opposite, rarely alternate, entire. Flowers in axillary racemes or clusters, sometimes in spikes or panicles. Bracts caducous. Calyx campanulate, 5-toothed, subequal or lower one longer. Corolla purple or pink, rarely white or yellow, caducous; vexillum broadly elliptic, ovate or suborbicular, apex obtuse, emarginate or mucronate, shortly clawed, often persisting for a time; wings oblong or obovate, narrower, auriculate, slightly cohering with keel; keel lanceolate or oblanceolate, straight or curved, gibbous on each side and often spurred. Stamens diadelphous; anthers uniform with glandular tips. Ovary sessile; ovules 1–numerous; styles glabrous; stigma capitate, often penicillate. Pods linear or oblong, straight or curved, terete, 3–4-sided, or plano-compressed transversely between seeds. Seeds estrophiolate.

More than 700 species distributed in tropical and subtropical regions, mostly in Africa; 81 species in China; five species in Hong Kong.

*Indigofera decora* Lindl. was recorded by Bentham (FHK 77. 1861), based on Col. Eyre’s drawings, but no specimen has been found, so it is not described here.

- 1a. Leaflets alternate; pods 4-angulate..... 1. *I. spicata*  
1b. Leaflets opposite; pods not 4-angulate.  
2a. Leaflets hairy on abaxial surface; pods 4–5 cm ..... 2. *I. venulosa*  
2b. Leaflets hairy on both surfaces; pods 1–3 cm.

- 3a. Plant long hirsute; vexillum obovate-elliptic..... 3. *I. hirsuta*  
 3b. Plant appressed pubescent, with medifixed hairs; vexillum broadly obovate.  
 4a. Leaflets apex obtuse; pods slightly curved, 2.5–3 cm; seeds 8–12..... 4. *I. tinctoria*  
 4b. Leaflets apex acute; pods falcate, 1–1.5 cm; seeds 5–8..... 5. *I. suffruticosa*

**1. *Indigofera spicata* Forssk. 穗序木藍(鋪地木藍)**

Fl. Egypt.-Arab. 138. 1775; FRPS 40: 316. 1994; FGD 5: 256. 2003.

*Indigofera hendecaphylla* Jacq., Collectanea 2: 358. 1788; FKH 76. 1861, 'endecaphylla'; FKH 75. 1912, 'endecaphylla'.

Erect or prostrate herb, 15–40 cm tall. Stems simple or branched at base, adpressed pubescent, with medifixed hairs. Leaves odd-pinnate, 2.5–7.5 cm; leaflets 11–19, alternate, obovate or oblanceolate, sometimes linear, 8–20 × 4–8 mm, base broadly cuneate, apex obtuse or truncate, glabrous adaxially, sparsely hirsute, with medifixed hairs abaxially. Racemes as long as leaves. Calyx 3–3.5 mm. Corolla violet-purple; vexillum broadly ovate, 5–6 mm; wings ca. 4 mm; keel ca. 5 mm. Pods linear, 10–20 mm, straight, 4-angulate, glabrous. Seeds 8–10.

Locality: Ngau Chi Wan, Sha Tin. *L. T. Lo* 501, 544; *Y. S. Lau* 3161.

Distribution: Guangdong, Yunnan, Taiwan; tropical Asia, Africa.

Ecology: Open areas along roadsides. Flowering & fruiting: Apr.–Nov.

**2. *Indigofera venulosa* Champ. ex Benth. 脈葉木藍**

(Photo 169)

Hooker's J. Bot. Kew Gard. Misc 4: 44. 1852; FKH 75. 1912; FRPS 40: 266. 1994; FGD 5: 257. 2003.

Erect shrub, 30–60 cm tall. Stems terete, glabrous. Leaves odd-pinnate, 10–15 cm; leaflets 5–13, opposite, ovate, rhombic or suborbicular, 1.3–5 × 1–2.7 cm, base cuneate to rounded, apex obtuse or acute, glabrous adaxially, sparsely covered with white medifixed hairs abaxially; veinlets prominent. Racemes axillary, slightly shorter than leaves, lax-flowered. Calyx cupulate, 3–3.5 mm, teeth deltoid. Corolla purplish; vexillum obovate-oblong or oblong, 11–14 mm, base shortly clawed, apex obtuse or emarginate, densely covered with white medifixed hairs abaxially; wings narrow, equal to vexillum, margin ciliate; keel slightly shorter than wings, hairy. Anthers ovate-oblong, barbate on both ends. Ovary glabrous. Pods terete, 4–5 cm. Seeds 10–12.

Locality: Ma On Shan, Sunset Peak. *H. C. Tang* 1308; *Y. S. Lau* 2986; *K. Y. Tam* 111.

Distribution: Guangdong, Taiwan.

Ecology: Forests. Flowering: Mar.–May.

Notes: The type specimen was collected between 1847 and 1850 by J. G. Champion from Victoria Peak.

**3. *Indigofera hirsuta* L. 硬毛木藍(剛毛木藍)**

(Fig. 79; Photo 170)

Sp. Pl. 751. 1753; FKH 76. 1861; FKH 75. 1912; FRPS 40: 312. 1994; FGD 5: 258. 2003.

Erect or trailing subshrub, 30–100 cm tall, multibranched. Branches, petioles and inflorescences with spreading long stiff hairs. Leaves odd-pinnate, 2.5–10 cm; leaflets 7–19, obovate or elliptic, 3–3.5 × 1–2 cm, base broadly cuneate, apex obtuse, adpressed pubescent on both surfaces, more dense on abaxial surface. Racemes 10–25 cm, densely flowered. Flowers small. Calyx ca. 4 mm, teeth linear. Corolla red; petals 4–5 mm, tomentose abaxially, clawed; vexillum obovate-elliptic; wings equal to keel, spurs small. Pods linear-cylindrical, 15–20 × 2.5–8 mm, with spreading long stiff hairs. Seeds 4–8.

Locality: Hong Kong Island, Tsuen Wan, Tai Lam Chung, Castle Peak, Lantau Island. *H. C. Tang* 2007; *Y. S. Lau* 363; *L. T. Lo* 174.

Distribution: Guangdong, Fujian, Zhejiang, Anhui; Japan.

Ecology: Forests and thickets along streams. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

**4. *Indigofera tinctoria* L. 木藍(藍靛)**

Sp. Pl. 751. 1753; FKH 75. 1912; FRPS 40: 303. 1994; FGD 5: 258. 2003.

Erect subshrub, 0.5–1 m tall, few-branched, covered with silvery medifixed hairs. Leaves odd-pinnate, 2.5–11 cm; leaflets 9–13, obovate-oblong or obovate, 1.5–3 × 0.5–1.5 cm, base broadly cuneate or rounded, apex obtuse or emarginate, covered with medifixed hairs on both surfaces, or subglabrous adaxially. Racemes 2.5–5 cm, lax-flowered to base. Calyx campanulate, ca.

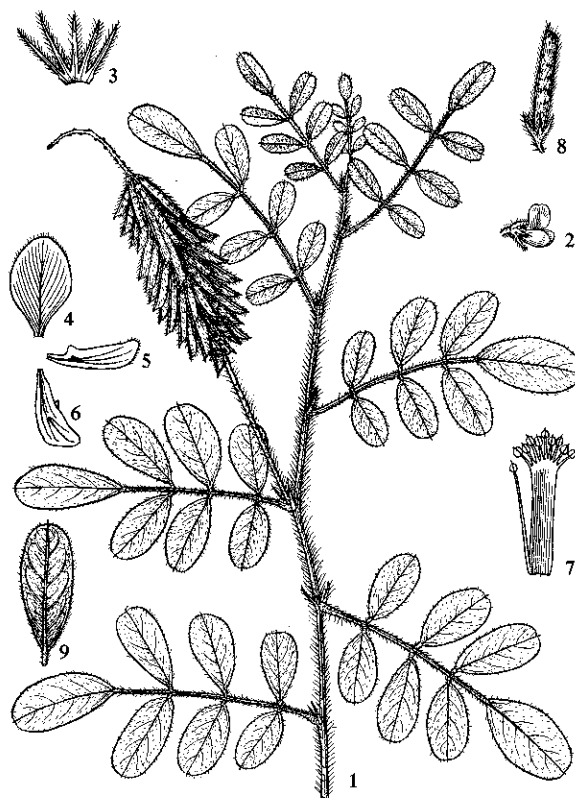


Figure 79. *Indigofera hirsuta* L.

1. fruiting branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pod; 9. leaflet. (drawn by H. P. Yu)



1.5 mm, teeth triangular. Corolla red; vexillum broadly obovate, 4–5 mm, hairy abaxially, shortly clawed; wings 4 mm; keel equal to vexillum. Ovary glabrous. Pods linear, 2.5–3 cm, tomentose. Seeds 5–10, subrectangular, ca. 1.5 mm.

Locality: Sha Tin, Fo Tan, Lantau Island. *Y. S. Lau* 2974; *L. T. Lo* 500; *HK sheet* 6828.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Anhui, Taiwan; widely distributed in Asia, tropical Africa, also cultivated in America.

Ecology: Open fields. Flowering & fruiting: Nearly all year round.

Uses: Medicinal (folklore), materials (dye).

### 5. *Indigofera suffruticosa* Mill. 野青樹

(Photo 171)

Gard. Dict. (ed. 8) no 2. 1768; FRPS 40: 303. 1994; FGD 5: 258, fig. 140. 2003.

*Indigofera anil* L., Mant. 272. 1771; FHK 77. 1861; FKH 75. 1912.

Erect subshrub, 0.8–1.5 m tall, few-branched, covered with adpressed medifixed hairs. Leaves odd-pinnate, 5–10 cm; leaflets 9–15, oblong or oblanceolate, 1–4 × 0.5–1.5 cm, base broadly cuneate or subrounded, apex acute, densely covered with medifixed hairs or glabrescent adaxially, covered with adpressed medifixed hairs abaxially. Racemes spicate, 2–3 cm. Calyx campanulate, ca. 1.5 mm, hairy abaxially. Corolla red; petals clawed; vexillum broadly obovate, 4–5 mm, densely hairy abaxially; wings equal in length with keel; keel spurred. Ovary densely hairy on ventral suture. Pods falcate-curved, 1–1.5 cm, reflexed. Seeds 6–8, shortly cylindrical, truncate on both ends.

Locality: Cultivated or naturalized. *Y. S. Lau* 239, 2042; *Y. W. Lam* 869.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangsu, Zhejiang, Fujian, Taiwan (cultivated); native to tropical America, cultivated and naturalized elsewhere.

Ecology: Flowering: Mar.–May; fruiting: Jun.–Oct.

Uses: Medicinal (folklore), materials (dye).

## 41. *Uraria* Desv. 狸尾豆屬

Perennial herbs, subshrubs or shrubs. Stipules and stipels present. Leaves simple, pinnately 3-foliolate or odd-pinnate; leaflets often large, reticulate-venose. Inflorescences racemose, terminal or axillary, rarely paniculate. Bracts imbricate, persistent or deciduous; bracteoles absent. Flowers paired in each bract; pedicels hooked-inflexed at apex after flowering. Calyx 5-lobed, the upper 2 lobes shorter, sometimes more or less connate, lower ones longer, bristle-like. Petals shortly clawed; vexillum orbicular or obovate; wings narrow, adhering to keel, auriculate; keel obtuse, slightly upcurved. Stamens diadelphous; anthers uniform. Ovary sessile, 2–10-ovuled; styles filiform, incurved; stigma capitate. Pods compressed, divided transversely into rounded segments, each folded over the other or segments ± triangular and becoming coiled into a flat circle.

About 20 species distributed in tropical Africa, Asia and Australia; nine species in China; three species in Hong Kong.

- 1a. Stems creeping; leaflets (1–)3 .....1. *U. lagopodioides*  
 1b. Stems erect; leaflets 3–7.  
 2a. Leaflets linear, 5–10 mm wide .....2. *U. picta*  
 2b. Leaflets oblong, more than 2 cm wide .....3. *U. crinita*

### 1. *Uraria lagopodioides* (L.) Desv. ex DC.

狸尾豆 (Fig. 80; Photo 172)

Mém. Soc. Linn. Paris 4: 309. 1826; FKH 80. 1912; FRPS 41: 69. 1995; FGD 5: 281, fig. 151. 2003.

*Hedysarum lagopodioides* L., Sp. Pl. 2: 1198. 1753.

Decumbent or spreading herb, up to 60 cm tall. Leaves pinnately 3-foliolate, rarely simple; leaflets papery, terminal one suborbicular, elliptic or ovate, mucronate, base rounded or cordate, lateral ones smaller, grey-yellow pubescent abaxially, lateral veins 5–7 on each side of midvein. Racemes terminal, 3–6 cm, densely flowered. Calyx 5-lobed, 2 upper lobes triangular, ca. 2 mm, 3 lower ones subulate, bristle like, three times as long as upper ones. Corolla purplish, 6 mm; vexillum obovate; wings adherent to longer upcurved keel. Stamens diadelphous. Ovary glabrous. Pods enclosed in calyx, segments 1–2(–3), brown, elliptic, 2.5 mm, glabrous.

Locality: Tsim Sha Tsui, Shing Mun, Tai Mo Shan, Lantau Island, Ping Chau. *Y. S. Lau* 913; *Y. W. Lam* 1138; *HK sheet* 36071.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan,

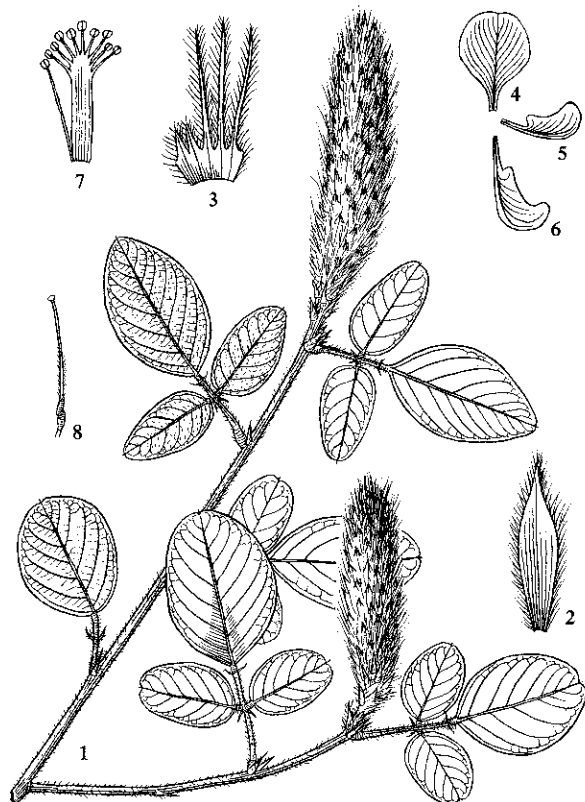


Figure 80. *Uraria lagopodioides* (L.) Desv. ex DC.

1. flowering branch; 2. bract; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil. (drawn by H. P. Yu)

Hunan, Jiangxi, Fujian, Taiwan; tropical Asia, Australia.

Ecology: Thickets. Flowering & fruiting: Aug.–Nov.

**2. *Uraria picta* (Jacq.) Desv. ex DC. 美花狸尾豆**

Prodr. 2: 324. 1825; FKH 80. 1912; FRPS 41: 68. 1995; FGD 5: 283. 2003.

*Hedysarum pictum* Jacq., Collectanea 2: 262–263. 1788.

Subshrub or shrub, 1–2 m tall, few-branched, shortly grey-hirsute. Stipules 1 cm, caudate, striate, grey ciliate. Leaves odd-pinnate; leaflets 5–7(–9), linear-oblong or linear-lanceolate, 6–12 × 1–2 cm, base rounded, apex acuminate, pubescent on veins of both surfaces. Racemes terminal, 10–30 cm. Bracts lanceolate, ca. 2.5 cm, pilose; pedicels becoming hooked in fruit. Calyx 5-lobed, 2 upper lobes subulate, shorter, 3 lower lobes lanceolate, bristle-like, slightly longer than upper ones. Corolla violet, slightly exerted from calyx; vexillum orbicular, 6–8 mm, base clawed; wings earlike, 4–7 mm; keel spatulate, equal to wings, upcurved. Stamens diadelphous. Ovary glabrous. Pods silver grey, glabrous, segments 3–5, ovate, 3 × 2 mm, black with whitish reticulations, folded back on each other.

Locality: New Territories. (*vide* FKH 80. 1912)

Distribution: Hainan, Guangxi, Guizhou, Yunnan, Sichuan, Taiwan; tropical Asia and Africa.

Ecology: Open grassy fields, wastelands. Flowering: Jul.

Uses: Medicinal (folklore).

**3. *Uraria crinita* (L.) Desv. ex DC. 貓尾草**

(Photos 173–174)

Prodr. 2: 324. 1825; FKH 81. 1861; FKH 80. 1912; FRPS 41: 68. 1995; FGD 5: 283. 2003.

*Hedysarum crinitum* L., Mant. Pl. 1: 102. 1767.

Subshrub, 1–1.5 m tall, few-branched, grey pubescent with minute hooked hairs. Stipules broadly lanceolate, with long points. Leaves odd-pinnate, often 3-foliolate at lower part of stem; leaflets subleathery, oblong, ovate-lanceolate or ovate, terminal one 6–15 × 3–8 cm, lateral ones smaller, base rounded or subcordate, apex acute, tomentose on veins of both surfaces, lateral veins 6–9 on each side of midvein. Racemes terminal, 15–30 cm, densely grey-white hirsute. Bracts ovate or lanceolate, up to 3 cm, white ciliate. Calyx shallow cup-like, short hirsute, 2 upper lobes 3 mm, 3 lower lobes 3.5 mm. Corolla purple, ca. 6 mm. Pods slightly tomentose; segments 2–4, elliptic, reticulate.

Locality: Hong Kong Island, Ma On Shan, Shing Mun, Tai Po Kau, Ta Kwu Ling, Lantau Island, Tsing Yi, Po Toi Islands. *Y. S. Lau* 326, 885; *Y. W. Lam* 1068.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangxi, Fujian; tropical Asia, Australia.

Ecology: Dry open fields. Flowering & fruiting: Apr.–Sep.

Uses: Medicinal (folklore).

**42. *Tephrosia* Pers. 灰毛豆屬**

Herbs, shrublets, or shrubs. Stipules present; stipels absent. Leaves odd-pinnate; leaflets opposite, entire, often silky hairy abaxially. Racemes terminal, leaf-opposed, or axillary. Bracts present; bracteoles absent. Flowers paired or clustered at nodes of rachis. Calyx campanulate, 5-toothed, teeth or lobes subequal or the upper 2 more connate. Corolla red, purple or white; petals clawed; vexillum suborbicular, hairy abaxially; wings obliquely obovate or oblong, slightly adherent to keel; keel incurved. Stamens diadelphous. Anthers uniform. Ovary sessile, with many ovules; styles upcurved; stigma capitate. Pods linear or oblong, compressed, 2-valved, not septate between seeds, tip beaked. Seeds oblong, sometimes with a small strophiole.

About 400 species distributed in tropical and subtropical regions, mostly in Africa; 11 species in China; two species in Hong Kong.

- 1a. Flowers white; pods 5.5–6 × 0.5 cm, densely yellow sericeous ..... 1. *T. vestita*  
 1b. Flowers purplish; pods 4–5 × 0.4 cm, sparsely adpressed pubescent ..... 2. *T. purpurea*

**1. *Tephrosia vestita* Vogel 黄灰毛豆 (黄毛灰藥)**

Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 15. 1843; FKH 76. 1912; FRPS 40: 217. 1994; FGD 5: 247, fig. 136. 2003.

Subshrub, 1–2 m tall. Young branches angulate, densely yellow-white tomentose. Leaves odd-pinnate, ca. 10 cm; leaflets 3–5(–6) pairs, obovate-elliptic to oblong, 2–4 × 1–1.8 cm, base cuneate, apex rounded or emarginate, glabrous adaxially, densely silky hairy abaxially, lateral veins 15–20 on each side of midvein. Racemes terminal or leaf-opposed at branch end, ca. 6 cm. Flowers 2–3-clustered at nodes of rachis. Calyx ca. 3 mm, densely yellow pubescent abaxially, teeth triangular, lower one longer. Corolla white; vexillum suborbicular, ca. 1.5 cm, densely yellow pubescent abaxially; wings obovate-oblong; keel ovate. Ovary densely sericeous. Pods straight, 5.5–6 × 0.5 cm, densely sericeous, suture thickened. Seeds 10–12, black, reniform.

Locality: Lantau Island. *HK sheet* 6859.

Distribution: Hainan, Guangdong, Jiangxi; SE Asia to New Guinea.

Ecology: Thin forests or grassy slopes. Flowering: Jun.–Oct.; fruiting: Jul.–Nov.

2. *Tephrosia purpurea* (L.) Pers. 灰毛豆(紅花灰葉) (Fig. 81)  
Syn. Pl. 2(2): 329. 1807; FHK 78. 1861; FKH 76. 1912; FRPS 40:  
219. 1994; FGD 5: 248, fig. 137. 2003.

Subshrub, 30–60 cm tall, many-branched, glabrous or pubescent. Leaves odd-pinnate, 7–15 cm; leaflets 4–8 pairs, elliptic-oblong or oblong-oblancheolate, 1.5–3.5 × 0.5–1.4 cm, apex obtuse or emarginate and mucronate, glabrous adaxially, adpressed pubescent abaxially, lateral veins 7–12 on each side of midvein. Racemes terminal or axillary, 10–15 cm. Flowers 2–4-clustered. Calyx broadly campanulate, 3–4 mm, pubescent, teeth subequal. Corolla purplish, ca. 8 mm; vexillum suborbicular, pubescent abaxially; wings and keels oblong. Ovary densely pubescent. Pods 4–5 × 0.4 cm, sparsely adpressed pubescent. Seeds 6–10, grey-brown with red-brown spots; elliptic, 3–5 mm.

Locality: Cape D' Aguilar. (fide FKH 76. 1912).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; widely distributed in the tropics.

Ecology: Seashores. Flowering: Mar.–Oct.

Uses: Green manure.

### 43. *Clitoria* L. 蝶豆屬

Perennial twining herbs or subshrubs, rarely trees. Stipules and stipels persistent. Leaves odd-pinnate or 3-foliolate, rarely 1-foliolate; leaflets entire. Flowers in racemes or 1–2 in axils of leaves, or on old wood. Bracts and bracteoles persistent. Calyx tubular, 5-toothed, teeth triangular or lanceolate, upper 2 subconnate. Corolla exserted from calyx, purplish, blue, white or red; vexillum much larger than petals, erect, emarginate, clawed, not appendaged; wings falcate-oblong, clawed, spreading, adherent in middle to keel; keel shorter than wings, incurved. Stamens diadelphous or monadelphous; anthers alternately dorsifixed and basifixed. Ovary stipitate, many-ovuled; styles elongated, incurved, bearded lengthwise adaxially. Pods stipitate, linear or oblong, compressed, slightly thickened on upper or on both sutures, beaked by persistent style. Seeds subglobose or compressed.

About 60 species distributed in tropical and subtropical regions especially America; three species in China; two species in Hong Kong.

- 1a. Erect subshrub; leaflets 3 ..... 1. *C. hanceana*  
1b. Climber; leaflets 5–7 ..... 2. *C. ternatea*

1. *Clitoria hanceana* Hemsl. 廣東蝶豆(韓氏蝶豆) (Fig. 82)  
J. Linn. Soc. Bot. 23(154): 187. 1887; FKH 82. 1912; FRPS 41:  
263. 1993; FGD 5: 323. 2003.

Subshrub with fleshy spindle-shaped roots. Stems terete, grey pubescent. Leaves pinnately 3-foliolate; leaflets subequal or lateral ones smaller, oblong, 6.5–14 × 2.8–5.5 cm, base obtuse or sometimes subcuneate, apex acute or rounded, often apiculate, glabrous adaxially, adpressed pubescent abaxially; lateral veins 9–12 on each side of midvein. Flowers 2–3 or 1 in axils of leaves. Calyx 2 cm, 5-toothed, striate-venose, lobes about equal to tube, hairy. Corolla white or yellowish, ca. 3 cm; vexillum striate-venose, tomentose abaxially; wings and keel smaller, clawed. Stamens diadelphous. Ovary pubescent. Pods linear-oblong, 3.5–6 × 0.6 cm, long-beaked. Seeds 2–7, black, elliptic, 4 × 3 mm.

Locality: Kowloon. *W. J. Tutcher* 5357, 5609.

Distribution: Guangdong, Guangxi; Vietnam, Cambodia, Thailand.

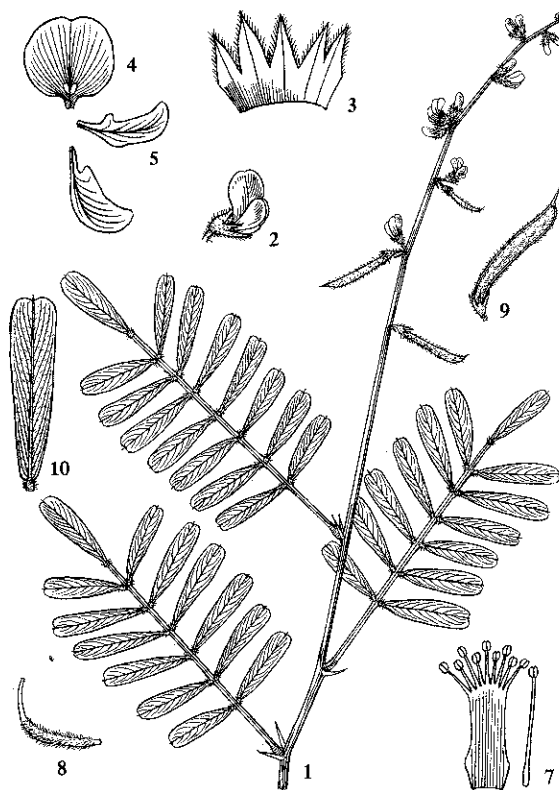


Figure 81. *Tephrosia purpurea* (L.) Pers.

1. part of plant; 2. flower; 3. calyx; 4. vexillum;  
5. wing; 6. keel; 7. stamens; 8. pistil; 9. pod; 10. leaflet  
(enlarged). (drawn by H. P. Yu)

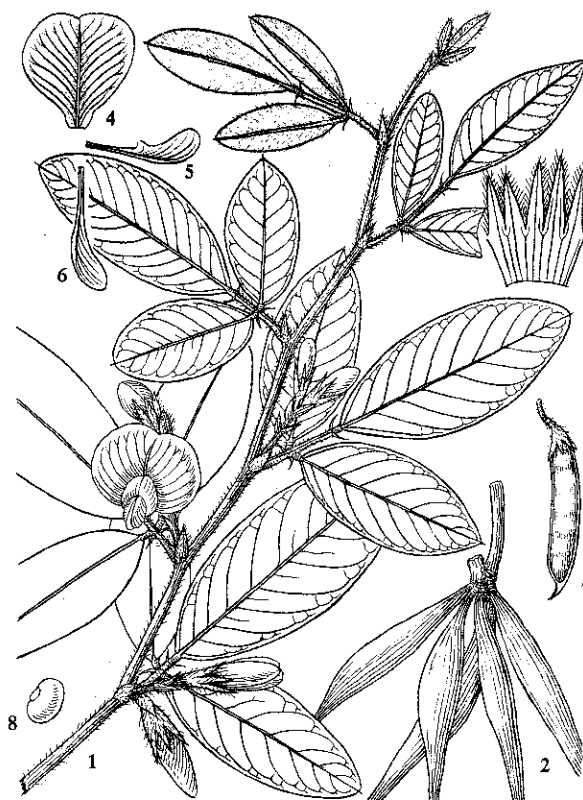


Figure 82. *Clitoria hanceana* Hemsl.

1. flowering branch; 2. spindle-shaped roots; 3. calyx;  
4. vexillum; 5. wing; 6. keel; 7. pod; 8. seed. (drawn by  
H. P. Yu)

Ecology: Thickets. Flowering: Jun.; fruiting: Oct.  
Uses: Medicinal (folklore).

## 2. *Clitoria ternatea* L. 蝶豆

(Photo 175)

Sp. Pl. 753. 1753; FKH 82. 1912; FRPS 41: 262. 1995; FGD 5: 322, fig. 176. 2003.

Herbaceous climber. Stems and branchlets slender, adpressed pubescent. Leaves odd-pinnate; leaflets 5–7(–9), elliptic or subovate, 2.5–5 × 1.5–3.5 cm, base obtuse, apex obtuse, emarginate, mucronate, sparsely adpressed pubescent or sometimes glabrous. Flowers large, solitary, axillary. Bracteoles suborbicular, 5–8 mm in diam. Calyx 1.5–2 cm, 5-toothed, teeth lanceolate. Corolla blue, pink, white, up to 5.5 cm; vexillum obovate, 3 cm in diam., white or with orange mark at center; wings and keel smaller than vexillum. Stamens diadelphous. Ovary pubescent. Pods linear, 5–11 × 1 cm, flat, beaked. Seeds 6–10, black, oblong, 6 × 4 mm.

Locality: Cultivated. *H. C. Tang* 403; *Y. S. Lau* 2322; *K. Y. Chan* 169.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Zhejiang, Fujian, Taiwan (cultivated); native to India.

Ecology: Flowering & fruiting: Jun.–Nov.

Uses: Green manure, ornamental, seed poisonous.

## 44. *Rhynchosia* Lour. 鹿藿屬

Shrublets or herbs, climbing, prostrate, or rarely erect. Stipules ovate or lanceolate. Leaves pinnately, rarely subdigitately 3-foliolate, exstipellate or minutely stipellate; leaflets with scattered, resinous dots abaxially. Racemes axillary, rarely flowers solitary. Flowers yellow, vexillum often lined, rarely purple. Bracts caducous; bracteoles absent. Calyx 5-lobed, upper 2 lobes more or less connate. Corolla inclusive or exerted; vexillum obovate or orbicular, spreading or reflexed, auriculate at base; wings narrow; keel incurved at apex. Stamens diadelphous; anthers uniform. Ovary sessile, (1–)2-ovuled; styles incurved adaxially, filiform or thickened; stigma small, terminal. Pods compressed, obliquely orbicular, oblong or falcate, dehiscent by 2 valves, continuous within or rarely septate. Seeds (1–)2, compressed globose or subreniform, hilum lateral, funicle central or scarcely oblique, strophiole thick, small or absent.

About 200 species distributed in tropical and subtropical regions, mainly in Asia; 13 species in China; one species in Hong Kong.

### 1. *Rhynchosia volubilis* Lour. 鹿藿 (Fig. 83; Photo 176)

Fl. Cochinch. 2: 460. 1790; FHK 90. 1861; FKH 85. 1912; FRPS 41: 334. 1994; FGD 5: 342, fig. 187. 2003.

Slender herbaceous twiner, more or less villous or pubescent. Stems slightly angulate. Stipules lanceolate, 3–5 mm. Leaves pinnately or digitately 3-foliolate; leaflets papery, terminal one rhomboid or obovate-rhomboid, 3–8 × 3–5.5 cm, base rounded or broadly cuneate, apex obtuse or acute, often mucronate, grey or yellowish pubescent on both surfaces, especially dense and with yellow-brown glands on abaxial surface; basal veins 3; lateral leaflets smaller, usually oblique. Racemes 1–3, axillary, 1.5–4 cm. Flowers 1 cm. Calyx campanulate, ca. 5 mm, lobes lanceolate, pubescent and glandular abaxially. Corolla yellow; vexillum suborbicular, incurvedly auriculate; wings obovate-oblong, auriculate one side; keel rostrate. Stamens diadelphous. Pods red-purple, oblong, 1–1.5 × 0.8 cm, very flat, apex rostellate, slightly constricted between seeds, slightly pubescent or subglabrous. Seeds usually 2, black, elliptic or subreniform, shining.

Locality: Aberdeen, Sha Tin, Tai Po, Lam Tsuen, Fung Yuen, Fanling, Ping Chau. *Y. S. Lau* 1056; *L. T. Lo* 395; *Y. W. Lam* 278.

Distribution: Areas S of Changjiang River; Korea, Japan, Vietnam.

Ecology: Thickets, grassy banks. Flowering: May–Aug.; fruiting: Sep.–Dec.

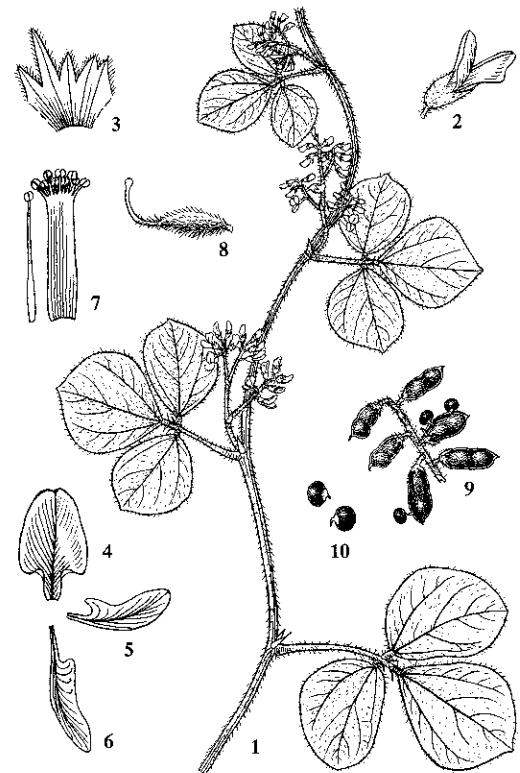


Figure 83. *Rhynchosia volubilis* Lour.

1. flowering branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. pods; 10. seeds. (drawn by H. P. Yu)

## 45. *Dunbaria* Wight & Arn. 野扁豆屬

Prostrate or twining herbs. Stipules deciduous or absent, stipels minute or absent. Leaves pinnately 3-foliolate; leaflets entire, bearing reddish glandular dots especially abaxially. Racemes axillary, rarely flowers solitary. Bracts deciduous or absent; bracteoles absent. Calyx campanulate, upper 2 lobes ± connate into a lip; vexillum suborbicular, erect or spreading, obovate or oblong, base auriculate; wings obliquely obovate or oblong; keel blunt, incurved. Stamens diadelphous, 1 opposite to vexillum free, others connate; anthers uniform. Ovary stipitate or sessile, several-ovuled; styles filiform, incurved, glabrous, stigma capitate. Pods linear or linear-oblong.

compressed, straight or curved, septate between seeds, hilum surrounded by rim-like aril.

About 20 species distributed in tropical Asia and Australia; nine species in China; five species in Hong Kong.

- 1a. Flowers larger; vexillum 15–18 mm.  
 2a. Leaflets longer than wide, 5–8 × 3–4 cm ..... 1. *D. crinita*  
 2b. Leaflets often as long as wide, or wider than long, 1.5–8 × 2–7 cm.  
 3a. Leaflets broad-ovate, not trilobed, 3.5–8 × 2.5–7 cm; pods 5–8 cm long ..... 2. *D. podocarpa*  
 3b. Leaflets rhomboid to deltoid, more or less trilobed, 1.5–3(–5) × 2–4(–5) cm; pods 3.5–4.5 cm long ..... 3. *D. villosa*  
 1b. Flowers smaller; vexillum 6–12 mm.  
 4a. Leaflets ovate, longer than wide, 6–9(–13) × 3–5(–9) cm; vexillum 12 × 10 mm; pods 5–6 cm, with bulbous-based hairs ..... 4. *D. fusca*  
 4b. Leaflets rhomboid, often as wide as long; 1–2(–4.5) × 1–3(–3.5) cm; vexillum 6–8 × 6–8 mm; pods 3–4(–6) cm, without bulbous-based hairs ..... 5. *D. punctata*

**1. *Dunbaria crinita* (Dunn) Maesen 簇毛野扁豆**

Wagening. Agr. Univ. Pap. 98-1: 26. 1998.

*Atylosia crinita* Dunn, J. Bot. 47(6): 198. 1909.

*Dunbaria flavescens* Nguyen van Thuan, Adansonia, ser. 2, 16-4: 512. 1977; Thuan, Fl. Cambodge, Laos, Vietnam 17: 124. 1979.

Perennial twining herb. Branches striate. Leaves pinnately 3-foliolate; terminal leaflet ovate to ovate-elliptic, 5–8 × 3–4 cm, base rounded, apex acute, lateral ones smaller, obliquely ovate or ovate-elliptic, densely velvety with short hairs adaxially, and with many reddish vesicular glands on both surfaces. Racemes up to 7 cm, 10–20-flowered or more. Calyx glandular, tube ca. 4 mm, teeth triangular. Vexillum orbicular, 15–18 × 15 mm, base clawed, biauriculate, apex emarginate; wings obovate, equal to keel in length; keel rostrate. Ovary linear, grey silky-hairy, glandular. Stamens diadelphous. Pods linear, 4–5 × 0.6–0.7 cm, hairy. Seeds 6–8, brown to brown with black mosaic, orbicular, 4 × 4 mm.

Locality: Cultivated. *S. Y. Hu 10901* (CUHK); *Y. W. Taam 1615* (A, G, NY, US); *J. P. W. Woo 369* (P).

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Weedy place. Flowering: Aug.–Sep.; fruiting: Oct.

Notes: Previously cultivated in Hong Kong Botanical Gardens, grown from seeds from Hainan.

**2. *Dunbaria podocarpa* Kurz 長柄野扁豆**

Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43(2): 185. 1874; FKH 85. 1912; FRPS 41: 312. 1995; FGD 5: 338. 2003.

Perennial twining herb. Stems 1–4 m, densely grey pubescent, striate. Leaves pinnately 3-foliolate; terminal leaflet rhombic, 3–4 × 3–4 cm, base obtuse, apex acute, rounded or subtruncate, lateral ones smaller, obliquely ovate, grey pubescent on both surfaces, with red glandular dots abaxially; trinerved. Racemes short, 1–2(–4)-flowered. Calyx campanulate, teeth ovate-lanceolate, pubescent and orange glandular-dotted. Corolla yellow, 1.5–2 cm; vexillum transversely elliptic, base 2-auriculate; wings narrowly elliptic, base with incurved auricle at one side; keel strongly curved, long beaked. Stamens diadelphous. Ovary linear, densely silky villose and dotted with orange glands. Pods linear-oblong, 5–8 × 0.9–1.1 cm, densely silky villose and dotted with orange glands, apex long beaked. Seeds 7–11, black, suborbicular, ca. 4 mm in diam., flat.

Locality: Mount Gough, Tai Po, Shek Kong, Fanling. *Y. S. Lau 802, 892*; *Y. W. Lam 1680*.

Distribution: Hainan, Guangdong, Guangxi, Fujian; India, Myanmar, Vietnam, Laos, Cambodia, Thailand, Malaysia, Indonesia.

Ecology: Thickets. Flowering & fruiting: Jun.–Nov.

**3. *Dunbaria villosa* (Thunb. ex Murray) Makino 野扁豆**

Bot. Mag. (Tokyo) 16(180): 35. 1902; FRPS 41: 311. 1995; Maesen, Wageningen Agr. Univ. Pap. 98-1: 93. 1998.

*Glycine villosa* Thunb. ex Murray, Syst. Veg. ed. 14: 659. 1784.

*Atylosia subrhombica* Miq., Ann. Mus. Bot. Lugduno-Batavum 3: 51. 1867.

(Fig. 84; Photo 177)

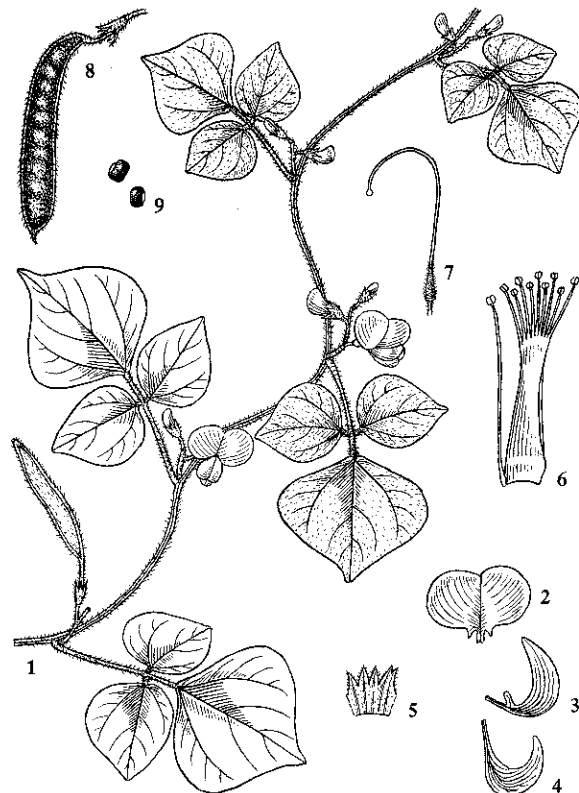


Figure 84. *Dunbaria podocarpa* Kurz

1. flowering branch; 2. vexillum; 3. wing; 4. keel; 5. calyx; 6. stamens; 7. pistil; 8. pod; 9. seeds. (drawn by H. P. Yu)

*Dunbaria subrhombea* (Miq.) Hemsl., J. Bot. 14(163): 207. 1876; Thuan, Fl. Cambodge, Laos, Vietnam 17: 116. 1979.

Perennial twining herb. Branches delicate, sparsely whitish pubescent. Leaves pinnately 3-foliolate; leaflets 3-lobed, rather unequal, terminal one rhomboid to deltoid, 1.5–3(–5) × 2–4(–5) cm, base rounded to broad-cuneate, apex obtuse or acute, mucronate, lateral ones obliquely rhomboid, 1–2.5 × 1–2.5 cm. Racemes 2–8-flowered. Calyx 4–13 mm, densely pubescent abaxially. Corolla yellow; vexillum obovate, 16 × 12 mm, base clawed, apex emarginate, auriculate; wings elongate-obovate, 12 × 3–5 mm; keel curved, tip circinate-rostrate. Stamens diadelphous; anthers basifixed. Pods brown, linear-falcate, 3.5–4.5 × 0.7–0.8 cm. Seeds 6–7, black to brown, with or without mosaic, quadrate-ovoid, 4 × 4 mm, estrophiolate divided.

Locality: Fanling, Tai Po. *W. J. Tutcher 10549*; *S. Y. Hu 5718* (CUHK).

Distribution: Hainan, Guangdong, Hunan, Jiangxi, Jiangsu, Zhejiang, Liaoning; Myanmar, India, Indonesia, Japan, Korea, Laos, Philippines, Thailand, Vietnam.

Ecology: Grassy fields, thickets, roadsides. Flowering: Aug.–Oct.; fruiting: Sep.–Oct.

#### 4. *Dunbaria fusca* (Wall.) Kurz 黄毛野扁豆

Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43(2): 186. 1874; FKH 85. 1912; FRPS 41: 308. 1995; FGD 5: 336. 2003.

*Phaseolus fuscus* Wall., Pl. Asiat. Rar. 1: 6, pl. 6. 1830.

Perennial twining herb. Stems to 3 m or longer, striate, densely grey pubescent. Leaves pinnately 3-foliolate; leaflets subequal, terminal one ovate, ovate-lanceolate or lanceolate, 5–9.5 × 2.5–4 cm, base rounded or subcuneate, apex acute to acuminate, mucronate, glabrous or thinly pubescent adaxially, densely grey to grey-brown pubescent and red gland-dotted abaxially, trinerved. Racemes axillary, 4–15 cm, 10–15-flowered. Calyx campanulate, 4–7 mm, teeth triangular. Corolla purple-red, ca. 1.3 cm; vexillum orbicular, 12 × 10 mm, base clawed and biauriculate; wings oblong; keel incurved, circinate-rostrate. Stamens diadelphous. Ovary sessile, densely golden hirsute, squarish ovoid, 4 × 4 mm, estrophiolate rather conspicuous.

Locality: Tsuen Wan, Shing Mun, Bride's Pool. *Y. S. Lau 1002*, 1969; *P. S. Choi 50*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Anhui; India, Myanmar, Vietnam, Laos, Thailand.

Ecology: Climbing in thickets, low herbage, evergreen jungles and deciduous forests, hillslopes or grasslands. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

#### 5. *Dunbaria punctata* (Wight & Arn.) Benth. 圓葉野扁豆

(Photo 178)

Pl. Jungh. 2: 242. 1852; FGD 5: 337, fig. 185. 2003.

*Dolichos punctatus* Wight & Arn., Prodr. Fl. Ind. Orient. 1: 247. 1834.

*Dunbaria rotundifolia* (Lour.) Merr., Philipp. J. Sci. 15(3): 242. 1919 [1920]; FRPS 41: 310. 1995.

*Indigofera rotundifolia* Lour., Fl. Cochinch. 458. 1790; *ibid.*, ed. 2: 559. 1793.

*Dunbaria conspersa* Benth., Pl. Jungh. 1: 241. 1852; FKH 89. 1861; FKH 85. 1912.

Perennial twining herb. Stems slender, slightly pubescent. Leaves pinnately 3-foliolate; leaflets papery, terminal one orbicular-rhomboid, 1.5–2.7 × 3 cm, base rounded, apex obtuse or rounded, slightly and very shortly pubescent on both surfaces or subglabrous, black-brown gland-dotted, especially denser on abaxial surface, trinerved. Flowers 1–2, axillary. Calyx campanulate; lobes lanceolate-falcate, the upper and lower ones longer than the tube, densely red gland-dotted and pubescent. Corolla yellow, 1–1.5 cm; vexillum obovate-orbicular, 6–8 mm, base 2-auriculate, apex emarginate; wings obovate, ca. 6 mm; keel falcate, obtusely beaked. Stamens diadelphous. Ovary sessile. Pods linear-oblong, 3–5 × 0.8 cm, flat, slightly curved, puberulent or glabrous, tip pin-like beaked. Seeds 6–8, black-brown, suborbicular, 3 mm in diam.

Locality: Aberdeen, Kwai Chung, Sha Tin, Fanling, Shek Kong. *L. T. Lo 527*; *Y. W. Lam 1116*; *HK sheet 35641*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Jiangxi, Fujian, Taiwan; India, Indonesia, Philippines.

Ecology: Thickets, grassy hillslopes. Flowering & fruiting: Sep.–Oct.

Notes: The species was reported as *Dunbaria rotundifolia* (Lour.) Merr. previously (Check List HK Plants 145. 2002; 54. 2004).

### 46. *Phaseolus* L. 菜豆屬

Twining or erect herbs, often with hooked hairs. Stipules basifixed, base not elongated, persistent; stipels present. Leaves pinnately 3-foliolate. Racemes axillary. Bracts and bracteoles persistent or deciduous. Flowers borne on swollen nodes. Calyx 2-lipped, upper lip 2-toothed connate, lower lip 3-toothed. Corolla yellow, white, red, or purple. Petals clawed; vexillum orbicular, reflexed, base with appendage or not; wings obovate or oblong, adherent to keel; keel linear, beak long, spirally coiled through 1–2 twins. Stamens diadelphous; styles spiral with keel over 360°; stigma oblique. Pods linear or oblong, subterete or compressed, 2-valved. Seeds 2–many, oblong or reniform, hilum shortly linear, estrophiolate.

About 50 species distributed in warm regions, especially tropical America; three species cultivated in China; one species cultivated in Hong Kong.

#### 1. *Phaseolus vulgaris* L. 菜豆

(Fig. 85)

Sp. Pl. 723. 1753; FRPS 41: 296. 1995; FGD 5: 333, fig. 183. 2003.

Annual twining or suberect herb. Stems pubescent or glabrescent. Leaves pinnately 3-foliolate; terminal leaflet broadly ovate or ovate-rhombic, lateral ones oblique, 4–16 × 2.5–11 cm, base rounded or broadly cuneate, apex acuminate, entire, tomentose. Racemes

shorter than leaves, several-flowered at apex of rachis. Calyx cupular 3–4 mm. Corolla white, yellow, violet or red; vexillum subquadrate, 9–12 mm wide; wings obovate; keel 1 cm, apex spirally twisted. Ovary pubescent. Pods loriform, 10–15 × 1–1.5 cm, slightly curved and turgid, glabrous, beaked. Seeds 4–6, white, brown, blue or variegated, oblong or ensiform, 0.9–2 × 0.3–1.2 cm.

Locality: Cultivated.

Distribution: Widely cultivated everywhere, native to America.

Ecology: Flowering: Apr.–Jul.

Uses: Food (vegetable).

**47. *Vigna* Savi 豇豆屬**

Twining or erect herbs, rarely subshrubs. Stipules basifixed or dorsifixed. Leaves pinnately 3-foliolate. Racemes axillary or terminal, node of rachis often thickened and glandular. Bracts and bracteoles deciduous. Calyx 5-toothed, 2-lipped. Corolla white, yellow, blue or purple; vexillum orbicular, with appendage at base; wings shorter than vexillum; keel subequal to wings, incurved, not beaked or produced into an incurved somewhat spiral beak (but at angle over 360°). Stamens diadelphous; anthers uniform. Ovary sessile, styles filiform, upper part thickened, bearded or hirsute lengthwise inside; stigma oblique. Pods linear or linear-oblong, terete or flat, 2-valved. Seeds reniform or subquadrate, hilum short, with or without arils.

About 150 species distributed in tropical regions; 16 species in China; six species and two subspecies in Hong Kong.

- 1a. Stipules basifixed .....1. *V. marina*
- 1b. Stipules dorsifixed.
  - 2a. Pods hirsute .....2. *V. radiata*
  - 2b. Pods glabrous.
    - 3a. Stipules small, 4–6 mm ..... 3. *V. minima*
    - 3b. Stipules larger, 1–1.7 cm.
      - 4a. Stipules sagittate ..... 4. *V. angularis*
      - 4b. Stipules lanceolate to ovate-lanceolate.
        - 5a. Stipules 1–1.5 cm; pods 6–10 × 0.5 cm..... 5. *V. umbellata*
        - 5b. Stipules ca. 1 cm; pods 10–70(–90) × 0.4–1 cm ..... 6. *V. unguiculata*

**1. *Vigna marina* (Burm.) Merr. 濱豇豆 (Fig. 86; Photo 179)**  
Interpr. Herb. Amboin. 285. 1917; FRPS 41: 279. 1995; FGD 5: 328, fig. 181. 2003.

*Phaseolus marinus* Burm., Ind. Alt. Herb. Amboin. 18. 1769.

Perennial prostrate or climbing herb. Stems up to several metres, glabrescent when old. Stipules basifixed, ovate, 3–5 mm. Leaves pinnately 3-foliolate; leaflets ovate-orbicular or obovate, 3.5–9.5 × 2.5–9.5 cm, base broadly cuneate or subrounded, apex rounded, obtuse or emarginate, very shortly setose to subglabrous on both surfaces. Racemes axillary, 2–4 cm. Peduncles 3–13 cm. Calyx 2.5–3 mm, teeth deltoid, 1–1.5 mm, upper 2 connate. Corolla yellow; vexillum obovate, 1.2–1.3 × 1.4 cm; wings and keel ca. 1 cm. Pods linear-oblong, 3.5–6 × 0.8–0.9 cm, pubescent when young, glabrous when old, constricted between seeds. Seeds 2–6, yellow-brown or red-brown, oblong, 5–7 × 4.5–5 mm, hilum oblong.

Locality: Shek O. L. T. Lo 665; Y. W. Lam 677.

Distribution: Hainan, Taiwan; widely distributed in tropical regions.

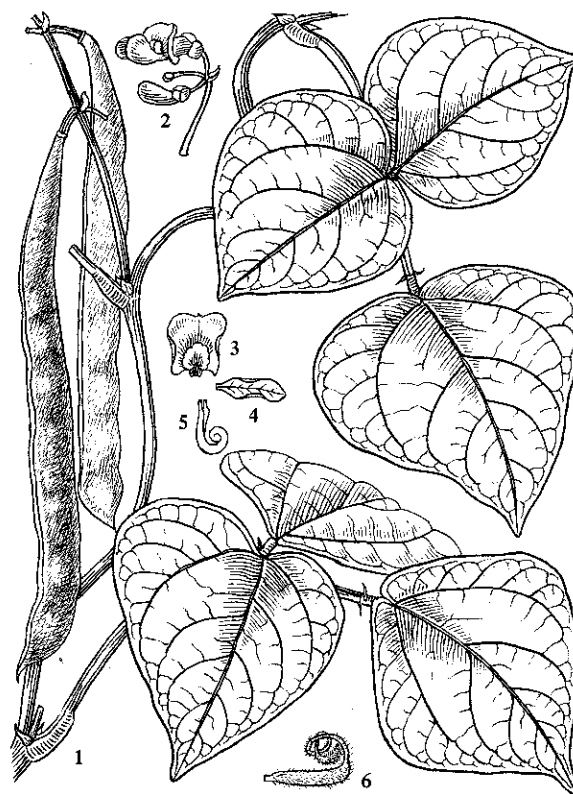


Figure 85. *Phaseolus vulgaris* L.  
1. fruiting branch; 2. inflorescence; 3. vexillum; 4. wing; 5. keel; 6. pistil. (drawn by H. P. Yu)

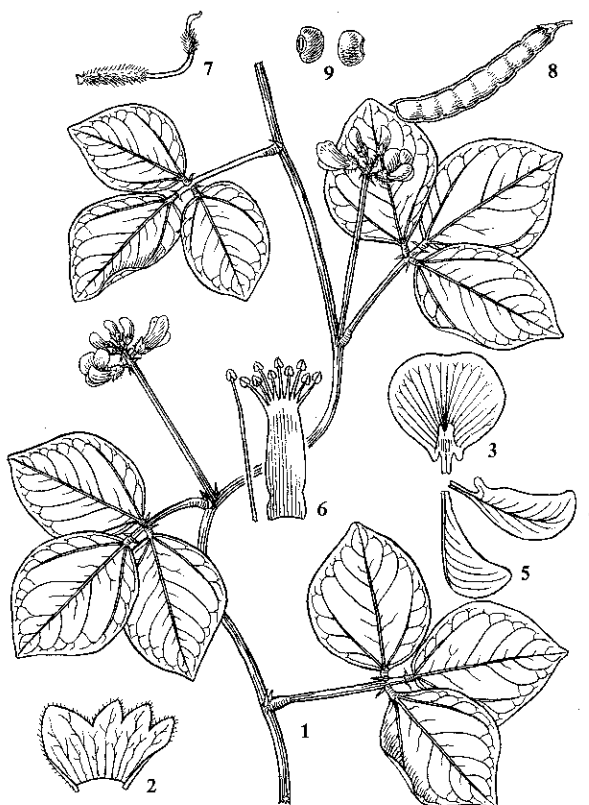


Figure 86. *Vigna marina* (Burm.) Merr.  
1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. pod; 9. seeds. (drawn by H. P. Yu)

Ecology: Sandy beaches.

Uses: Food (seeds edible), medicinal (folklore).

**2. *Vigna radiata* (L.) Wilczek 綠豆 (Fig. 87; Photo 180)**

Fl. Congo Belge 6: 386. 1954; FRPS 41: 284. 1995; FGD 5: 329. 2003.

*Phaseolus radiatus* L., Sp. Pl. 725. 1753.

*Phaseolus aureus* Roxb., Fl. Ind., ed. 1832, 3: 297. 1832.

Annual erect herb, 20–60 cm tall. Stems brown hirsute. Stipules dorsifixed, ovate, 0.8–1.2 cm. Leaves pinnately 3-foliolate; leaflets ovate, 5–16 × 3–12 cm, lateral ones ± oblique, base broadly cuneate or rounded, apex acuminate, more or less sparsely pilose on both surfaces, trinerved. Racemes axillary, 4–several-flowered, up to 25-flowered. Calyx 3–4 mm, teeth deltoid, 1.5–4 mm, upper 2 connate into one but 2-fid at apex; vexillum subquadrate, 1.2 × 1.6 cm, yellow-green outside, pink inside, apex emarginate; wings ovate, yellow; keel falcate, green tinged with pink, pouched at right lateral side. Pods linear-terete, 4–9 × 0.6 cm, sparsely pale brown hirsute. Seeds 8–14, greenish or yellow brown, shortly terete, 2.5–4 × 2.5–3 mm, hilum white.

Locality: Cultivated. *L. T. Lo* 622; *Y. W. Lam* 1010, 1565.

Distribution: Widely cultivated in tropical and subtropical regions.

Ecology: Flowering: May–Jun.; fruiting: Jun.–Sep.

Uses: Food (seeds), medicinal (folklore).

**3. *Vigna minima* (Roxb.) Ohwi & H. Ohashi 賊小豆(山綠豆)**

*J. Jap. Bot.* 44(1): 30. 1969; FRPS 41: 285. 1995; FGD 5: 329. 2003.

*Phaseolus minimus* Roxb., Fl. Ind., ed. 1832, 3: 290. 1832; FHK 88. 1861; FKH 84. 1912.

Annual twining herb. Stems slender. Stipules dorsifixed. Leaves pinnately 3-foliolate; leaflets variable in size and shape, from ovate, ovate-lanceolate, lanceolate to linear, 2–7 × 0.8–3 cm, base rounded or broadly cuneate, apex acute or obtuse, subglabrous or sparsely scabrid hairy on both surfaces. Racemes axillary, slender, 3–4-flowered. Calyx campanulate, ca. 3 mm. Corolla yellow; vexillum suborbicular, 1 × 8 mm; keel with long beaked auricle. Pods terete, 3.5–6.5 × 0.4 cm, glabrous, spirally contorted after open. Seeds 4–8, deeply grey, oblong, 0.4 × 3 mm, hilum linear.

Locality: Mount Gough, Shing Mun, Tai Mo Shan, Tai Po, Lantau Island. *H. C. Tang* 1420; *L. T. Lo* 251; *HK sheet* 36140.

Distribution: Widely distributed in China; Philippines, Japan.

Ecology: Grassy fields, thickets. Flowering & fruiting: Aug.–Oct.

**4. *Vigna angularis* (Willd.) Ohwi & H. Ohashi 赤豆(紅豆)**

(Photo 181)

*J. Jap. Bot.* 44(1): 29. 1969; FRPS 41: 287. 1995; FGD 5: 330. 2003.

*Dolichos angularis* Willd., Sp. Pl. 3(2): 1051. 1802.

*Phaseolus angularis* W. Wight, U.S.D.A. Bur. Pl. Industr. Bull. 137: 17. 1909.

Annual erect or twining herb, 30–90 cm tall, sparsely pilose. Stipules dorsifixed, sagittate. Leaves pinnately 3-foliolate; leaflets ovate, rhomboid-ovate, 5–10 × 5–8 cm, apex acute or subrounded, lateral ones oblique, entire or shallowly 3-lobed, sparsely pilose on both surfaces. Racemes axillary, 5–6-flowered. Calyx campanulate, 3–4 mm. Corolla yellow, ca. 9 mm; vexillum transversely orbicular or subreniform, apex emarginate; wings broader than keel, shortly clawed and auriculate; keel apex incurved nearly in a half circle. Ovary linear. Pods terete, 5–8 × 0.5–0.6 cm, glabrous. Seeds obscurely red or with other colours, oblong, 5–6 × 4–5 mm, hilum not impressed.

Locality: Cultivated. *L. T. Lo* 618; *HK sheet* 34332, 34333.

Distribution: Widely cultivated.

Ecology: Flowering: Jun.–Jul.; fruiting: Sep.–Oct.

Uses: Food (seeds), medicinal (folklore).

**5. *Vigna umbellata* (Thunb.) Ohwi & H. Ohashi 赤小豆**

*J. Jap. Bot.* 44: 31. 1969; FRPS 41: 288. 1995; FGD 5: 330. 2003.

*Dolichos umbellatus* Thunb., Trans. Linn. Soc. London 2: 339. 1794.

*Phaseolus chrysanthus* Savi, Nuov. Giorn. Sc. 3: 318. 1822; FKH 84. 1912.

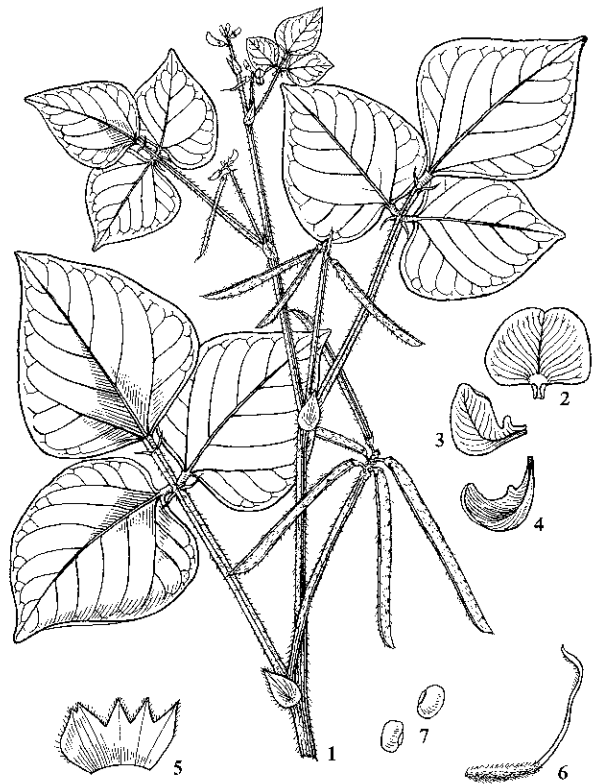


Figure 87. *Vigna radiata* (L.) Wilczek

1. upper part of plant; 2. vexillum; 3. wing; 4. keel; 5. calyx; 6. pistil; 7. seeds. (drawn by H. P. Yu)



Annual twining herb. Stems slender, to 1 m or over, yellow pilose when young, glabrous when old. Stipules dorsifixed, lanceolate or ovate-lanceolate, 10–15 mm. Leaves pinnately 3-foliolate; leaflets ovate or lanceolate, 10–13 × 5–7.5 cm, base broadly cuneate or obtuse, apex acute, entire or slightly 3-lobed, trinerved, sparsely pubescent on veins. Racemes axillary, 2–3-flowered. Calyx campanulate, 3–4 mm, teeth deltoid. Corolla yellow; vexillum oblong, 1 cm, apex emarginate; wings obovate; keel with horn-like appendage at one side. Pods linear, terete, 6–10 × 0.5 cm, glabrous. Seeds 6–10, obscurely red, brown, black or stramineous, oblong, 3–3.5 mm in diam.

Locality: Cultivated. *L. T. Lo 619; HK sheet 7944, 7946.*

Distribution: S China; SE Asia, Philippines, Korea, Japan.

Ecology: Flowering: May–Aug.

Uses: Food (seeds), medicinal (folklore).

**6. *Vigna unguiculata* (L.) Walp.** 豇豆

Repert. Bot. Syst. 1(5): 779. 1843; FRPS 41: 289. 1995; FGD 5: 330. 2003.

*Dolichos unguiculatus* L., Sp. Pl. 725. 1753.

Annual or perennial, erect, trailing or climbing herb. Stems 1–3 m, subglabrous. Stipules dorsifixed, lanceolate, 1 cm. Leaves pinnately 3-foliolate; leaflets ovate–rhomboid, 5–15 × 4–6 cm, lateral ones oblique, base acute to rounded, apex acute, entire or subentire, glabrous on both surfaces. Racemes axillary, 2–6-flowered, fasciculate on top of rachis. Calyx campanulate 6–10 mm, teeth lanceolate. Corolla yellow-white with slightly violet, 2 cm; petals clawed; vexillum suborbicular, 1.2–3.3 × 1–3.2 cm, apex emarginate; wings blue to purple, subdeltoid; keel usually white or pale yellow, not twisted. Pods terete, 20–30 × 0.6–1 cm. Seeds several, dark red or black, often mottled with black or brown, oblong or reniform, 6–9 mm.

The species usually divided into three subspecies.

- 1a. Annual twining plant, 2–4 m; pods 30–80(–90) cm, pendulous, slightly fleshy and inflated when young; seeds 8–12 mm..... 6b. *V. unguiculata* subsp. *sesquipedalis*  
 1b. Annual erect or trailing plant, 15–80 cm; pods less than 30 cm, more solid and not inflated when young; seeds 6–9 mm.  
 2a. Pods 20–30 cm, pendulous..... 6a. *V. unguiculata* subsp. *unguiculata*  
 2b. Pods 7.5–13 cm, erect or spread..... 6c. *V. unguiculata* subsp. *cylindrica*

**6a. *Vigna unguiculata* (L.) Walp. subsp. *unguiculata*** 豇豆

*Dolichos sinensis* L., Cent. Pl. II. 28. 1756.

*Vigna sinensis* (L.) Hassk., Cat. Hort. Bot. Bogor 279. 1844; FKH 84. 1912.

*Vigna sinensis* subsp. *sinensis* Mansf., Prodr. Enum. Sp. Pl. Agri- et Hort. 209. 1959.

Pods 20–30 cm, pendulous.

Locality: Cultivated.

Distribution: Widely cultivated in tropical and subtropical regions.

Ecology: Flowering: Jun.–Jul.; fruiting: Aug.

Uses: Food (pods).

**6b. *Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.)**

Verdc. 長豇豆(豆角) (Photo 182)

Fl. Turkey 3: 266. 1970 & Kew Bull. 24: 544. 1970; FGD 5: 331. 2003.

*Dolichos sesquipedalis* L., Sp. Pl. ed. 2, 1019. 1763.

*Vigna sinensis* (L.) Hassk. subsp. *sesquipedalis* (L.) Van Eselt., Veg. New York 1(2): 11. 1931.

Annual twining plants, 2–4 m. Pods 30–80(–90) cm, pendulous, slightly fleshy and inflated when young. Seeds 8–12 mm.

Locality: Cultivated. *S. P. Lau 19; K. Y. Chan 168; HK sheet 7981.*

Distribution: Widely cultivated in China; widely cultivated in tropical regions of Asia and Africa.

Ecology: Flowering & fruiting: Jun.–Aug.

**6c. *Vigna unguiculata* (L.) Walp. subsp. *cylindrica* (L.) Verdc.**

短豇豆(眉豆) (Fig. 88)

Kew Bull. 24: 544. 1970; FGD 5: 331. 2003.

*Phaseolus cylindricus* L., Herb. Amb. 23. 1754.

*Vigna sinensis* (L.) Hassk. subsp. *cylindrica* (L.) Van Eselt., Veg. New York 1(2): 11. 1931.

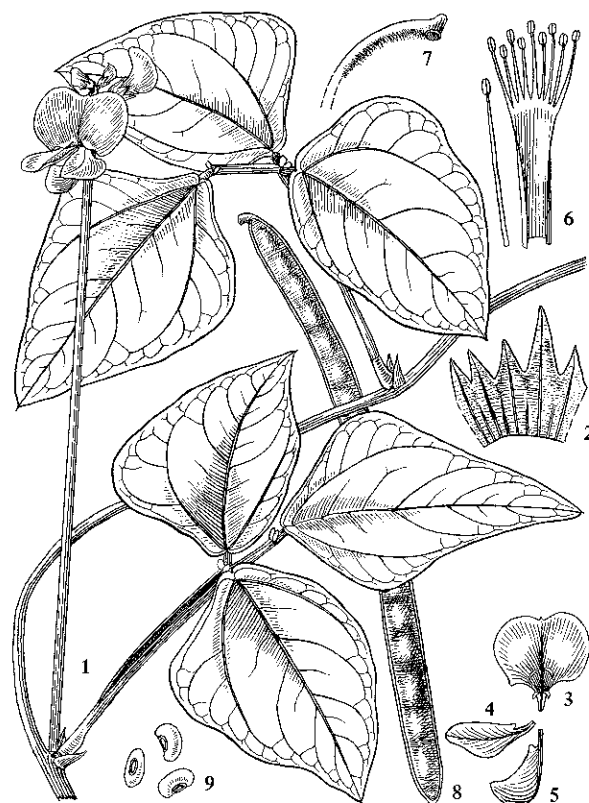


Figure 88. *Vigna unguiculata* (L.) Walp. subsp. *cylindrica* (L.) Verdc. 1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. style and stigma; 8. pods; 9. seeds. (drawn by H. P. Yu)

Pods 7.5–13 cm, erect or spread.

Locality: Cultivated. *L. T. Lo 240, 620; HK sheet 34334.*

Distribution: Widely cultivated in China; Japan, Korea, America (cultivated).

Ecology: Flowering: Apr.–May; fruiting: Sep.

#### 48. *Lablab* Adans. 扁豆屬

Perennial twining or suberect herbs. Stipules reflexed, persistent; stipels lanceolate. Leaves pinnately 3-foliolate. Racemes axillary, nodes of rhachis swollen. Calyx campanulate, 2-lipped, upper lip entire or emarginate, lower lip 3-lobed. Corolla purple or white; vexillum orbicular, reflexed, auriculate at base, with 2 callosities on adaxial surface; wings oblong; keel incurved at a right angle. Stamens diadelphous; anthers uniform; styles abruptly upturned, laterally compressed, bearded in upper part, stigma terminal. Pods obliquely oblong-falcate, compressed, sinuous with minute warts along both sutures, shallowly septate between seeds within. Seeds slightly compressed, dark brown, hilum linear with white aril.

One species and three subspecies native of Africa, now widely cultivated throughout the tropics; one species cultivated in Hong Kong.

**1. *Lablab purpureus* (L.) Sweet 扁豆 (Fig. 89; Photo 183)**  
Hort. Brit. 481. 1826; FRPS 41: 271. 1995; FGD 5: 325, fig. 178. 2003.

*Dolichos lablab* L., Sp. Pl. 725. 1753.

*Dolichos purpureus* L., Sp. Pl. (ed. 2) 1021. 1763.

Perennial twining vine. Stems up to 6 m, usually purplish. Stipules basifixed, lanceolate. Leaves pinnately 3-foliolate; terminal leaflet deltoid-ovate, 6–10 × 6–10 cm, lateral ones oblique, base subtruncate, apex acute or acuminate. Racemes axillary, erect, 15–25 cm. Flowers 2–5-fasciculate at each node. Calyx campanulate, 6 mm, upper 2 teeth almost wholly connate, lower 3 teeth subequal. Corolla white or purple; vexillum orbicular, 12 mm, base with 2 appendages and 2 auricles below the appendages; wings broadly obovate, blade 10 mm; keel curved at right angle, base attenuate. Ovary linear, styles longer than ovary, laterally compressed, apex bearded. Pods oblong-falcate, 5–7 × 1.4–1.8 cm, compressed, straight or slightly curved, beaked. Seeds 3–5, oblong, white, purple or purple-black, hilum linear.

Locality: Cultivated. *L. T. Lo 272; Y. S. Lau 3229; Y. W. Lam 1159.*

Distribution: Widely cultivated, native to Africa.

Ecology: Cultivated in garden or escaped in open wastelands, roadsides. Flowering: Apr.–Dec.

Uses: Food (pods), medicinal (folklore).

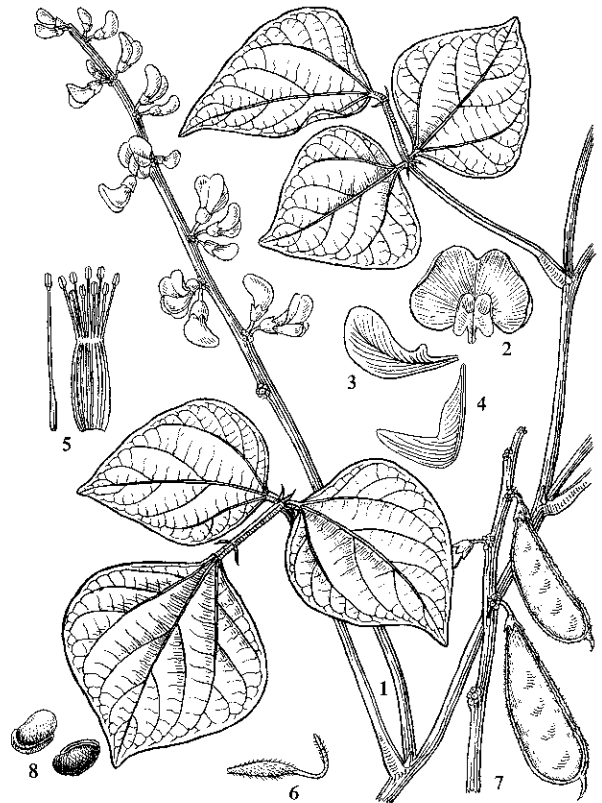


Figure 89. *Lablab purpureus* (L.) Sweet

1. flowering branch; 2. vexillum; 3. wing; 4. keel; 5. stamens; 6. pistil; 7. pods; 8. seed. (drawn by H. P. Yu)

#### 49. *Galactia* P. Browne 乳豆屬

Perennial climbing or suberect herbs. Stipules small or deciduous. Leaves pinnately 3-foliolate, rarely 1–5- or 7-foliolate, stipellate. Racemes axillary; flowers remotely paired or fasciculate, or the lower ones subsolitary in axils of small setaceous bracts, rarely the lower flowers apetalous; bracteoles very small. Calyx deeply 4-lobed; lobes acuminate, the upper one broader, consisting of 2 completely united lobes, lateral ones smaller, lower one often longer. Corolla slightly exserted; vexillum ovate or orbicular, margins slightly inflexed at base or with appendage; wings narrow or obovate, adherent to keel; keel subequal to or longer than wings, not beaked. Stamens free; anthers uniform. Ovary sessile; ovules numerous; styles filiform, not barbate; stigma small, terminal. Pods linear, compressed, straight or incurved, plano-compressed or rarely concave, 2-valved, thinly filled or subseptate between seeds. Seeds estrophiolate, rarely pods of lower apetalous flowers penetrating soil and ground. Seed 1.

About 140 species distributed in tropical and subtropical regions of America and Asia; three species in China; one species in Hong Kong.

**1. *Galactia tenuiflora* (Klein ex Willd.) Wight & Arn. 乳豆**

(Fig. 90)

Prodr. Fl. Ind. Orient. 1: 206. 1834; FRPS 41: 215. 1995; FGD 5: 308, fig. 164. 2003.

*Glycine tenuiflora* Klein ex Willd., Sp. Pl. 3: 1059. 1802.

Slender twining herb. Stipules lanceolate, small, caducous. Leaves pinnately 3-foliolate; leaflets rounded and emarginate at apex, with appressed hairs. Racemes axillary, slender. Flowers 4–8 mm. Calyx 6 mm, pubescent. Corolla purple to pale blue; petals auriculate; vexillum obovate, 10 × 7 mm; wings oblong, 9 × 2 mm; keel slightly longer than wings, apex obtuse. Stamens diadelphous. Ovary

densely tomentose. Pods linear, flat, sparsely pubescent, 7–8-seeded. Seeds elliptic; hilum elliptic at center of seed.

Locality: Cape D'Aguilar, Tai Au Mun, Clear Water Bay, Po Toi Islands, Cheung Chau. *Y. S. Lau* 3333; *P. S. Choi* 366; *Y. W. Lam* 1051.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Taiwan; India, Sri Lanka, Malaysia, Thailand, Vietnam, Philippines.

Ecology: Thickets near villages. Flowering & fruiting: Aug.–Sep.

### 50. *Pachyrhizus* Rich. ex DC. 豆薯屬

Perennial twining or erect herbs, with fleshy tubers. Stipules and stipels present. Leaves pinnately 3-foliolate; leaflets large, ovate or rhomboid, entire or sinuately lobed. Racemes or panicles axillary; rachis often nodose. Bracts caducous; bracteoles small, subsistent or minute and caducous. Calyx 2-lipped, upper lip emarginate, lower lip 3-toothed. Corolla violet or white, exserted from calyx; vexillum broadly obovate, with 2 inflexed auricles at base; wings oblong or falcate, often adherent to middle of keel; keel subequal to wings. Stamens diadelphous; anthers uniform. Ovary many-ovuled; styles filiform, inflexed distally. Pods loriform, 2-valved, constricted between seeds. Seeds compressed, suborbicular or transversely oblong.

Six species distributed in tropical America; one species cultivated in China, also in Hong Kong.

#### 1. *Pachyrhizus erosus* (L.) Urb.

豆薯(沙葛)

(Fig. 91; Photo 184)

Symb. Antill. 4(2): 311. 1905; FRPS 41: 214. 1995; FGD 5: 307, fig. 163. 2003.

*Dolichos erosus* L., Sp. Pl. 2: 726. 1753.

*Pachyrhizus angulatus* Rich., Prodr. 2: 402. 1825; FKH 84. 1912.

Robust twining vine. Roots fleshy tuberous, 10–20 cm in diam. Leaves pinnately 3-foliolate; terminal leaflet rhombic or ovate, 4–18 × 4–20 cm, distal margin often somewhat dentate or lobed, lateral ones very unequalateral, sparsely pubescent abaxially. Racemes axillary, 15–30 cm. Flowers 3–5 at thickened nodes. Calyx campanulate, 9–11 mm, adpressed pilose. Corolla purplish or pink; vexillum suborbicular, 15–20 mm, with yellow-green spot and 2 callous appendages near base, 2-auriculate; wings falcate, linear-auriculate; keel subfalcate, 1.5–2 cm. Stamens diadelphous. Ovary yellowish hirsute, styles curved. Pods loriform, 7.5–13 × 1.2–1.5 cm, compressed, hirsute. Seeds 8–10, subquadrate.

Locality: Cultivated. *Y. S. Lau* 791; *Y. W. Lam* 279, 1136.

Distribution: SW to SE China (cultivated); native to tropical America, widely cultivated in tropical regions.

Ecology: Cultivated in garden. Flowering: Aug.; fruiting: Nov.

Uses: Food (vegetable).

### 51. *Pueraria* DC. 葛屬

Twining vines; roots sometimes bearing tubers. Stipules dorsifixed or basifixed; stipels present. Leaves pinnately 3-foliolate; leaflets large, ovate or rhomboid, entire or sinuately lobed. Racemes or panicles axillary, sometimes several racemes clustered at branch apex. Bracts caducous; bracteoles present. Flowers often aggregated

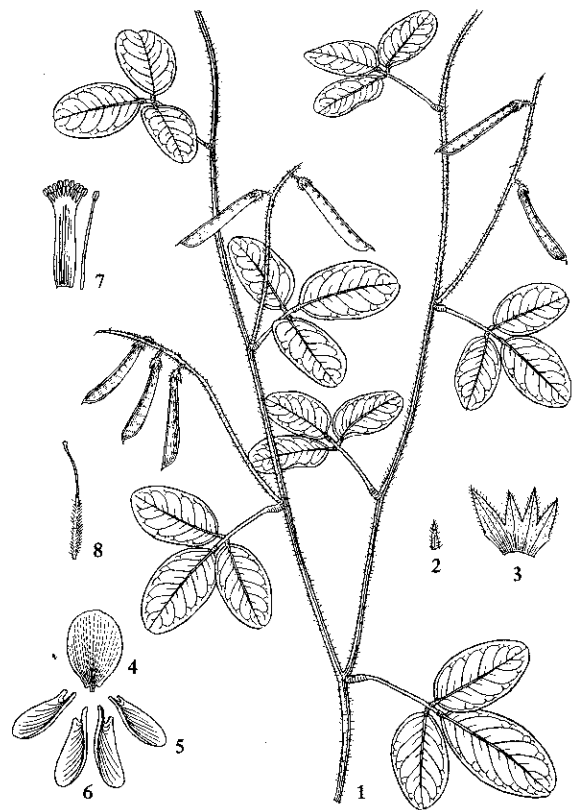


Figure 90. *Galactia tenuiflora* (Klein ex Willd.) Wight & Arn.

1. fruiting branch; 2. bract; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil. (drawn by H. P. Yu)

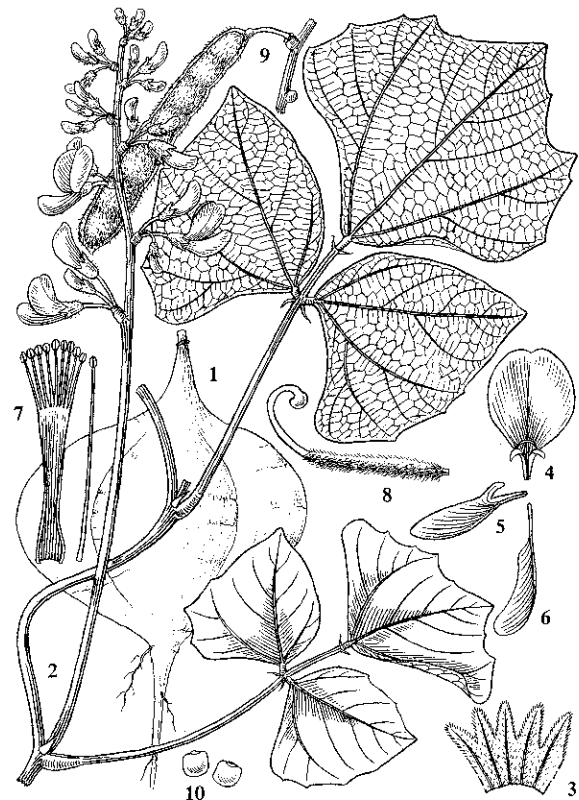


Figure 91. *Pachyrhizus erosus* (L.) Urb.

1. tuberous root; 2. flowering branch; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens; 8. pistil; 9. pod; 10. seeds. (drawn by H. P. Yu)

on swollen nodes. Calyx campanulate, upper 2 teeth  $\pm$  connate. Corolla blue or purple; petals clawed; vexillum suborbicular or obovate, with appendage and 2 auricles at base; wings narrow, auriculate and adherent to keel; keel equal to wings, apex slightly curved. Stamens diadelphous; anthers uniform. Ovary sessile or subsessile, many-ovuled. Pods linear, compressed or terete, 2-valved, continuous within or septate between seeds. Seeds, suborbicular or oblong, compressed.

About 35 species distributed from India to Malaysia; eight species in China; two species and two varieties in Hong Kong.

- 1a. Stipules basifixed; pods cylindrical, 4 mm wide, 15–20-seeded..... 1. *P. phaseoloides*  
 1b. Stipules dorsifixed; pods compressed, 5–9 mm wide, 8–12-seeded.  
 2a. Bracts shorter than bracteoles; calyx 7–8 mm; vexillum 8 mm in diam.; pods 4–9  $\times$  0.6–0.8 cm.... 2a. *P. lobata* var. *montana*  
 2b. Bracts longer than bracteoles; calyx 8–20 mm; vexillum 10–18 mm long; pods 5–14  $\times$  0.8–1.3 cm.  
 3a. Calyx 8–10 mm long; vexillum obovate, 10–12 mm; wings and keel subequal; pods 5–9  $\times$  0.8–1.1 cm... 2. *P. lobata*  
 3b. Calyx up to 20 mm long; vexillum suborbicular, 16–18 mm; wings slightly shorter than keel; pods 10–14  $\times$  1–1.3 cm  
 ..... 2b. *P. lobata* var. *thomsonii*

**1. *Pueraria phaseoloides* (Roxb.) Benth.** 三裂葉野葛

(Photo 185)

J. Linn. Soc. Bot. 9: 125. 1865; FRPS 41: 221. 1994; FGD 5: 310. 2003.

*Dolichos phaseoloides* Roxb. Fl. Ind., ed. 1832, 3: 316. 1832.

*Neustanthus phaseoloides* Benth., Pl. Jungh. 2: 235. 1825; FHK 86. 1861; FKH 83. 1912.

Herbaceous twiner. Stems slender, 2–4 m, hirsute, with brown-yellow spreading hairs. Stipules basifixed, ovate-lanceolate, 3–5 mm. Leaves pinnately 3-foliolate; leaflets broadly ovate, rhombic or ovate-rhombic, terminal one larger, 6–10  $\times$  4.5–9 cm, lateral ones smaller, oblique, entire or 3-lobed, hirsute on both surfaces. Racemes axillary, 8–15 cm or longer, flowers aggregated on nodes. Calyx campanulate, 6 mm, 5-toothed, hairy. Corolla light blue or purplish; vexillum suborbicular, 8–12 mm wide, with 2 appendages and an auricle at base; wings obovate-oblong, with a rounded auricle on one side at base; keel falcate, shorter than wings. Ovary linear. Pods subterete, 5–8  $\times$  0.4 cm, adpressed pubescent at first, 2-valved. Seeds oblong, 4 mm, truncate at both ends.

Locality: Common in Hong Kong. *Y. S. Lau* 248, 2396; *HK sheet* 40773.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Zhejiang; India, Indochina, Malaysia.

Ecology: Thickets. Flowering: Aug.–Sep.; fruiting: Oct.–Nov.

**2. *Pueraria lobata* (Willd.) Ohwi** 葛

(Fig. 92)

Bull. Tokyo Sci. Mus. 18: 16. 1947; FRPS 41: 224. 1994; FGD 5: 311, fig. 166. 2003.

*Dolichos lobatus* Willd., Sp. Pl. ed. 3, 2: 1047. 1802.

*Neustanthus chinensis* Benth., FHK 86. 1861.

*Pueraria thunbergiana* (Siebold & Zucc.) Benth., J. Linn. Soc. Bot. 9: 122. 1867; FKH 83. 1912.

Robust vine with tuber roots. Stems up to 8 m, woody at base, yellow hirsute throughout. Stipules dorsifixed, ovate-oblong. Leaves pinnately 3-foliolate; leaflets broad-ovate or oblique ovate, 3-lobed, rarely entire, 7–19  $\times$  5–13(–18) cm, apex acuminate, lateral ones smaller, oblique, adpressed yellowish pubescent on both surfaces, more dense abaxially. Flowers 2–3, aggregated on nodes. Calyx campanulate, 8–10 mm, yellow-brown villose, teeth lanceolate. Corolla purple; petals auriculate; vexillum obovate, 10–12 mm, with yellow callose appendage at base; wings falcate; keel falcate-oblong. Stamens diadelphous. Ovary linear, hairy. Pod oblong, 5–9  $\times$  0.8–1.1 cm, compressed, brown hirsute.

Locality: Common in Hong Kong. *Y. S. Lau* 1060; *HK sheet* 1396.

Distribution: Widely distributed in China; E Asia, SE Asia to Australia.

Ecology: Thin forests. Flowering: Sep.–Oct.; fruiting: Nov.–Dec.

Uses: Medicinal (folklore).

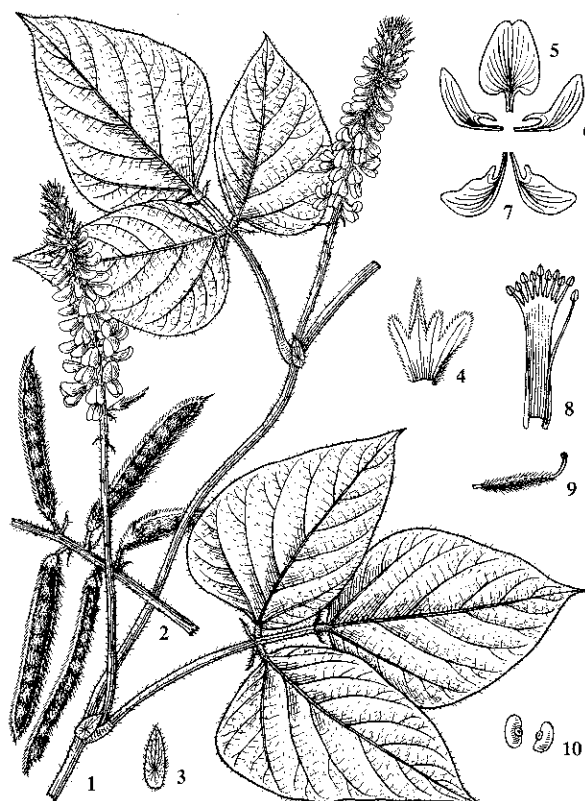


Figure 92. *Pueraria lobata* (Willd.) Ohwi

1. flowering branch; 2. fruiting branch; 3. stipule; 4. calyx; 5. vexillum; 6. wing; 7. keel; 8. stamens; 9. pistil; 10. seeds. (drawn by H. P. Yu)

**2a. *Pueraria lobata* (Willd.) Ohwi var. *montana* (Lour.) Maesen** 葛麻姆

(Photo 186)

Agr. Univ. Wageningen Papers 85(1): 53. 1985; FRPS 41: 226. 1994; FGD 5: 311. 2003.

*Dolichos montana* Lour., Fl. Cochinch. 440. 1790.

*Pueraria montana* (Lour.) Merr., Trans. Amer. Philos. Soc., n.s., 24(2): 210. 1935.

Terminal leaflets usually entire. Calyx 7–8 mm; vexillum orbicular, 8 mm in diam. Pods 4–9 × 0.6–0.8 cm.

Locality: Common in Hong Kong. *H. C. Tang 2053*; *Y. S. Lau 2027, 2389*.

Distribution: SW, S & SE China; Thailand, Philippines, Laos, Vietnam, Japan.

Ecology: Thickets, thin forests and open fields. Flowering: Sep.–Oct.; fruiting: Nov.–Dec.

**2b. *Pueraria lobata* (Willd.) Ohwi var. *thomsonii* (Benth.) Maesen 粉葛**

(Photo 187)

Agr. Univ. Wgeningen Papers 85(1): 53. 1985; FRPS 41: 226. 1994; FGD 5: 312. 2003.

*Pueraria thomsonii* Benth., J. Linn. Soc. Bot. 9: 122. 1867.

Terminal leaflet entire or 2–3-lobed, 16–18 mm. Calyx up to 20 mm; vexillum suborbicular; wings slightly shorter than keel. Pods 10–14 × 1–1.3 cm.

Locality: Cultivated. *Y. S. Lau 2408, 2794*; *Y. W. Lam 1128*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Xizang, Sichuan; India, Thailand, Laos.

Ecology: Thickets. Flowering: Sep.; fruiting: Nov.

Uses: Food (tuberous roots).

**52. *Pisum* L. 豌豆屬**

Annual or perennal, spreading or climbing herbs by tendrils. Stems glabrous. Stipules leaf-like, semi-cordate or semi-sagittate; rachis of pinnate leaves ending in a branched tendril. Leaves even-pinnate; leaflets 1–3 pairs, ovate or elliptic, entire or serrate. Racemes axillary, with long peduncles or flowers solitary. Bracts caducous; bracteoles absent. Calyx campanulate, base oblique or gibbous, lobes subequal or upper 2 broader. Petals shortly clawed; vexillum obovate; wings falcate-oblong, adherent to keel; keel shorter than wings, incurved. Stamens diadelphous. Ovary sessile; styles compressed and inflexed, longitudinally bearded on one side. Pods oblong, 2-valved. Seeds 4–8, globose, hilum oblong, covered by thin aril.

About six species distributed in Europe and Asia; one species cultivated in China; also in Hong Kong.

**1. *Pisum sativum* L. 豌豆 (Fig. 93; Photo 188)**

Sp. Pl. 727. 1753; FKH 82. 1912; FRPS 42(2): 287. 1998; FGD 5: 357, fig. 199. 2003.

Annual climbing herb, 0.5–2 m tall, glabrous and glaucous. Stipules larger than leaflet, leaf-like, cordate, margin serrulate on proximal part. Leaves even-pinnate; leaflets 2–3 pairs, ovate, 2–5 × 1–2.5 cm. Flowers solitary or several in racemes. Calyx campanulate, 5-lobed, lobes lanceolate, 5–7 mm. Corolla usually white or purple or of other colours; vexillum erect, suborbicular, 1.5–1.7 cm wide; wings obliquely ovate or oblong, blade 10 × 7 mm; keel lunate, 7 × 5 mm. Stamens diadelphous. Ovary glabrous. Pods oblong, 2.5–10 × 0.7–1.4 cm. Seeds 2–10, green, globose.

Locality: Cultivated. *Y. S. Lau 2643*; *HK sheet 7698*.

Distribution: Widely cultivated.

Ecology: Flowering: Jun.–Jul.; fruiting: Jul.–Sep.

Uses: Food, green manure, forage.

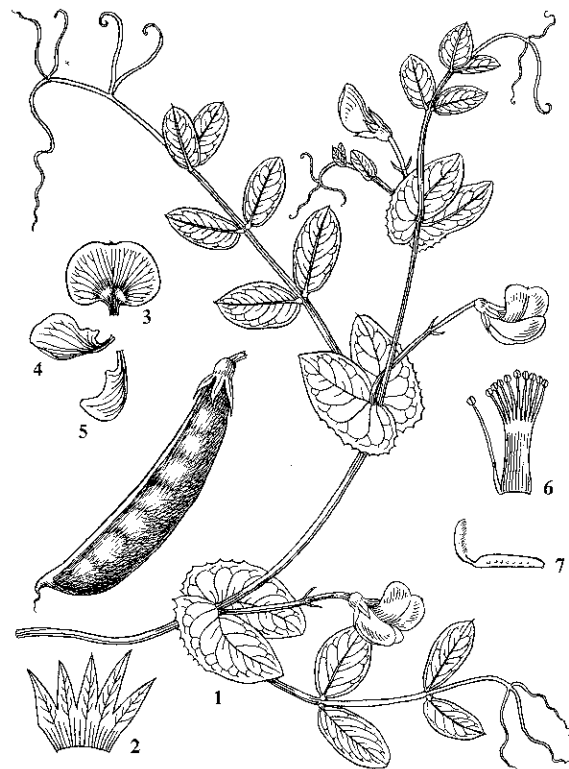


Figure 93. *Pisum sativum* L.

1. flowering branch; 2. calyx; 3. vexillum; 4. wing; 5. keel; 6. stamens; 7. pistil; 8. pod. (drawn by H. P. Yu)

**53. *Trifolium* L. 車軸草屬**

Herbs. Stipules adnate to petioles. Leaves digitately 3- or rarely 5–7-foliolate, rarely pinnately 3–5-foliolate; leaflets mostly denticulate. Flowers mostly purple, red or white, rarely yellow, in spicate, capitate, umbellate inflorescence, or rarely solitary. Bracts small or absent, sometimes membranous, persistent or deciduous, sometimes outer ones connate into a dentate or lobed involucre; bracteoles absent. Calyx-teeth or lobes subequal or the lower longer, the upper 2 sometimes more or less connate. Petals marcescent, all clawed, or the lower 4 more or less adnate to staminal sheath; vexillum oblong or ovate; wings narrow; keel shorter than wings, obtuse. Vexillary stamen free or rarely connate at middle with others; alternate filaments or all of them dilated at apex, or scarcely dilated;

anthers uniform. Ovary with few ovules, styles filiform, incurved distally, stigma capitate or hooked. Pods oblong and subterete or obovate-compressed, enclosed by marcescent calyx and petals, mostly membranous, indehiscent. Seeds 1–2(–8), estrophiolate.

About 250 species distributed in tropical and subtropical regions; 13 species in China; one species in Hong Kong.

**1. *Trifolium repens* L.** 白車軸草 (Fig. 94; Photo 189)

Sp. Pl. 767. 1753; FRPS 42(2): 334. 1998.

Perennial glabrous herb, 10–30 cm tall. Stems creeping. Stipules ovate-lanceolate, base sheath-like. Leaves digitately 3-foliate; leaflets obovate to suborbicular, 8–20 × 8–16 mm, base attenuate, apex emarginate or obtuse, minutely denticulate, lateral veins ca. 13 pairs, elevated on both surfaces. Petioles 1.5 mm. Inflorescence globular, terminal, 15–40 mm in diam., densely 20–50(–80)-flowered. Peduncles double as long as petioles. Flowers 7–12 mm. Calyx campanulate, teeth 5, lanceolate, slightly unequal. Corolla white, milk-yellow or reddish; vexillum elliptic, double as long as wings or keel; keel slightly shorter than wings. Pods oblong. Seeds 3–4, broadly ovoid.

Locality: Naturalized. *Y. S. Lau* 3246; *Y. W. Lam* 1315; *K. Y. Tam* 108.

Distribution: Native to Europe, N Africa, widely cultivated elsewhere.

Ecology: Cultivated or naturalized. Flowering & fruiting: May–Oct.

Uses: Forage, green manure.

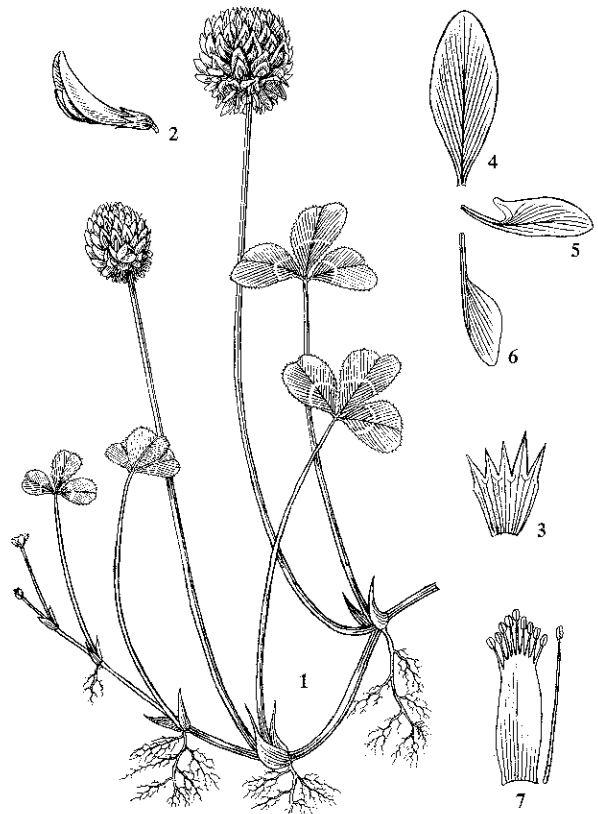


Figure 94. *Trifolium repens* L.

1. flowering branch; 2. flower; 3. calyx; 4. vexillum; 5. wing; 6. keel; 7. stamens. (drawn by H. P. Yu)

## 186. ELAEAGNACEAE 胡頹子科

HU Qi-ming 胡啟明

Erect or scandent shrubs, rarely trees, often covered with peltate or stellate silvery or brown scales. Leaves simple, petiolate, alternate, opposite or in whorls, without stipules. Flowers bisexual or sometimes unisexual (plants dioecious or polygamo-dioecious), regular, mostly 4-merous, apetalous, in axillary clusters or cymes. Perianth-tube in perfect and pistillate flowers tubular, constricted above the ovary, in staminate flowers usually cupulate or almost flat, the upper portion 2- or 4-lobed and deciduous. Stamens equal to and alternate with the perianth-lobes or twice as many, inserted in the tube or at its base. Ovary superior, 1-locular, with a single erect, anatropous ovule; style 1, with simple stigma. Fruit drupe-like or berry-like, consisting of the dry achene enclosed by the thickened lower portion of the persistent perianth-tube.

Three genera and about 85 species mainly distributed in N America, Europe and S Asia and Australia; two genera and about 60 species in China; one genus and two species in Hong Kong.

### 1. *Elaeagnus* L. 胡頹子屬

Evergreen or deciduous shrubs, rarely trees, often spiny and covered with silvery or brown stellate scales. Leaves alternate, short-petiolate. Flowers bisexual or polygamous, apetalous, axillary, solitary or clustered. Perianth-tube campanulate or tubular, apex 4-lobed; lobes valvate in bud. Stamens 4; filaments very short, inserted in perianth-tube; anthers dorsifixed. Ovary 1-locular; style subulate, recurved, and stigmatic along one side at the top. Fruit berry-like, the ellipsoidal striate stone enclosed by the fleshy perianth-tube.

About 80 species mainly in N temperate and subtropical regions, with a few species extending to tropical areas; 55 species in China; two species in Hong Kong.

- 1a. Perianth-tube 10–13 mm; fruit 15–20 × 8–12 mm ..... 1. *E. loureirii*  
 1b. Perianth-tube 4–5 mm; fruit 8–9 × 5–6 mm ..... 2. *E. tutcheri*

**1. *Elaeagnus loureirii* Champ. ex Benth.** 雞柏紫藤(羅氏胡頹子)

(Photo 190)

Hooker's J. Bot. Kew Gard. Misc. 5: 196. 1853, 'Loureiri'. FHK 298. 1861; FKH 228. 1912; FRPS 52(2): 9. 1983; FGD 4: 272. 2000.

Evergreen scandent shrub, without thorns; young shoots, abaxial surface of leaves and flowers densely covered with rusty-brown scurfy scales. Leaves alternate, papery; petioles 8–12 mm; leaf blade elliptic, ovate-elliptic to ovate-oblong, 4–13.5 × 2–3.5 cm, base subrounded or cuneate, apex obtuse or acute, margin entire, adaxial surface glabrous, greyish green when dry. Flowers usually 2 or 3 together, in lateral clusters or short racemes. Pedicels 8–11 mm. Perianth tubular, lower portion enclosing the ovary, upper portion campanulate, 10–13 mm, apex 4-lobed; lobes triangular, ca. 6 mm. Stamens 4, inserted in perianth-tube. Fruit ellipsoidal, 15–20 ×

8–12 mm, covered with brown scales, orange-red when mature.

Locality: Hong Kong Island, Tai Mo Shan, Ma On Shan, Tai Po Kau, Tai Mong Tsai, Lantau Island. *C. Ford s.n. (HK sheet 5132)*; *S. T. Dunn s.n. (HK sheet 24902)*; *H. C. Tang 2340*.

Distribution: Guangdong, Jiangxi, Guangxi, Yunnan.

Ecology: Thin forests and thickets. Flowering: Oct.–Dec.; fruiting: Apr.–May of the following year.

Uses: Food (fruit edible).

Notes: The type specimen was collected from Mount Parker by J. G. Champion between 1847 and 1850.

## 2. *Elaeagnus tutcheri* Dunn

香港胡頹子(塔氏胡頹子) (Fig. 95; Photo 191–192)

*J. Bot.* 45: 404. 1907; *FKH* 228. 1912; *FRPS* 52(2): 37, pl. 10: 4–6. 1983; *FGD* 4: 274. 2000.

Evergreen scandent shrub, without thorns; young shoots and flowers densely covered with rusty-brown scurfy scales. Leaves alternate, leathery; petioles 8–11 mm; leaf blade elliptic, oblong or obovate, 4–8 × 2–4 cm, base rounded, apex obtuse to rounded, margin entire or slightly undulate, adaxial surface initially covered with brown scurfy scales, glabrous and shining when full grown, abaxial surface densely covered with silvery and brown scales. Flowers usually 2 or 4 together, in lateral clusters or short racemes. Pedicels 2–3 mm. Perianth tubular, lower portion enclosing the ovary, upper portion campanulate, 4–5 mm, apex 4-lobed; lobes ovate, ca. 3 mm, sparsely stellate-hairy adaxially. Stamens 4, inserted in perianth-tube. Fruit ellipsoidal, 8–9 × 5.5–6.5 mm, covered with brown scales, orange-red when mature.

Locality: Aberdeen, Victoria Peak, Cape D'Aguilar, Tai O, Mirs Bay (Ping Chau). *C. Ford 553*; *Y. S. Lau 456, 2833*; *HK sheet 40174*.

Distribution: Guangdong, S Hunan.

Ecology: Thin forests and thickets. Flowering: Nov.–Dec.; fruiting: Mar. of the following year.

Uses: Food (fruit edible).

Notes: The type specimen was collected from Cape D'Aguilar by W. J. Tutcher.

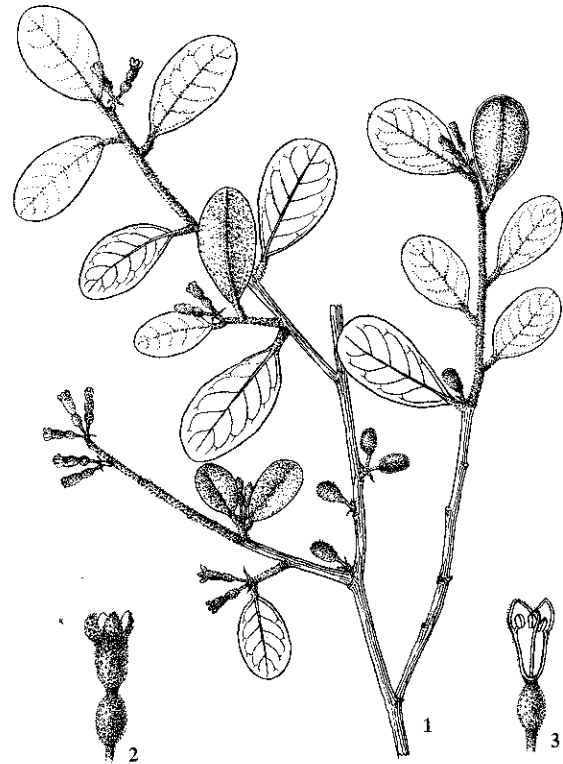


Figure 95. *Elaeagnus tutcheri* Dunn  
1. flowering branch; 2. flower; 3. vertical section of flower. (drawn by H. P. Yu)

## 187. PROTEACEAE 山龍眼科

HU Qi-ming 胡啟明

Trees, shrubs, or rarely perennial herbs. Leaves usually alternate, entire or divided, without stipules. Flowers normally bisexual, but sometimes unisexual (plant dioecious), actinomorphic or zygomorphic, usually in racemes, spikes or heads. Perianth-segments 4, petaloid, usually valvate in bud. Stamens as many as, opposite to and inserted in the segments; anthers 2-celled, opening by longitudinal slits. Ovary superior, 1-locular, sessile or stalked, with 1–several ovules; style simple, often bent inwards and sometimes fleshy or wiry. Fruit a follicle, drupe or nut.

About 80 genera and 1700 species in tropical and subtropical regions, especially in Australia and S Africa; four genera (one introduced) and about 25 species in China; two genera (one introduced) and four species in Hong Kong.

- 1a. Leaves bipinnatifid; flower-buds curved; fruit a follicle; seeds winged.....1. *Grevillea*  
1b. Leaves entire or lobed; flower-buds straight; fruit a nut; seeds not winged.....2. *Helicia*

### 1. *Grevillea* R. Br. ex Knight, *nom. cons.* 銀樺屬

Trees or shrubs. Leaves alternate, bipinnatifid or undivided, without stipules. Flowers bisexual, in terminal or axillary racemes or panicles. Bracts small, usually caducous. Perianth tubular in flower-bud, usually curved, apex subglobular, usually oblique, opening by 4 linear or linear-spathulate, recurved lobes. Stamens 4; anthers ovate, sessile, inserted in perianth-lobes. Ovary usually stipitate, with 2 lateral ovules; style filiform, with oblique discoid stigma. Follicles leathery or woody, opening along ventral suture, 1–2-seeded.

About 250 species mostly in Australia; one species cultivated in China; also in Hong Kong.

#### 1. *Grevillea robusta* A. Cunn. ex R. Br. 銀樺

(Photo 193)

*Suppl. Prodr. Fl. Nov. Holl.* 24. 1830; *FGZ* 173, fig. 76. 1956; *FHN* 1: 442, fig. 243. 1964; *FGD* 1: 95, fig. 105. 1987; *FRPS* 24: 7, pl. 2: 1–6. 1988.

Evergreen tree, 10–25 m tall; bark dark grey to blackish, longitudinally fissured; young shoots and peduncles rusty tomentose. Leaves alternate, bipinnatifid, 15–30 cm, ultimate segments lanceolate, margin recurved, adaxial surface glabrous or sparsely covered with silky hairs, abaxial surface densely covered with silvery silky hairs and brown tomentum. Racemes 11–15 cm, axillary or sometimes several crowded together on leafless short branches. Pedicels ca. 1 cm, glabrous. Perianth orange; tube 1–1.3 cm; lobes small, oblanceolate, 4–6 mm. Ovary stipitate; style 1.8–2 cm, with oblique discoid stigma. Follicles oblique ovoid, ca. 1.5 cm; seeds oblong, winged.

Locality: Cultivated. *H. C. Tang & N. B. G. 1; Y. S. Lau 2198.*

Distribution: Native to Australia, widely cultivated in tropical and subtropical regions.

Ecology: Flowering: Mar.–May; fruiting: Jun.–Aug.

Uses: Ornamental.

## 2. *Helicia* Lour. 山龍眼屬

Trees or shrubs. Leaves alternate, entire or toothed. Flowers bisexual, regular, in axillary racemes. Bracts usually triangular, sometimes leafy, persistent or caducous. Pedicels usually in pairs and often united to the middle. Perianth tubular, apex 4-lobed; lobes linear, recurved. Stamens 4; anthers subsessile, inserted in the perianth-lobes. Ovary sessile or subsessile, with 2 ovules; style slender, club-shaped at the top. Fruit an indehiscent nut.

About 97 species mainly in SE Asia and Australia; 20 species in China; three species in Hong Kong.

- 1a. Young shoots and buds glabrous ..... 1. *H. cochinchinensis*  
 1b. Young shoots and buds hairy.  
     2a. Leaves leathery, reticulation of veins raised on both surfaces; inflorescence and flowers usually glabrous; pedicels ca. 3 mm ..... 2. *H. reticulata*  
     2b. Leaves firmly papery, reticulation of veins conspicuous on abaxial surface; inflorescence and flowers brown pubescent; pedicels ca. 2 mm ..... 3. *H. kwangtungensis*

### 1. *Helicia cochinchinensis* Lour. 小果山龍眼(越南山龍眼)

(Fig. 96; Photo 194)

Fl. Cochinch. 83. 1790; FHK 295. 1861; FKH 226. 1912; FHN 1: 444, fig. 244. 1964; FGD 1: 97. 1987; FRPS 24: 21, pl. 4: 5. 1988; FOC 5: 197. 2003.

Evergreen tree, 4–15 m tall, glabrous throughout. Leaves alternate, thin-leathery or papery; petioles 0.5–1.5 cm; leaf blade oblong, obovate-elliptic or elliptic, 5–11 × 2.5–4 cm, base cuneate, ± decurrent to the petiole, apex acuminate, margin entire or coarsely serrate in the upper part. Racemes axillary, 10–14 cm. Flowers white or light yellow. Pedicels 3–4 mm, in pairs and often united to the base. Perianth tubular, 1–1.2 cm. Hypogynous scales 4, free or slightly united at middle, less than 1/2 of the ovary. Nuts ellipsoidal, 12–15 × 8–10 mm, blue-black or black.

Locality: Mount Parker, Happy Valley, Lam Tsuen. *N. K. Chun 40205; Y. S. Lau 2755; HK sheet 24784.*

Distribution: Guangdong, Guangxi, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Japan, Vietnam.

Ecology: Margins of forests. Flowering: Jun.–Oct.; fruiting: Nov.–Mar. of the following year.

### 2. *Helicia reticulata* W. T. Wang 網脈山龍眼 (Photo 195)

Act. Phytotax. Sin. 5: 300, pl. 56. 1956; FGD 1: 98. 1987; FRPS 24: 19, pl. 5: 1–3. 1988; FOC 5: 196. 2003.

*Helicia erratica* auct. non Hook. f.: FKH 226. 1912.

Evergreen shrub or tree, 2–10 m tall, glabrous except the bud and inflorescence brown pubescent when young. Leaves alternate, leathery; petioles 0.5–1.5 cm; leaf blade oblong, ovate-oblong or obovate, 7–27 × 3–9 cm, base cuneate, apex acute or obtuse, margin sparsely serrate or serrulate, secondary and tertiary veins raised on both surfaces. Racemes axillary, 10–15 cm. Flowers yellowish white. Pedicels ca. 3 mm, in pairs and often united at base. Perianth tubular, 1.3–1.5 cm. Hypogynous scales 4, free or slightly united at base. Nuts ellipsoidal, 1.6–1.8 × 1.2–1.5 cm.

Locality: Aberdeen, Lan Nai Wan, Pat Sin Leng, Ng Tung Chui, Shing Mun, Lantau Island. *Y. S. Lau 1479, 3035; HK sheet 40247.*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Jiangxi, Fujian.

Ecology: Thin forests in ravines or on slopes. Flowering: May–Jul.

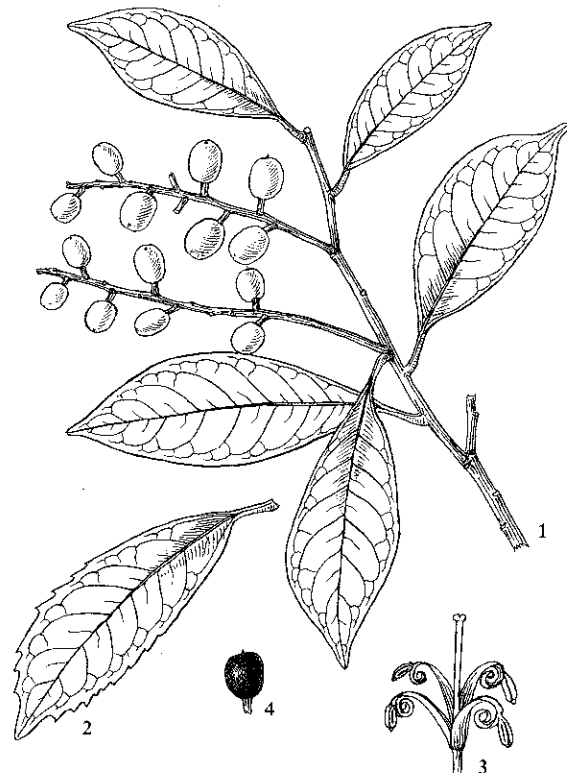


Figure 96. *Helicia cochinchinensis* Lour.

1. fruiting branch; 2. leaf; 3. flower; 4. fruit. (drawn by H. P. Yu)



3. *Helicia kwangtungensis* W. T. Wang 廣東山龍眼

(Photo 196)

Act. Phytotax. Sin. 5: 297. 1956; FGD 1: 98, fig. 108. 1987; FRPS 24: 19. 1988; FOC 5: 197. 2003.

Evergreen tree, to 10 m tall, branches and leaves glabrous; buds brown pubescent when young. Leaves alternate, firmly papery; petioles 1–2.5 cm; leaf blade oblong, obovate or elliptic, 10–26 × 6–12 cm, base cuneate, apex acute, shortly acuminate or obtuse, margin entire or sparsely serrate on the upper part, lateral veins inconspicuous. Racemes axillary, 15–20 cm, densely brown pubescent. Flowers yellowish. Pedicels ca. 2 mm, in pairs and often united at the base. Perianth tubular, 1.2–1.4 cm, sparsely puberulous abaxially. Hypogynous scales 4, free or slightly united at the base. Nuts subglobose, 1.5–2.5 cm in diam., purplish black when mature.

Locality: Tai Mo Shan, Lantau Island. *S. C. Ng 2120; Y. S. Lau 3026; HK sheet 24681.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian.

Ecology: Forests on hillslopes. Flowering: Jun.–Jul.

## 188. PODOSTEMACEAE 川苔草科

DENG Yun-fei 鄧雲飛 • XIA Nian-he 夏念和

Annual or perennial herbs; roots usually flattened, thalloid or filiform, attached to rocks in flowing water; stems absent or present, small or large, simple or branched. Leaves distichous, scattered, or imbricate, base often sheathed, margin entire or dissected; stipules absent or present. Flowers bisexual, in spike-like inflorescences, cymes, irregularly clusters or solitary, actinomorphic or zygomorphic, enclosed or not by a membranous spathella or spathella lacking. Perianth either present, 3- or 5-lobed, free or united at base or reduced to scale-like petals; tepals 2–many, usually alternating with stamens. Stamens 1–4, or many, in 1–2 whorls or confined to one side of flower, hypogynous; filaments free or connate at base; anthers 2–4-locular, longitudinally or irregularly dehiscent. Ovary superior, 1–3-locular; ovules numerous, placenta central; styles 1–3. Fruit a capsule, septicidal, with equal or unequal valves; seeds 2–many, minute, without endosperm.

About 50 genera and 270 species in tropical and subtropical regions; three genera and six species in China; one genus and one species in Hong Kong.

1. *Cladopus* H. Möller 川苔草屬

Perennial herbs; roots thalloid, compressed, subcylindrical or ribbon-like, pinnately branched, closely attached to rocks; stems very short, arising laterally from root margins, simple. Leaves on sterile shoots subulate or linear, up to 8 mm; leaves on fertile shoots more or less scale-like, bifid or palmately lobed, with 3–9 linear lobes. Flowers shortly stalked, solitary, terminal, zygomorphic, pedicellate, enclosed in spathella before anthesis. Spathella ovoid to globose, apex nipple-shaped. Tepals 2, very small, on both sides of stamen, narrowly triangular to linear, membranous. Stamen 1, simple; filament curved, anther basifixed, 2-locular. Ovary smooth, ovoid, 2-locular; stigmas 2, linear. Capsule smooth, subglobose, opening by 2 valves, the larger one persistent.

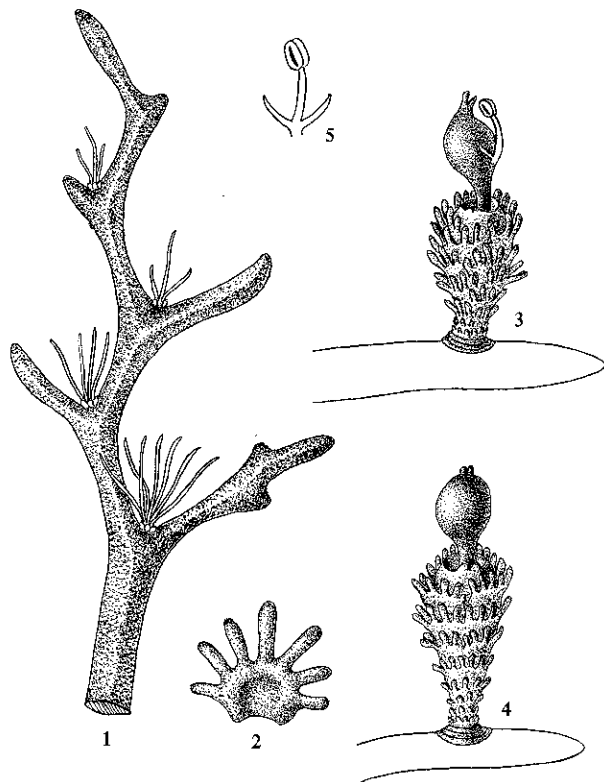
Ten species in E and SE Asia; three species in China; one species in Hong Kong.

1. *Cladopus austrosinensis* M. Kato & Y. Kita 飛瀑草 (Fig. 97)  
Acta Phytotax. Geobot. 54: 92. 2003.

*Cladopus nymanii* auct. non H. Möller: W. Y. Chun & Y. Tsiang, Acta Phytotax. Sin. 8: 261. 1963; FHN 1: 373. 1964; FGD 2: 68. 1991.

Roots creeping, adhering to rock surface, subcylindrical, compressed, branched, 0.5–1(–1.3) mm wide. Leaves on fertile shoots simple or palmately lobed; lobes linear, flat, apex obtuse, to 6 mm; leaves in fertile shoots 8–10, in two rows, digitate; lobes 3–9, oblong or linear, to 0.7 × 0.3 mm, rough, with silica on surface, linear lobes to 5 mm. Flower buds covered by spathella; spathella globose, apex mucronate, mucros simple or sometimes forked, ca. 0.4 mm, irregularly rupturing near apex at anthesis; tepals 2, on both sides of stamen, linear, 1–1.5 mm; stamen 1, to 1.5 mm, ca. 1 mm thick, 2-celled, with 2 nearly vertical grooves. Stigmas 2, forked near base, ca. 0.6 mm, equal, linear to subulate, entire, procumbent; ovules borne over septa surface, 25–34 per locule; septae convex in center, margin thin. Stalk of capsule to 1.7 mm long. Capsule globose, 1.5 mm, smooth, 2 valved. \*

Locality: Tai Mo Shan.

Figure 97. *Cladopus austrosinensis* M. Kato & Y. Kita

1. upper part of plant; 2. leaf; 3. flowering branch; 4. fruiting branch; 5. stamen. (drawn by H. P. Yu)

Distribution: Hainan, Guangdong.

Ecology: On rocks in streams. Flowering & fruiting: May.

Notes: According to M. Kato & Y. Kita (2003), this species was recorded from Tai Mo Shan (*Iwatsuki* 63, T1). No specimen collected from Hong Kong was seen by the authors. The species was reported as *Cladopus nymanii* H. Möller previously (Check List HK Plants 157. 2002; 58. 2004).

## 189. HALORAGACEAE 小二仙草科

HU Qi-ming 胡啟明

Annual or perennial herbs, aquatic, amphibious or terrestrial, sometimes with a woody base; cortex commonly with air-cavities. Leaves opposite to alternate or in whorls, very varied in form, usually the submerged leaves pinnately divided into unbranched capillary segments and the aerial leaves normally simple, and toothed or entire; stipules absent. Flowers bisexual or unisexual, regular, usually very small, solitary and axillary or in terminal spikes to panicles. Calyx-tube adnate to the ovary, with 2–4 lobes, or sometimes none. Petals 2–4, free and caducous, or absent. Stamens most commonly 8 in 2 whorls, with the outer set opposite to the sepals, or less often 2–6; anthers basifixed, dehiscent laterally. Ovary inferior, 2–4-locular; styles as many, with feathery or papillose stigmas. Fruit a nut or drupe-like.

About nine genera with 145 species widely distributed throughout temperate and subtropical regions, especially in the S hemisphere; two genera and about seven species in China; two genera and four species in Hong Kong.

- 1a. Plants terrestrial; flowers in terminal racemes or panicles..... 1. *Gonocarpus*  
1b. Plants aquatic; flowers solitary in axils of verticillate leaves..... 2. *Myriophyllum*

### 1. *Gonocarpus* Thunb. 小二仙草屬

Perennial terrestrial herbs. Stems slender, decumbent or erect, usually with raised lines descending from the base of petioles. Leaves opposite or alternate, rarely in whorls of 3(–5), undivided. Flowers small, bisexual, 3–4-merous; solitary or clustered in the upper leaf-axils, or in terminal racemes or panicles. Calyx-tube adnate to the ovary, terete or angular, the limb 4-lobed, persistent in fruit. Petals 4–8, concave, usually shortly clawed, caducous. Stamens usually twice as many as sepals; filaments short; anthers oblong, 4-celled. Ovary incompletely 3–4-locular, with 1 pendulous ovule in each locule; stigma capitate. Fruits small, nut-like, 1-seeded, pericarp somewhat membranous, 1-locular, septa almost absent.

About 36 species chiefly in Australia and New Zealand; two species in China; also in Hong Kong.

- 1a. Leaves lanceolate to oblong, subsessile, ± with rough minute hairs; flowers erect, yellow..... 1. *G. chinensis*  
1b. Leaves ovate, short-petiolate, usually glabrous; flowers nodding at anthesis, red or rose..... 2. *G. micranthus*

#### 1. *Gonocarpus chinensis* (Lour.) Orchard

黄花小二仙草 (Fig. 98; Photo 197)

Bull. Auckland Inst. Mus. 10: 207. 1975.

*Haloragis chinensis* (Lour.) Merr., Trans. Amer. Philos. Soc., n.s., 24(2): 39. 1935; FHN 1: 431, fig. 236. 1964; FRPS 53(2): 141, pl. 29: 6. 2000.

*Haloragis scabra* (Koenig.) Benth., FHK 139. 1861.

*Haloragis tetragyna* auct. non (Labill.) Hook. f.: FKH 102. 1912.

*Gaura chinensis* Lour., Fl. Cochinch. 225. 1790.

Perennial terrestrial herbs, 10–60 cm tall. Stems slender, 4-angled, erect or diffuse, much branched, rough and more or less with minute, retrorse hairs, rooting at nodes. Leaves opposite, subsessile, lanceolate or narrowly oblong, 10–28 × 1–9 mm, base broadly cuneate, apex obtuse, margin sparsely serrate, scabrous and ± hirtellous on both surfaces. Flowers small, 0.2–0.7 mm, almost sessile, solitary in each bract, forming slender, terminal, one-sided racemes or interrupted spikes, and usually branching into narrow panicles. Calyx tubular, 4-lobed; lobes triangular, margin yellowish, cartilaginous. Petals narrowly oblong, 0.5–0.9 × 0.4–0.6 mm, yellow, sparsely puberulent abaxially. Stamens 8, nearly as long as the petals. Ovary ovoid, 4-locular; style very

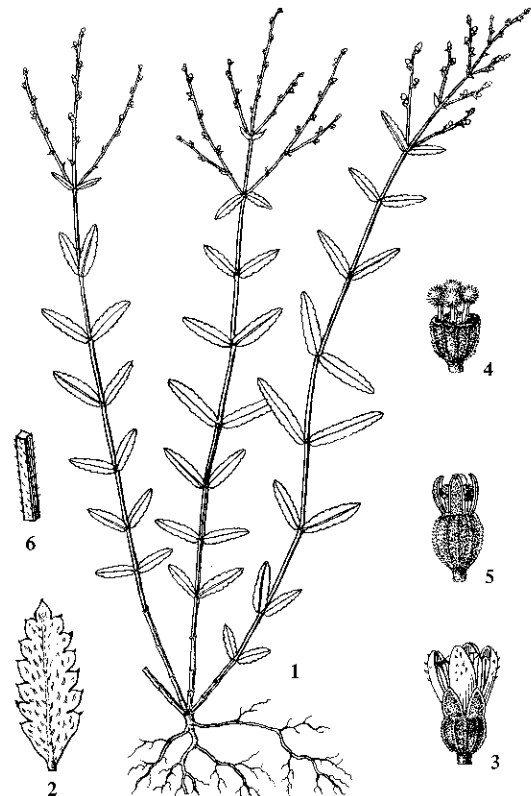


Figure 98. *Gonocarpus chinensis* (Lour.) Orchard  
1. whole plant; 2. leaf; 3. flower; 4. flower with sepals and petals removed, showing style; 5. fruit; 6. portion of stem. (drawn by H. P. Yu)

short; divided at the top into a tuft of hair-like lobes. Nuts subglobose, ca. 1 mm in diam., with 8 ribs and scabrous tubercles.

Locality: Common in Hong Kong. *W. J. Tutchter 8127; Y. S. Lau 2052, 3144.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Fujian, Taiwan; India, Indochina, Malesia, Australia.

Ecology: Moist and wet grassy slopes. Flowering: May–Aug.; fruiting: Jul.–Sep.

Notes: The species was reported as *Haloagis chinensis* (Lour.) Merr. previously (Check List HK Plants 158. 2002; 58. 2004).

## 2. *Gonocarpus micranthus* Thunb. 小二仙草

(Photo 198)

Nov. Gen. Pl. 3: 69. 1783.

*Haloragis micrantha* (Thunb.) R. Br., Fl. Jap. 1: 25. 1835; FHN 1: 431. 1964; FRPS 53(2): 141, pl. 29: 6. 2000.

Perennial terrestrial herbs, 5–45 cm tall. Stems slender, sulcate, erect or prostrate at the base, much branched, usually reddish brown. Leaves opposite, short-petiolate or subsessile, ovate, 6–17 × 4–8 mm, base rounded, apex acute or obtuse, margin sparsely serrate, usually glabrous on both surfaces. Flowers small, ca. 1 mm, almost sessile, solitary under each bract, forming slender, terminal, one-sided racemes or panicles. Calyx-tube 0.8 mm, apex 4-lobed, lobes triangular, ca. 0.5 mm. Petals pink, narrowly oblong, ca. 1.5 mm. Stamens 8; filaments ca. 0.2 mm; anthers linear, 0.3–0.7 mm. Ovary ovoid, 2–4-locular. Nuts subglobose, ca. 1 mm in diam., obtusely 8-ribbed.

Locality: Sunset Peak. *L. T. Lo 613; Y. W. Lam 1635.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Henan, Hebei, Hunan, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Indochina, India, Malesia, New Zealand, Australia.

Ecology: Moist grassy slopes. Flowering: May–Jul.; fruiting: Jun.–Oct.

Uses: Medicinal (folklore).

Notes: The species was reported as *Haloragis micrantha* (Thunb.) R. Br. previously (Check List HK Plants 158. 2002; 58. 2004).

## 2. *Myriophyllum* L. 狐尾藻屬

Aquatic perennial herbs. Leaves alternate or whorled, sessile or subsessile, linear to ovate, entire, serrate, or more often pectinate-divided. Flowers very small, usually unisexual, monoecious, sessile, solitary in axil of leaves, or rarely in spikes. Bracts 2, entire or lobed. Male flowers: calyx-tube short, apex 2–4-lobed or entire; petals 2–4, caducous; stamens 2–8, free, anthers basifixed, opening by longitudinal slits; rudimentary pistils present or absent. Female flowers: calyx-tube adnate to ovary, 4-grooved, apex 4-lobed or entire; petals small and caducous, or wanting; staminodes present or absent; ovary inferior, 4-locular, or rarely 2-locular, with a solitary anatropous ovule in each locule; style (2–)4; stigmas feathery. Fruit separating into (2–)4 one-seeded mericarps.

About 36 species, cosmopolitan, but mainly in Australia; 11 species in China; two species in Hong Kong.

- 1a. Flowers solitary in axils of leaves; stamens 4 .....  
..... 1. *M. tetrandrum*
- 1b. Flowers in terminal or axillary spikes; stamens 8 .....  
..... 2. *M. spicatum*

### 1. *Myriophyllum tetrandrum* Roxb. 四蕊狐尾藻

Fl. Ind., ed. 1820, 1: 470. 1820; FHN 1: 433. 1964; FRPS 53(2): 140. 2000.

Perennial submerged herbs, with creeping rhizomes in mud. Stems terete, to 2 m or longer, less branched, apex projecting above water. Leaves in whorls usually of 4, feathery, to 8 cm or longer, segments linear, 10–13 mm; leaves at apex of stem above water lanceolate or spatulate, margin ± toothed, decreasing gradually upwards into bract of about 0.4 mm, palmately lobed. Flowers solitary in axils of the whorled leaves, male above female, short-pedicellate. Calyx-tube 4-angled; lobes triangular, 0.2 × 0.15 mm. Petals spatulate, flat, membranous, 1 × 0.4 mm. Stamens 4. Styles 4, with papillose stigmas. Fruit globose, ca. 2 mm in diam.

Locality: Sha Kok Mei, Wang Tong Tsuen. *P. S. Choi 26; Y. S. Lau 3251; Y. W. Lam 193.*

Distribution: Hainan; Indochina, India.

Ecology: Freshwater ponds and ditches. Flowering: Sep.

### 2. *Myriophyllum spicatum* L. 穗狀狐尾藻

(Fig. 99)

Sp. Pl. 992. 1753; FHN 1: 432. 1964; FTW ed. 2, 3: 973\*1993; FRPS 53(2): 136, pl. 27: 1–3. 2000.

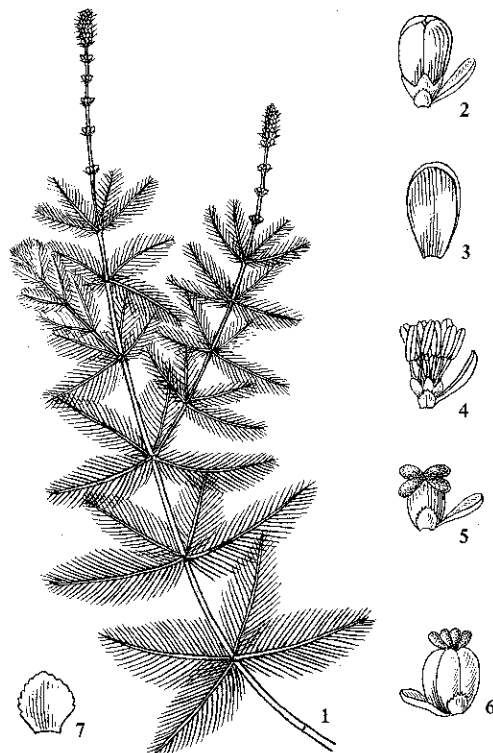


Figure 99. *Myriophyllum spicatum* L.

1. portion of plant; 2. flower bud; 3. petal; 4. male flower with petals removed; 5. female flower; 6. fruit; 7. bract. (drawn by H. P. Yu)

Perennial submerged herbs, with creeping rhizomes rooted on bottom. Stems terete, 1–2.5 m, much branched. Leaves in whorls usually of 5, but sometimes in whorls of 3–4–6, feathery, to 3.5 cm or longer, segments linear, 10–15 mm; petioles very short or almost wanting. Flowers small, in a whorled spike (6–10 cm) projecting above water, with male flowers above the females. Male flowers: calyx-tube broadly campanulate, apex 4-lobed; petals 4, pinkish, broadly spatulate, concave, ca. 2.5 mm; stamens 8; anthers ca. 2 mm, light yellow. Female flowers: calyx-tube tubular, apex 4-lobed; petals absent or inconspicuous; ovary 4-locular, styles 4, with feathery stigmas. Fruit ovoid or oval-ellipsoidal, 2–3 mm, 4-grooved.

Locality: Sai Kung. *Y. S. Lau 3212*.

Distribution: Widely spread over most regions of the world.

Ecology: Freshwater ponds. Flowering: Apr.–Aug.

Uses: Animal food, medicinal (folklore).

## 191. SONNERATIACEAE 海桑科

TANG Wing-sze 鄧詠詩 • Winnie P. W. KWOK 郭碧雲 • YIP Kwok-leung 葉國樑

Trees. Leaves simple, opposite, entire, leathery and stipulate. Flowers bisexual, actinomorphic, perigynous, pedicellate, either solitary at terminal or 2–3 in cymes or corymbs. Calyx persistent, 4–8-lobed, leathery, often coloured inside. Petals 4–8 or absent. Stamens many (less often only 12), seriate, inflexed in buds and inserted on the calyx; filaments filiform, long and robust; anthers reniform or ellipsoidal. Ovary superior, sessile, 4 or more locules, enclosed by calyx during anthesis; ovules many; stigma either capitate, peltate or slightly lobed. Fruits on the calyx tube, either valvate capsule or indehiscent globose berry. Seeds many, small and irregular, exalbuminous.

Two genera and about 12 species (including three hybrid species), mainly distributed from tropical Asia to tropical Africa; two genera and five species in China; one genus and two species in Hong Kong, both accidentally introduced to mangroves along muddy coast and channels.

### 1. *Sonneratia* L. f. 海桑屬

Trees or shrubs; bark flaky; trunk not buttressed, densely surrounded by thick, cone-shaped and upright pneumatophores; root subsurface at slight depth and radiating. Flowers solitary or 2–3 at the end of the branchlet. Calyx leathery, 4–8-lobed, often coloured inside. Petals narrow, vestigial or absent, caducous. Stigma capitate or peltate; style folded in bud. Stamens numerous and caducous; anthers reniform and small. Ovary superior. Fruits berry, globular. Seeds numerous, embedded in pulp.

About nine species in the genus (including 3 hybrid species), ranging from E Africa through Indo-Malay to tropical Australia and into Micronesia and Melanesia including the Hainan Island and Fujian Province of China; two native and one introduced species in China; two species in Hong Kong, both introduced. Kwok et al. (Hong Kong Biodiversity, Issue No. 10: 9–12, 2005) provided a report of the *Sonneratia* species and their situation in Hong Kong SAR.

- 1a. Calyx 4(–5)-lobed, petals absent; stigma expanded, mushroom-like; fruits smaller than 3 cm in diam.; leaves lanceolate, gradually taper towards apex..... 1. *S. apetala*
- 1b. Calyx 6(–8)-lobed; petals dark red; stigma capitate but not expanded; fruits exceed 3 cm in diam.; leaves elliptic, oblong or obovate, apex emarginate..... 2. *S. caseolaris*

#### 1. *Sonneratia apetala* Buch.-Ham. 無瓣海桑

(Photos 199–200)

Symes, Embassy Ava 3: 477. 1800, cum tab.; Baker & Steenis in Fl. Malesiana ser. 1, 4: 286. 1951.

Tree, to 12 m tall (15(–20) m elsewhere); twigs slender and pendulous; bark light brown and thin; pneumatophores conspicuous, grey, arising from horizontal roots, up to 1 m tall. Leaves sparse, opposite; petioles 0.5–1.1 cm; leaf blade lanceolate, 4–8.5 × 1–3 cm, glabrous, margin entire. Inflorescence mostly 3, in terminal cyme. Flowers small, apetalous, 1.5–2 cm. Calyx 4(–5)-lobed, calyx tube cup-shaped during anthesis. Stigma broad, mushroom-shaped at the anthesis. Stamens numerous; filament white, 1 cm long. Ovary 6–8 locular. Fruit an oval berry, green when young, becoming greyish when mature, 1.5–2.5 cm, distinctively smaller than other members in *Sonneratiaceae*; hypanthium flat-expanded. Seeds compactly arranged in the fleshy pulp of the placenta, rusty, mostly “U” or “V”-shaped, or irregular, 90–242 per fruit.

Locality: Deep Bay, Lantau Island. (Naturalized) *W. S. Tang s.n. (HK sheet 40305)*.

Distribution: Hainan, Guangdong (Shenzhen, introduced); S Asia ranging from India, Bangladesh and Malaysia to Solomon Islands and the New Hebrides.

Ecology: Introduced accidentally. Near the banks of tidal river and mudflat, especially where salinity is low. Flowering & fruiting: Almost all year round.

Uses: Food (fruit).

**2. *Sonneratia caseolaris* (L.) Engler** 海桑

(Photos 200–201)

Engl. & Prantl., Nachtr. 261. 1897; Baker & Steenis in Fl. Malesiana ser. 1, 4: 283, fig. 3c. 1951; FHN 1: 426. 1964, *p.p.*; FGD 1: 92. 1987.

*Sonneratia acida* L. f., Suppl. Sp. Pl. 252. 1781

*Sonneratia lanceolata* Blume, Herb. Lugd. Batav. 567. 1851.

Tree, to 12 m tall (15(–20) m elsewhere), crown sparse; branches horizontal, twigs slender; bark deep to pale brown or grey, smooth or lightly fissured; pneumatophores grey, conical, taper towards the ends, up to 1(–2) m tall. Leaves opposite; petiole short (0.4–0.9 cm) to almost sessile; leaf blade variable in shape, young leaves lanceolate, apex acute; adult leaves elliptic, oblong or obovate, 4–7 × 2.5–5 cm, glabrous, adaxial surface deep green, midvein often red at the base toward the petiole. Flower solitary or in few-flowered cyme on the outer pendulous twigs. Calyx 6(–8) lobed; tube cup-shaped during anthesis. Petals inconspicuous, slender, lanceolate, dark red. Stigma capitate but not expanded. Stamens numerous, filaments slender, pink or red below and white distally, 2–4.5 cm long; anthers pale yellow. Ovary globose, flattened or depressed above, 15–18(–20)-locular. Fruits edible, compressed globose, 3–8.5 cm in length, pericarp leathery, green when young and turns yellowish green and aromatic when mature; hypanthium flat-expanded. Seeds many, rusty, embedded in the fleshy pulp, mostly “U” or “V”-shaped, or irregular, 800–1300 per fruit.

Locality: Deep Bay, Ma Wan, Tolo Pond, Lantau Island. (Naturalized) *HK sheet 39179, 39181, 39182.*

Distribution: Native to China (Hainan Island) and cultivated in SE China; SE Asia to N Australia.

Ecology: Introduced accidentally. Near the banks of tidal river and mudflat where salinity is low. Flowering & fruiting: Almost all year round.

Uses: Food (fruit), medicinal (folklore), timber, corks or floats (pneumatophores), paper (pulp).

**192. LYTHRACEAE 千屈菜科**

WU De-lin 吳德鄰

Herbs, shrubs or trees. Stipules much reduced or absent. Leaves opposite, rarely whorled or alternate, simple and commonly entire. Flowers bisexual, solitary or fasciculate in axils or often in terminal spikes, racemes or panicles. Calyx campanulate or tubiform, 3–6(–16)-lobed, with or without appendages between lobes. Petals as many as calyx-lobes or absent, attached at summit of hypanthium. Stamens as many or twice as many as petals, rarely indefinite, inserted in the tube of the calyx, often lower down than the petals; filaments more or less elongate; anthers versatile or seldom basifixed, opening by longitudinal slits. Ovary superior, 2–6-locular; ovules numerous in each locule, anatropous. Capsules leathery or membranous, dehiscent by valves or by a transverse slit, or seldom indehiscent. Seeds numerous, sometimes winged, without endosperm.

About 27 genera and 600 species widespread in tropical countries, with relatively few species in temperate regions; about 11 genera and 47 species in China; six genera and 14 species in Hong Kong.

## 1a. Herbs.

2a. Petals present; capsule enclosed within calyx-tube, with mucilaginous and glandular hairs ..... 1. *Cuphea*

2b. Petals inconspicuous or absent; capsule exerted from calyx-tube, without mucilaginous and glandular hairs.

3a. Inflorescence a spike on racemes; capsule dehiscent, 2–5-valved ..... 2. *Rotala*

3b. Inflorescence a cyme or flowers fasciculate; capsule transversely dehiscent ..... 3. *Ammannia*

## 1b. Trees or shrubs.

4a. Petals 8–12; leaves with a gland or hole on tip of midvein abaxially ..... 4. *Lafoensia*

4b. Petals 4–6; leaves without a gland or hole on tip of midvein abaxially.

5a. Petals 4; stamens 8; seeds not winged ..... 5. *Lawsonia*

5b. Petals usually 6; stamens numerous; seeds winged at apex ..... 6. *Lagerstroemia*

**1. *Cuphea* P. Browne 萼距花屬**

Herbs or shrubs, with mucilaginous and glandular hairs. Leaves opposite or whorled, rarely alternate. Flowers bilateral, solitary or in racemes, borne between petioles, rarely axillary or extra-axillary; bracteoles 2. Calyx-tube angulate, apex 6-lobed and with same appendages, base spurred. Petals 6, unequal, rarely 2 or absent. Stamens 11, rarely 9, 6 or 4, 2 of them shorter than others. Ovary superior, sessile, unequally 2-locular; ovules 3–many in each locule; styles filiform; stigma capitate. Capsules oblong, involved in calyx, laterally dehiscent.

About 300 species native to America and Hawaii Islands; eight species introduced in China; three species cultivated in Hong Kong. *Cuphea petiolate* (L.) Koehne and *C. platycentra* Lemarie, both native to America, were once cultivated.

1. *Cuphea hyssopifolia* Kunth

細葉萼距花

(Fig. 100; Photo 202)

Nov. Gen. Sp. (4th ed.) 6: 199. 1823 [1824].

Little shrub, 30–60 cm tall, much branched. Branches sparsely hirsute, internodes very short, 4–6 mm. Leaves opposite; petioles 1–1.5 mm; leaf blade elliptic to narrowly elliptic, 0.8–2.5 × 0.4–1 cm, base obtuse, apex acute, margin entire, glabrous adaxially, sparsely hirsute on veins abaxially, lateral veins 4–5 on each side of midvein. Flowers solitary axillary, 7–8 mm in diam. Pedicels slender, 2–3 mm, sparsely hirsute. Calyx 4–5 mm, sparsely hairy on the ribs, slightly gibbous at base limb, 6-toothed. Petals 6, obovate-elliptic, 2–2.5 × 1.2–2 mm, nearly equal, purplish red to pink, apex acute, base ± clawed. Stamens included. Capsules ellipsoidal.

Locality: Cultivated. *L. T. Lo 134; Y. S. Lau 2511.*

Distribution: Native to Mexico.

Ecology: Flowering: Nearly all year round.

Uses: Ornamental.

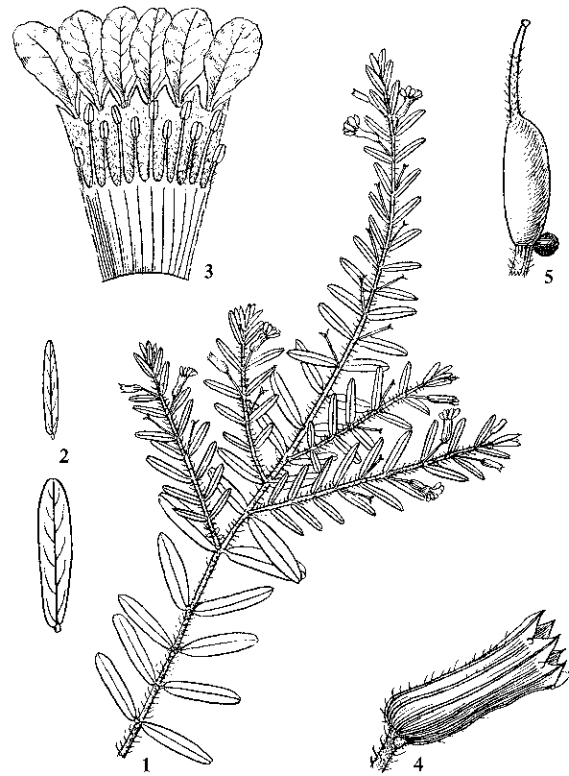


Fig. 100. *Cuphea hyssopifolia* Kunth

1. flowering branch; 2. leaf; 3. corolla and stamens; 4. calyx; 5. pistil and glands. (drawn by H. P. Yu)

2. *Rotala* L. 節節菜屬

Annual, rarely perennial herbs, glabrous or subglabrous. Leaves decussate or verticillate, rarely alternate, sessile or subsessile. Flowers small, 3–6-merous, actinomorphic, solitary in axil of leaves, or in spikes or racemes, axillary or terminal; bracteoles 2. Calyx-tube cylindrical, subglobose or pot-like, scarious, rarely leathery, 3–6-toothed, without appendages between lobes, or with setiform appendages. Petals 3–6, minute or absent, persistent or caducous. Stamens 1–6. Ovary 2–5-locular; styles short or long; stigma disciform. Capsule not wholly involved by calyx-tube, septicidal, 2–5-valved; fruit wall transversely striate (seen under magnifier). Seeds minute.

About 50 species mainly distributed in tropical regions of Asia and Africa, few in Australia, Europe and America; six species in China; four species in Hong Kong.

- 1a. Capsules opening into 2 valves ..... 1. *R. indica*
- 1b. Capsules opening into 3–5 valves.
  - 2a. Leaves orbicular, 5–10 × 3.5–15 mm ..... 2. *R. rotundifolia*
  - 2b. Leaves not orbicular, 7–30 × 3–8 mm.
    - 3a. Stems angled and winged; capsules 3-valved ..... *R. diversifolia*
    - 3b. Stems angled, not winged; capsules 3–5-valved ..... 4. *R. pentandra*

1. *Rotala indica* (Willd.) Koehne 節節菜

Bot. Jahrb. Syst. 1(2): 172. 1880; FRPS 52(2): 73. 1983; FGD 3: 73, fig. 50. 1995.

*Peplis indica* Willd., Sp. Pl. 2(1): 244. 1799.

*Ammannia peploides* Spreng, Syst. Veg. 1: 444. 1825; FKH 109. 1912.

Annual erect or diffuse herb, 6–25 cm tall. Stems slightly 4-angled, often decumbent and with adventitious roots at base. Leaves opposite, sessile or subsessile; leaf blade obovate or oblong-obovate, 4–17 × 3–7 mm, base narrow, apex acute or obtuse, mucronate, margin cartilaginous. Flowers small, less than 3 mm, in axillary, short (8–15 mm) spikes, rarely solitary. Bracts oblong-obovate, 4–5 mm; bracteoles 2, linear-lanceolate. Calyx-tube campanulate, 2–2.5 mm, teeth 4, narrowly deltoid. Petals 4, minute, pinkish, scarcely half the length of calyx-teeth. Capsules elliptic, 1.5 mm, slightly angled, dehiscing by 2 valves.

Locality: Common in Hong Kong. *W. J. Tutcher 8132, 7271; P. S. Choi 64.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian; India, Sri Lanka, Indonesia, Philippines, Indochina, Japan, Russia.

Ecology: Paddy fields and wet places. Flowering: Oct.–Nov.; fruiting: Nov.–Mar. of the following year.

2. *Rotala rotundifolia* (Buch.-Ham. ex Roxb.) Koehne

圓葉節節菜

(Fig. 101; Photos 203–204)

Bot. Jahrb. Syst. 1(2): 175. 1800; FRPS 52(2): 75. 1983; FGD 3: 73. 1995.

*Ammannia rotundifolia* Buch.-Ham. ex Roxb., Fl. Ind., ed. 1820, 1: 446. 1820; FHK 111. 1861; FKH 108. 1912.

Annual herb, 5–30 cm tall, glabrous, diffuse and often rooting at base. Leaves opposite, sessile or very shortly petiolate; leaf blade orbicular, obovate, or broadly oblong, 5–10 × 2.5–15 mm, base obtuse, apex rounded, lateral veins 4 on each side of midvein. Flowers solitary in axils of bracts, forming 1–3 terminal densely flowered spikes of 1–5 cm. Bracts ovate or long-ovate, as long as flowers; bracteoles 2, membranous, lanceolate or cuneate, as long as calyx-tube. Calyx-tube broadly campanulate, ± hyaline, 1–1.5 mm, 4-toothed; teeth deltoid. Petals 4, obovate, purplish, twice as long as calyx-lobes. Stamens 4. Capsules elliptic, 3–4-valved.

Locality: Wong Chuk Hang, Tai Mo Shan, Sha Tin, Sai Kung, Lantau Island. *Y. S. Lau* 834, 3049; *L. T. Lo* 207.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; India, Malaysia, Sri Lanka, Indochina, Japan.

Ecology: Paddy fields and wet places. Flowering & fruiting: Dec.–Jun. of the following year.

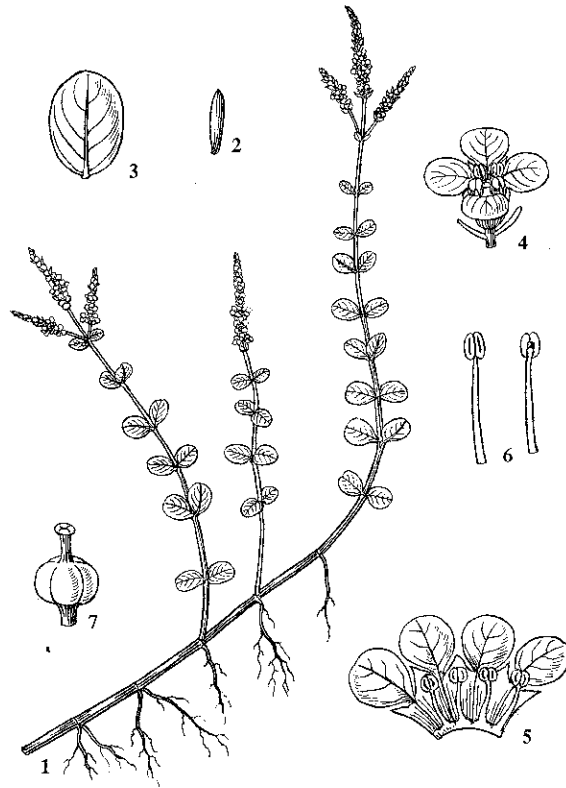


Figure 101. *Rotala rotundifolia* (Buch.-Ham. ex Roxb.) Koehne

1. part of plant; 2. bract; 3. leaf; 4. flower; 5. corolla and stamens; 6. stamens; 7. pistil. (drawn by H. P. Yu)

3. *Rotala diversifolia* Koehne 異葉節節菜

Bot. Jahrb. Syst. 41(2): 77. 1907; FRPS 52(2): 75. 1983; FGD 3: 74. 1995.

Annual herb, 8–30 cm tall. Stems angled and broadly winged. Leaves decussate, sessile; leaf blade narrowly oblong, 8–12 × 3–8 mm, base broadly subcordate, apex obtuse, semiamplexicaul, lateral veins slender, 5 or more on each side of midvein. Spikes axillary, 3–5(–10) cm. Bracts leaf-like, 4–6 mm, base rounded, enlarged; bracteoles 2, white. Calyx-tube broadly campanulate, 2 mm, teeth 4–5, deltoid, 1 mm. Petals purplish, 4–5, obovate, 2 mm, persistent. Stamens 4–5. Capsule subglobose, 3-valved.

Locality: Tai Lung. *S. Y. Hu* 12702; *P. S. Choi* 529.

Distribution: Hainan, Guangxi; Vietnam, Laos, Thailand.

Ecology: Wet places. Flowering: Nov.

4. *Rotala pentandra* (Roxb.) Blatt. & Hallb. 薄瓣節節菜J. Bombay Nat. Hist. Soc. 25: 707. 1918, *p.p.*; FRPS 52(2): 76. 1983; FGD 3: 74. 1995.*Ammannia pentandra* Roxb., Fl. Ind., ed. 1820, 1: 448. 1820; FKH 108. 1912.

Annual herb. Stems decumbent or erect, 8–30 cm tall, 4-angled. Leaves narrowly lanceolate or lanceolate, 7–30 × 3–5 mm (only 5 mm in lateral branches), base subtruncate, rarely slightly cordate and amplexicaul, apex acute, obtuse or emarginate; bracteoles linear-lanceolate. Flowers sessile. Calyx pot-like to campanulate, 1–1.5 mm, 3–5-toothed, with bristle-like appendages between teeth. Petals 5, thin and hyaline, sometimes absent. Stamens 3–5. Capsules red, globular, 3–5-valved.

Locality: Hong Kong. (*vide* Hu, 2001)

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Jiangsu, Fujian; E & S Asia, Afghanistan, Indonesia, Philippines, Japan.

Ecology: Flowering & fruiting: Jul.

Notes: The species was reported as *Ammannia leptopetala* Koehne previously (Check List HK Plants 65. 1993).

3. *Ammannia* L. 水莧菜屬

Annual herbs. Stems erect, slender, many-branched, often 4-angled. Leaves opposite, sessile, without stipules. Flowers small, 4–numerous, actinomorphic, often in axillary cymes or densely fasciculate, rarely solitary. Bracts 2. Calyx campanulate, globular after flowering, 4–6-toothed, with minute appendages between teeth. Petals as many as calyx-lobes, and alternate with it or absent. Stamens 2–8, usually 4. Ovary enclosed within calyx-tube, 2–4-locular, sometimes 1-locular; styles straight; stigma capitate; ovules many on axile placentation. Capsules membranous, lower parts enclosed within calyx-tube, opening whether transversely or irregularly. Seeds numerous, deltoid.

About 30 species widely distributed in tropical and subtropical regions, mainly in Africa and Asia; four to five species in China; three species in Hong Kong.

- 1a. Petals absent..... 1. *A. baccifera*  
 1b. Petals present.  
 2a. All leaves auriculate at base; flowers 3–7; capsules 2–3.5 mm in diam. .... 2. *A. arenaria*  
 2b. At least leaves on lower part of stem cuneate at base; flowers more than 15; capsules 1.5 mm in diam. .... 3. *A. multiflora*

**1. *Ammannia baccifera* L. 水菟菜 (細葉水菟)** (Fig. 102)

Sp. Pl. 120. 1753; FRPS 52(2): 69. 1983; FKH 109. 1912; FGD 3: 75, fig. 51. 1995.

Annual herb, 10–15 cm tall. Stems erect, many-branched, slightly 4-angled and narrowly winged. Leaves opposite on lower part of stem, ± alternate on upper part of stem, sessile; leaf blade oblong or lanceolate, 6–15 × 3–5 mm on lateral branchlet, up to 7 cm on upper part of stem, base attenuate, apex acute or obtuse. Cymes or flower fascicles axillary; pedicels 1.5 mm. Flowers minute, 1 mm, green or purplish. Calyx 4-toothed, teeth deltoid, appendages folded or dentate. Petals absent. Stamens 4. Capsules purple, globular, 1.2–1.5 mm in diam., upper part irregularly circumscissile. Seeds black, minute, subdeltoid.

Locality: Lamma Island. *E. M. Gibbs 5155*.

Distribution: E, C, S & SW China; Vietnam, India, Philippines, Malaysia, Australia, Africa.

Ecology: Paddy field or wet places. Flowering: Aug.–Oct.; fruiting: Sep.–Dec.

**2. *Ammannia arenaria* Kunth 耳基水菟** (Photo 205)

Nov. Gen. Sp. (4th ed.): 190. 1824; FRPS 52 (2): 70. 1983.

*Ammannia senegalensis* auct. non Lam.: DC., Prodr. 3: 77. 1828; FKH 109. 1912, *p.p.*

Erect herb, 15–55 cm tall. Stems 4-angled, few-branched. Leaves opposite, membranous, narrowly lanceolate or narrowly oblong, 2–7 × 0.3–1.5 cm, base cordate-auriculate, apex acuminate, semiamplexicaul. Cymes axillary. Peduncles 2–5 mm. Bracts 1.5 mm; bracteoles scale-like. Calyx campanulate, angled, teeth 4, broadly deltoid. Petals 4, red, suborbicular, slightly longer than calyx-tooth, caducous or absent. Stamens 4. Capsules purple-red, oblate, 2.5–3 mm in diam., irregularly circumscissile. Seeds subdeltoid, 0.5 mm.

Locality: Sha Tin Tau Tsuen, Peng Shan Ha Chuen, Peng Chau, Lantau Island. *Y. S. Lau 2380*; *Y. W. Lam 1000, 1350*; *K. Y. Tam s. n.* (HK sheet 39334).

Distribution: Guangdong, Fujian, Zhejiang, Jiangsu, Anhui, Hubei, Henan, Hebei, Shaanxi, Gansu, Yunnan; tropical regions of the world.

Ecology: Wet places and paddy field. Flowering: Dec.–Feb. of the following year; fruiting: Aug.–Sep.

**3. *Ammannia multiflora* Roxb. 多花水菟**

Fl. Ind., ed. 1820, 1: 447. 1820; FRPS 52(2): 69. 1983; FGD 3: 76. 1995.

*Ammannia senegalensis* auct. non Lam.: DC., Prodr. 3: 77. 1828; FKH 109. 1912, *p.p.*

Erect herbs, 8–40 cm tall. Stems many-branched, 4-angled. Leaves opposite, sessile; leaf blade linear or narrowly lanceolate, 8–25 × 2–8 mm, base cuneate (leaves on lower part of stem), or auriculate to subrounded (leaves on upper part of stem), apex acuminate. Flowers minute, in lax, dichotomous cymes. Peduncles 2–3 mm; bracteoles 2; pedicels 1–1.5 mm. Calyx-tube angulate, teeth 4, shorter than tube. Petals 4, obovate, caducous. Stamens 4, rarely 6–8. Capsules deeply red, oblate, 1.5–2 mm in diam., upper half exserted from calyx. Seeds black brown, minute, triangular.

Locality: So Kon Po. *W. J. Tutcher s.n.* (HK sheet 1922).

Distribution: Widely distributed in S China; Asia, Europe, Africa, Australia

Ecology: Swamp. Flowering & fruiting: Jul.–Sep.

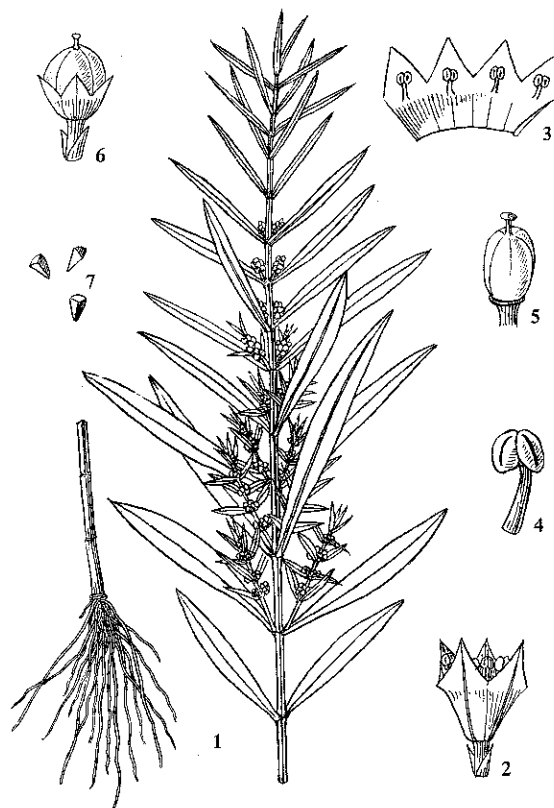


Figure 102. *Ammannia baccifera* L.

1. whole plant; 2. flower; 3. calyx opened up showing stamens; 4. stamen; 5. pistil; 6. capsule; 7. seeds. (drawn by H. P. Yu)

**4. *Lafoensia* Vand. 麗薇屬**

Trees or shrubs, glabrous. Branches terete. Leaves decussate, leathery, often with a gland or a small hole near tip of midvein on abaxial surface. Flowers showy, axillary, solitary or in racemes or panicles. Bracts leaf-like; bracteoles 2, caducous. Flowers 8–16 (–many). Calyx campanulate or oblate, leathery, 10–12-toothed, teeth long-deltoid, membranous, without appendage. Petals 8–12, inserted on throat of calyx-tube, clawed and crisped. Stamens 16–32, inserted at middle of calyx-tube, whorled, long and erect, filaments filiform;



anthers dorsifixed. Ovary 1-locular or imperfectly 2-locular; ovules numerous; styles very long; stigma capitate. Capsules hard, imperfectly loculicidal dehiscent into 2–4 valves, or irregularly dehiscent at apex.

Ten species distributed in tropical America; one species introduced into China and Hong Kong.

1. *Lafoensia vandelliana* Cham. & Schldt.

麗薇(萊浮樹)

(Fig. 103)

Linnaea 2: 346. 1827; FRPS 52(2): 89. 1983; FGD 3: 77, fig. 53. 1995.

Shrub, 2–8 m tall. Branches terete. Leaves decussate; petioles 2–8 mm; leaf blade thinly leathery, obovate or obovate-oblong, 5–9 × 3–4.5 cm, apex subrounded or obtuse, emarginate, often reflexed, light green and shining adaxially, with a gland or small hole near tip of midvein abaxially, lateral veins 15–18 on each side of midvein, rather prominent on both surfaces. Flowers showy, 8–12-merous, solitary or in panicles. Calyx obovate, 13–16 mm, lobes 10, lanceolate-deltoid, ca. 7 mm, often reflexed. Petals white, oblong or obovate-oblong, 2.5–3 cm, apex emarginate or erose. Stamens 22, filaments 6–7 cm. Capsules 3.5 × 2.5 cm. Seeds 2.5–3 × 1.2 cm including wings.

Locality: Cultivated. *H. C. Tang 200*; *Y. S. Lau 803*; *HK sheet 11770*.

Distribution: Native to Brazil, Paraguay.

Ecology: Flowering: Jul.–Aug.

Uses: Ornamental.

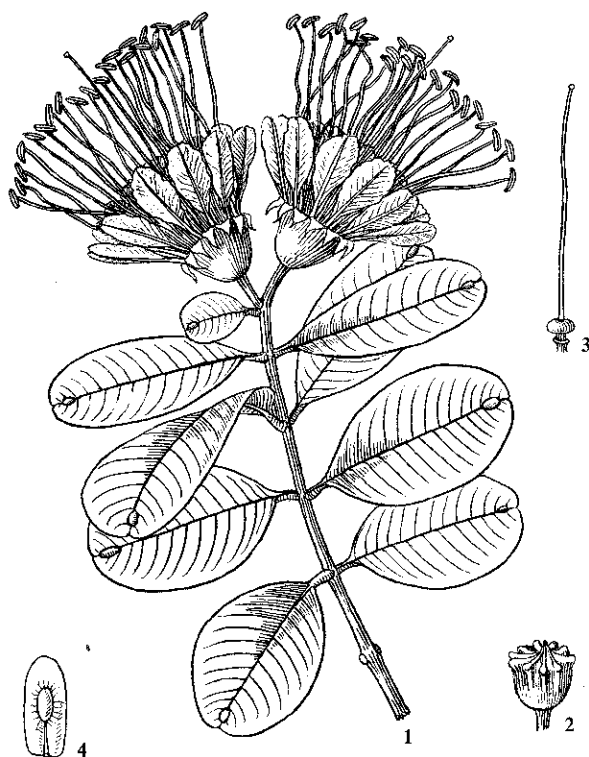


Figure 103. *Lafoensia vandelliana* Cham. & Schldt.

1. flowering branch; 2. flower bud; 3. pistil; 4. seed. (drawn by H. P. Yu)

5. *Lawsonia* L. 散沫花屬

Shrubs, often armed. Leaves decussate, entire, shortly petiolate. Flowers 4-merous, in large panicles. Calyx-tube very short; lobes 4, without appendages. Petals 4, crisped and clawed. Stamens 8, sometimes 4–12, in pairs inserted at the base of calyx-tube, exerted from corolla. Ovary 2–4-locular, style long. Capsules imperfectly enveloped by calyx, irregularly dehiscent or indehiscent. Seeds numerous, exalate.

Only one species, widely cultivated in tropical regions.

1. *Lawsonia inermis* L. 散沫花(指甲花) (Fig. 104; Photo 206)

Sp. Pl. 349. 1753; FKH 109. 1912; FRPS 52(2): 111. 1983; FGD 3: 80, fig. 56. 1995.

Shrub, unarmed, up to 6 m tall. Branchlets slightly 4-angled. Leaves decussate, elliptic or elliptic-lanceolate, 1.5–5 × 1–2 cm, base cuneate or attenuate, decurrent to petioles, apex acute, lateral veins 5 on each side of midvein, slender. Panicles up to 40 cm. Flowers very fragrant, white, rosy to vermilion, 6–8 mm in diam. Calyx 2–5 mm, 4-lobed, lobes deltoid. Petals 4, slightly longer than calyx-lobes, crisped, margin involute. Stamens 8. Ovary subglobular. Capsules obovate, 5–7 mm in diam., with 4 concave tracks. Seeds numerous, thick.

Locality: Cultivated. *L. T. Lo 42*; *Y. S. Lau 2612*; *HK sheet 11775*.

Distribution: Guangdong, Guangxi, Yunnan, Fujian, Jiangsu, Zhejiang (cultivated); Asia, N Africa.

Ecology: Flowering: Jun.–Oct.; fruiting: Dec.

Uses: Ornamental, materials (spice, dye).

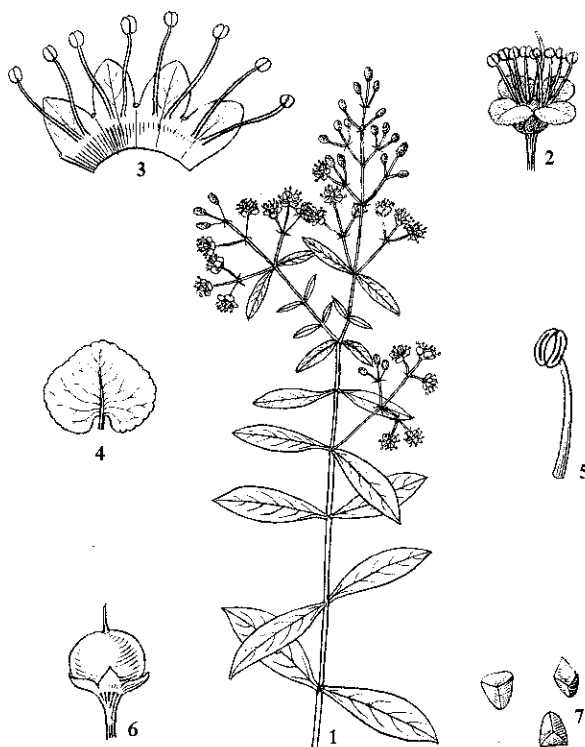


Figure 104. *Lawsonia inermis* L.

1. flowering branch; 2. flower; 3. calyx opened up showing stamens; 4. petal; 5. stamen; 6. capsule; 7. seeds. (drawn by H. P. Yu)

6. *Lagerstroemia* L. 紫薇屬

Trees or shrubs. Stipules minute, deciduous. Leaves opposite, subopposite or fasciculate on upper parts of branchlets, entire. Panicles terminal or axillary; pedicels articulate. Flowers showy, actinomorphic. Calyx obovate or turbinate, leathery, angled or winged, 5–9-lobed. Petals 6, or as many as calyx-lobes, base clawed, margin crisped. Stamens 6–numerous, inserted near base of calyx-tube, filament slender, not equal in length. Ovary 3–6-locular; ovules numerous in each locule; styles filiform, with a capitate stigma. Capsules woody, base surrounded by persistent calyx and adherent with it, loculicidally opening in 3–6 valves. Seeds numerous, terminating in a wing.

About 55 species distributed in Asia and Atlantic; 16 species in China; four species (three cultivated) in Hong Kong.

- 1a. Leaves large, 10–25 × 6–12 cm; flowers large, 4–5 cm in diam. .... 1. *L. speciosa*  
 1b. Leaves smaller, 2.5–10 × 1–4 cm; flowers smaller, not more than 4 cm in diam.  
   2a. Flowers purplish; stamens 34–42..... 2. *L. indica*  
   2b. Flowers whitish; stamens 15–30.  
     3a. Leaves opposite; capsules 6–8 mm ..... 3. *L. subcostata*  
     3b. Leaves alternate; capsules 1–1.2 cm..... 4. *L. fordii*

1. *Lagerstroemia speciosa* (L.) Pers. 大花紫薇(洋紫薇)

(Photo 207)

Syn. Pl. 2: 72. 1807; FRPS 52(2): 97. 1982; FGD 3: 81. 1995.

Large trees, 10–20 m tall; bark grey, glabrous. Branchlets terete. Leaves alternate, leathery; petioles 6–15 mm; leaf blade oblong-elliptic or oblong-ovate, 10–25 × 6–12 cm, base broadly cuneate or subrounded, apex obtuse or acute, lateral veins 9–17 on each side of midvein, curved and connected at margin. Panicles 15–25(–40) cm, scurfy hairy. Flowers purple or purple-red, 4–5 cm in diam.; pedicels 1–1.5 cm. Calyx 12–13 mm, 12-angled, 6 lobed, appendages scale-like. Petals 6, suborbicular or oblong-obovate, 2.5–3.5 × 2–2.5 cm, margin crisped. Stamens 100–200. Capsules grey-brown, globular, 2 cm in diam., dehiscent into 6 valves. Seeds many, 10–15 mm.

Locality: Cultivated. *HK sheet 11784, 11785, 34227.*

Distribution: Guangdong, Guangxi, Fujian (cultivated); Sri Lanka, India, Malaysia, Vietnam, Philippines.

Ecology: Flowering: May–Jul.; fruiting: Oct.–Nov.

Uses: Ornamental, timber, medicinal (folklore).

2. *Lagerstroemia indica* L. 紫薇 (Photo 208)

Sp. Pl. ed. 2, 734. 1762; FHK 112. 1861; FKH 109. 1912; FRPS 52(2): 94. 1983; FGD 3: 82, fig. 57. 1995.

Shrub or small tree, up to 7 m tall. Branchlets slender, 4-angular or narrowly winged. Leaves alternate or sometimes opposite, elliptic, broadly oblong or obovate, 2.5–7 × 1.5–4 cm, base broadly cuneate or suborbicular, apex acute or obtuse, sometimes emarginate, glabrous, or puberulent along veins abaxially, lateral veins 3–7 on each side of midvein. Panicles terminal, 7–20 cm. Flowers red, purple or white; pedicels 3–15 mm. Calyx 7–10 mm, tube not furrowed as in other species; lobes 6, deltoid, without appendages. Petals 6, 12–20 mm, crisped, clawed. Stamens 36–42, outer 6 much longer than others. Capsules purple-black, nearly globular, 1–1.3 cm in diam., loculicidal. Seeds ca. 8 mm, winged.

Locality: Cultivated. *S. P. Lau 176; HK sheet 1927, 39299.*

Distribution: E, S, C & SW China; widely cultivated in tropical regions.

Ecology: Flowering: Jun.–Aug.; fruiting: Jul.–Oct.

3. *Lagerstroemia subcostata* Koehne 南紫薇 (Fig. 105)

Bot. Jahrb. Syst. 4(1): 20. 1883; FKH 109. 1912; FRPS 52(2): 104. 1983; FGD 3: 82. 1995.

*Lagerstroemia microcarpa* auct. non Wight: Hance, J. Bot. 16: 107. 1878.

Tree or shrub, up to 14 m tall; bark thin, grey or brown. Leaves deciduous, opposite; petioles 2–4 mm; leaf blade membranous, oblong, oblong-lanceolate, rarely ovate, 2–9 × 1–4.4 cm, base broadly cuneate, apex acuminate, glabrous or sparsely puberulent

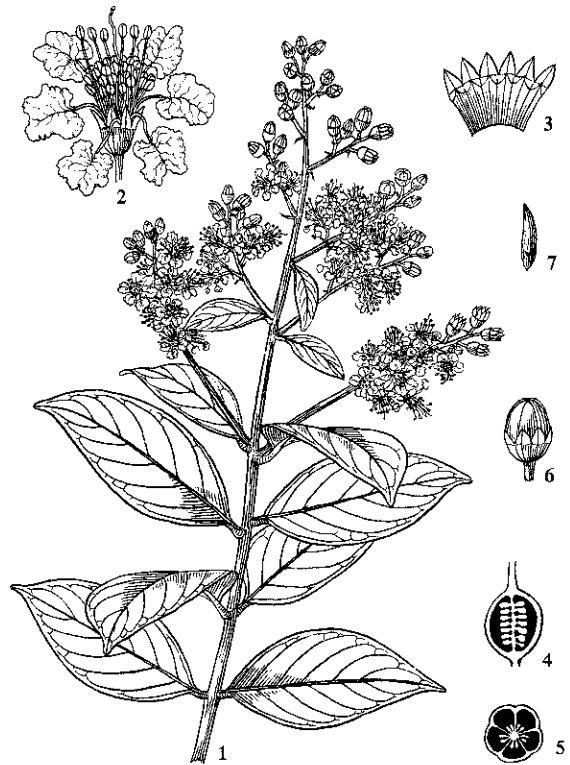


Figure 105. *Lagerstroemia subcostata* Koehne

1. flowering branch; 2. flower; 3. calyx; 4. ovary (longitudinal section); 5. ovary (cross section); 6. capsule; 7. seed. (drawn by H. P. Yu)

on both surfaces, lateral veins 3–10 on each side of midvein. Panicles terminal, 5–15 cm, densely flowered. Flowers white or roseate. Calyx 3.5–4.5 mm, 10–12-angled; lobes 5, deltoid. Petals 6, 2–6 mm, crisped and clawed. Stamens 15–30, 5–6 of them longer than others. Capsules elliptic, 6–8 mm, dehiscent in 3–6 valves. Seeds winged.

Locality: Cultivated.

Distribution: Guangdong, Guangxi, Sichuan, Qinghai, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Japan (Ryukyu).

Ecology: Flowering: May–Jul.; fruiting: Oct.–Nov.

Uses: Ornamental.

**4. Lagerstroemia fordii** Oliv. & Koehne 廣東紫薇

(Photo 209)

Pflanzenreich IV. 216(Heft): 262, fig. 56b. 1903; FKH 109. 1912; FRPS 52(2): 105. 1983; FGD 3: 83. 1995.

Tree, up to 8 m tall. Branchlets terete, sometimes slightly 4-angled. Leaves alternate; petioles 3–10 mm; leaf blade papery, broadly lanceolate or elliptic-lanceolate, 6–10 × 2.5–3.5 cm, base cuneate, apex caudate, glabrous adaxially, pubescent along midvein abaxially, later glabrescent, lateral veins 4–5 on each side of midvein. Panicles terminal, 6–12 cm, grey-white tomentose; pedicels 4–6 mm. Calyx ca. 6 mm, 10–12-angled, grey-white pubescent; lobes 6, deltoid, apex sometimes caudate, densely pubescent abaxially. Petals cordate-orbicular, 10–12 mm including the 5 mm claw. Stamens 25–30, inserted at base of calyx-tube, 5–6 of them longer than others. Capsules brown, ovoid-globose, 1–1.2 × 0.7–0.9 cm, glabrous.

Locality: Wong Chuk Hang, Mount Nicholson, Tai Tam, Cape D'Aguiar, Lantau Island (Shek Pik, Yi O). *H. G. Ye et al. 1265; K. Y. Tam s.n. (HK sheet 38715); HK sheet 40598.*

Distribution: Guangdong, Fujian; widely distributed in tropical regions.

Ecology: Thin forests. Flowering: Jun.–Oct.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore), timber.

Notes: The type specimen was collected from Lantau Island by C. Ford around 1888. Listed in *Rare and Precious Plants of Hong Kong*.

## 197. THYMELAEACEAE 瑞香科

XIA Nian-he 夏念和

Shrubs or trees, rarely herbs. Leaves simple, alternate or opposite, entire, exstipulate. Inflorescences terminal or axillary, in heads, umbels, racemes, panicles or spikes, rarely flower solitary. Flowers bisexual or unisexual (plant dioecious). Calyx tubular or campanulate, lobes 4–5, petaloid, imbricate. Petals wanting or scale-like. Stamens as many as or two times as many as calyx lobes, rarely 2 or 1, in 2 (or 1) whorls, usually inserted at the middle part and throat of calyx; anthers 2-celled, dehiscent longitudinally. Disk annular or cupular, unlobed or divided into 2–4 scales. Ovary superior, 1(–2)-locular; ovules 1(–3), anatropous; style 1; stigma capitate or clavate. Fruit a drupe, nut or berry, rarely a capsule. Embryo straight; endosperm present or wanting.

About 50 genera and 720 species widely distributed in tropical and temperate regions of the world, especially in Australia and tropical Africa; ten genera and ca. 90 species in China; three genera and six species in Hong Kong.

- 1a. Trees; petals scale-like, inserted at throat of calyx tube; ovary 2-locular; fruit a capsule ..... 1. *Aquilaria*  
 1b. Shrubs; petals wanting; ovary 1-locular; fruit a drupe.  
 2a. Leaves alternate; inflorescence usually with bracts or involucre ..... 2. *Daphne*  
 2b. Leaves opposite; inflorescence usually without bracts or involucre ..... 3. *Wikstroemia*

### 1. *Aquilaria* Lam. 土沉香屬

Trees or small trees. Leaves alternate, lateral veins slender and dense, nearly parallel to each other. Inflorescences axillary or terminal, in umbels, usually ebracteate. Flowers bisexual, usually 5-merous; calyx tube campanulate, usually hairy, lobes reflexed or erect; petals 10, scale-like, inserted at the throat of calyx-tube, united into a ring at base, usually tomentose; stamens twice as many as the calyx lobes, alternating with petals; filaments very short or absent; anthers ellipsoidal, dorsifixed, pubescent, connective broad. Disk lacking or annular. Ovary subsessile, completely or incompletely 2-locular, pubescent; style very short or inconspicuous; stigma capitate or subulate. Fruit a capsule, loculicidal, compressed laterally, obovoid, included by the persistent calyx at base, pericarp leathery or woody. Seeds 2 or 1, ovoid or ellipsoidal, hanging by a caruncle-like or tail-shaped basal appendage.

About 15 species distributed in SE Asia; two species in China; one species in Hong Kong.

1. *Aquilaria sinensis* (Lour.) Spreng.

土沉香(牙香樹·白木香)

(Fig. 106; Photo 210)

Syst. Veg. 2: 356. 1825; FHN 1: 434, fig. 238. 1964; FFFJ 4: 37, fig. 31. 1989; FGX 1: 616, pl. 255: 8–12. 1991; FGD 3: 84, fig. 58. 1995; FRPS 52(1): 290, pl. 45: 5–8. 1999.

*Ophiospermum sinense* Lour., Fl. Cochinch. 1: 281. 1790.

*Aquilaria grandiflora* Benth., FHK 297. 1861; FKH 227. 1912.

*Aquilaria sinensis* (Lour.) Merr., Philipp. J. Sci. 15(3): 248. 1919 [1920].

Evergreen tree, 5–15 m tall; bark dark grey; branchlets terete, puberulous, glabrescent. Petiole 5 mm, pubescent. Leaves subovate, obovate to elliptic, 5–10 × 2–5 cm, leathery, base broadly cuneate, apex short acuminate, glabrous on both surfaces, lateral veins 15–20 on each side of midvein, veins and veinlets slender, subparallel, obscure. Flowers yellowish green; pedicel 5–10 mm; calyx tube shallowly campanulate, ca. 6 mm, densely pubescent on both surfaces, lobes 5, ovate, 3–5 mm long, pubescent on both surfaces; petals 10, scale-like, inserted at the throat of calyx-tube, hairy; stamens 10 in 1 whorl, filaments ca. 1 mm; ovary ovoid, hairy. Capsules obovoid, 2–3 × 2 cm, apex apiculate, base tapering, densely yellowish brown pubescent. Seeds dark brown, ovoid, base with a ca. 2 cm tail-shaped appendage.

Locality: Common in Hong Kong. *Y. S. Lau 3319*; *K. L. Yip 4540*; *S. K. Chan 1*.

Distribution: Hainan, Guangdong, Guangxi, Taiwan.

Ecology: Lowland forests. Flowering: Mar.–May; fruiting: Sep.–Oct.

Uses: Medicinal (folklore), incense, resin.

Notes: Listed in *Rare and Precious Plants of Hong Kong*.



Figure 106. *Aquilaria sinensis* (Lour.) Spreng.

1. fruiting branch; 2. flower; 3. flower opened up showing stamens, scales and gynoecium; 4. seed. (drawn by H. P. Yu)

2. *Daphne* L. 瑞香屬

Evergreen or deciduous shrubs or subshrubs. Leaves alternate or subopposite, petiolate. Inflorescences usually terminal (rarely axillary), capitate, racemose or cymose, bracteate or ebracteate. Flowers bisexual or unisexual (plants sometimes dioecious). Calyx tubular or campanulate; lobes 4(–5); petals wanting. Stamens 8 or 10, in 2 whorls, inserted at upper part of calyx-tube; filaments very short or sessile, anthers included or subexserted. Disk annular, often cup-shaped, sometimes absent. Ovary superior, ovoid, 1-locular; ovule 1 per locule, anatropous; style short, stigma capitate. Fruit a drupe, sometimes surrounded by the persistent dry calyx-tube. Testa crustaceous. Embryo fleshy; endosperm scanty or absent.

About 70 species distributed in Asia and Europe; 44 species in China; two species in Hong Kong.

1a. Leaves silky hairy..... 1. *D. championii*

1b. Leaves glabrous..... 2. *D. cannabina*

1. *Daphne championii* Benth.

小葉瑞香(毛葉瑞香)

(Fig. 107; Photo 211)

FHK 296. 1861; FKH 227. 1912; FGD 3: 86, fig. 59. 1995; FRPS 52(1): 338, pl. 54: 12–18. 1999.

Evergreen shrub, ca. 1 m tall. Branchlets slender, dark brown, densely white villose. Leaves alternate; petioles 1–2 mm, silky hairy; leaf blade papery or membranous, elliptic or ovate-elliptic, 1–5 × 0.8–2 cm, base broadly cuneate, apex obtuse or subacute, apiculate, both surfaces white-sericeous, sometimes rather sparsely so adaxially, densely so abaxially, veins 5–6 on each side of

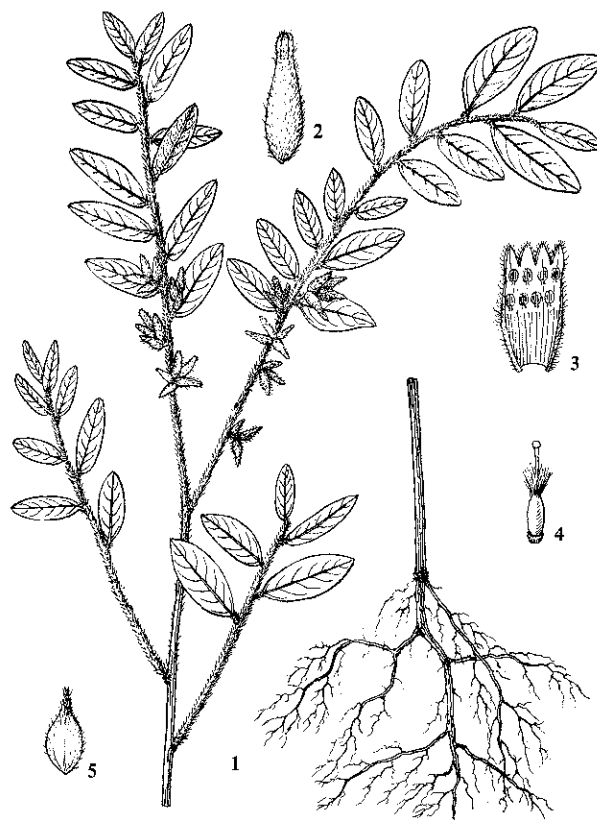


Figure 107. *Daphne championii* Benth.

1. whole plant; 2. flower; 3. calyx opened; 4. gynoecium; 5. drupe. (drawn by H. P. Yu)

midvein. Inflorescences axillary, 3–10-flowered, ebracteate or sometimes with a small leaf-like bract; subsessile or with a very short peduncle. Flowers white, sessile. Calyx tube cylindrical, 6–8 mm, densely greyish white silky hairy abaxially; lobes 4, broadly ovate, ca. 2 mm, densely white silky hairy abaxially. Stamens 8, in 2 series, inserted on the middle and upper part of calyx tube; filaments very short; anthers oblong, ca. 0.6 mm. Disk annular, apex lobed. Ovary ellipsoidal, ca. 1 mm, sessile or with a short stipe, apex densely silky hairy; style slender, ca. 2 mm, stigma capitate. Drupe pear-shaped, 4–5 × 1.7–2 mm, hairy, apex beaked.

Locality: South Bay Rd., Mount Violet, Ma On Shan, Sunset Peak. *Y. S. Lau 2674*; *P. S. Choi 393*; *HK sheet 38555*.

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Margins of forests, thickets on hillslopes. Flowering: Feb.–Mar.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

## 2. *Daphne cannabina* Wall. 白瑞香

(Photo 212)

Asiat. Res. 13: 315, pl. 7–8. 1820; FKH 227. 1912.

*Daphne papyracea* Wall. ex Steud., Nomencl. Ed. 2, 1: 485. 1840; FGD 3: 86. 1995; FRPS 52(1): 375, pl. 69: 1–4. 1999.

*Daphne cavaleriei* Levl., Bull. Geogr. Bot. 25: 42. 1915; *Daphne mairei* Levl., Bull. Geogr. Bot. 25: 41. 1915.

*Daphne papyrifera* Hamilton ex D. Don, Prodr. Fl. Nepal. 68. 1825, *pro syn.*

Evergreen shrub, to 1.5(–4) m tall. Branchlets greyish brown or greyish black, glabrous. Leaves alternate; petiole 4–15 mm, glabrescent; leaf blade papery, elliptic to oblong-lanceolate or oblanceolate, 6–14 × 1.5–4 cm, base cuneate, apex acuminate or obtuse, glabrous, veins 6–15 on each side of midvein. Inflorescences in terminal, many-flowered fascicles, bracteate; peduncle ca. 2 mm, silky hairy; bracts caducous; ovate, 7–15 × 3–4 mm, acuminate, sparsely silky hairy. Flowers white, fragrant; pedicel 2 mm, densely silky hairy; calyx tube narrowly funnel-shaped, 15–20 mm, yellowish pubescent abaxially, throat 2.5–5 mm wide; lobes 4, ovate, 4–11 × 2–5 mm; stamens 8 in 2 series, inserted at the middle and upper part of calyx-tube, filaments short, anthers oblong, 1.5–2 mm; disk annular, margins slightly undulate; ovary cylindrical, 2–4 mm, glabrous, style very short, stigma capitate, papillose. Fruit ovoid, 0.8–1 cm, red, not beaked.

Locality: Shing Mun, Tai Mo Shan, Sunset Peak, Lantau Peak. *H. C. Tang 2150, 2427*; *P. S. Choi 328*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Fujian.

Ecology: Valleys, margins of forests. Flowering: Feb.–Mar.; fruiting: Apr.–May.

Uses: Ornamental.

Notes: The species was reported as *Daphne papyracea* Wall. previously (Check List HK Plants 160. 2002; 59. 2004).

## 3. *Wikstroemia* Endl. 蕘花屬

Evergreen or deciduous shrubs or small trees. Leaves opposite, rarely alternate. Inflorescence usually terminal and subterminal, rarely axillary, fasciculate or solitary, spicate, racemose, capitate, or paniculate; involucre absent or present; peduncle long or short. Flowers bisexual, 4- or 5-merous. Calyx-tube cylindrical or tubular, sometimes slightly funnel-shaped, often deciduous after anthesis; lobes 4 or 5, spreading. Petaloid appendages absent. Stamens twice as many as calyx-lobes, in 2 series; filaments very short; anthers oblong. Disk hypogynous, membranous, 2–4-lobed, scale-like. Ovary superior, sessile, rarely shortly stipitate, 1-locular, 1-ovuled; style 1, short, distinct or obscure; stigma large, capitate, globose, or disciform. Fruit a succulent berry or rather dry. Endosperm scanty or absent; cotyledons fleshy.

About 70 species distributed in E Asia, Malaysia, Australia, and Pacific islands; 48 species in China (41 endemic); three species in Hong Kong.

- 1a. Leaves dark green or purplish, sparsely greyish fine pubescent abaxially..... 1. *W. monnula*  
 1b. Leaves glabrous on both surfaces.  
     2a. Leaves yellowish green on both surfaces..... 2. *W. indica*  
     2b. Leaves dark green adaxially, glaucous abaxially ..... 3. *W. nutans*

## 1. *Wikstroemia monnula* Hance 北江蕘花

(Photo 213)

J. Bot. 16(181): 13. 1878; FKH 227. 1912; FGX 1: 620, pl. 256: 5–6. 1991; FGD 3: 91, fig. 63. 1995; FRPS 52(1): 312. 1999.

*Wikstroemia stenantha* Hemsl., J. Linn. Soc., Bot. 26(177): 400. 1894; FKH 227. 1912.

Deciduous shrub, 0.5–0.8 m tall. Branches yellowish green, turning dark purple, angular, greyish pubescent when young, glabrescent. Leaves usually opposite, rarely alternate; petioles short, 1–1.5 mm; leaf blade membranous, ovate-elliptic to elliptic, 3–6 × 1–2.8 cm, base broadly cuneate or subrounded, apex acute; adaxially glabrous, dark brown when dried, abaxially puberulous at least on veins, light brown, lateral veins slender, 4 or 5 on each side of midvein. Inflorescences terminal, often on short lateral branches, shortly racemose, 3–8-flowered; peduncle 3–15 mm, greyish pubescent. Pedicel short. Calyx tube white, 9–12 mm, silky pubescent abaxially; lobes 4, ovate, 1–2 mm, purplish red. Stamens 8; filaments short; anthers ellipsoidal, ca. 1 mm. Disk scales 1, linear or broadly obovate, apex 3-lobed. Ovary narrowly obovoid, ca. 4 mm, stipitate, apex yellowish tomentose; style very short; stigma capitate. Drupe dry, obovoid, enclosed by persistent calyx.

Locality: Ma On Shan, Sunset Peak, Lantau Peak. *H. C. Tang 479*; *Y. S. Lau 1397*; *HK sheet 40001*.

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Zhejiang.

Ecology: Thin forests and thickets. Flowering: Apr.; fruiting: Apr.–Aug.

Notes: The species was reported as *Wikstroemia chinensis* Meisn. previously (Check List HK Plants 40. 1993).

## 2. *Wikstroemia indica* (L.) C. A. Mey.

了哥王

(Fig. 108; Photo 214)

Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 2(1): 347–358. 1843; FKH 227. 1912; FHN 1: 437, fig. 240. 1964; FGX 1: 622, pl. 256: 1–2. 1991; FGD 3: 89, fig. 61. 1995; FRPS 52(1): 300, pl. 46: 3. 1999.

*Daphne indica* L., Sp. Pl. 1: 357. 1753.

*Daphne cannabina* Lour., Fl. Cochinch. 1: 236. 1790.

Shrub, 0.5–2 m or taller. Branches reddish brown, glabrous. Leaves opposite; petioles ca. 1 mm; leaf blade obovate, elliptic-oblong, or lanceolate, 1.5–5 × 0.5–1.5 cm, papery to thinly leathery, base broadly or narrowly cuneate, apex obtuse or acute, glabrous, reddish brown on both surfaces when dried; lateral veins dense, 5–7 on each side of midvein. Inflorescences terminal, capitate, several-flowered; peduncle 0.5–1 cm, glabrous. Pedicel 1–2 mm. Calyx tubular, yellowish green, 7–12 mm, sparsely pubescent or glabrescent abaxially; lobes 4, broadly ovate to oblong, ca. 3 mm. Stamens 8, in 2 whorls, filaments short. Disk scales often 2 or 4, 1 or 2 bifid at apex. Ovary obovoid, glabrous or apex sparsely pubescent; style very short; stigma capitate. Drupe ellipsoidal, 7–8 mm, red to dark purple when mature.

Locality: Common in Hong Kong. *S. P. Lau* 38, 144; *K. L. Yip* 4106.

Distribution: Areas S of Changjiang River; Vietnam to India.

Ecology: Thickets on hillslopes. Flowering: Mar.–Apr.; fruiting: Aug.–Sep.

Uses: Medicinal (folklore).



Figure 108. *Wikstroemia indica* (L.) C. A. Mey.

1. flowering branch; 2. fruiting branch; 3. stem and root; 4. corolla opened up showing stamens; 5. flower with perianth removed. (drawn by H. P. Yu)

## 3. *Wikstroemia nutans* Champ. ex Benth. 細軸蕘花

(Photo 215)

Hooker's J. Bot. Kew Gard. Misc. 5: 195. 1853; FHK 297. 1861; FKH 227. 1912; FGD 3: 88. 1995; FRPS 52(1): 298. 1999.

Shrub, 1–2 m or taller. Branches terete, reddish or greyish brown, glabrous. Leaves opposite; petiole 1–2 mm, glabrous; leaf blade ovate or ovate-elliptic to ovate-lanceolate, 3–6(–8.5) × 1.2–2.5(–4) cm, membranous to papery, base cuneate or subrounded, apex acuminate, green to brownish green adaxially, greenish white abaxially, both surfaces glabrous; lateral veins 6–13 on each side of midvein. Inflorescences terminal, shortly racemose, often pendulous, 3–8-flowered; peduncle 1.5–3 cm, slender, glabrous. Pedicel 0.5–2 mm. Calyx yellowish green; tube (10–)13–16 mm, base slightly inflated, exterior glabrous; lobes 4, elliptic, ca. 3 mm. Stamens 8; filaments ca. 0.5 mm; anthers linear, 1.5–2 mm. Disk scales 2, each divided by a septum and appearing as 4 scales, ca. 1 mm. Ovary obovoid, ca. 1.5 mm, stipitate, apex pubescent; style very short; stigma capitate. Drupe ellipsoidal, 6–7 × 4.5 mm, dark red when mature.

Locality: Common in Hong Kong. *L. T. Lo* 46; *N. H. Li* 43; *K. L. Yip* 4489.

Distribution: Hainan, Guangdong, Guangxi, Hunan, Fujian, Taiwan; Vietnam.

Ecology: Thin forests and thickets. Flowering: Jan.–Apr.; fruiting: May–Sep.

Notes: The type specimen was collected from Happy Valley by J. G. Champion between 1847 and 1850.

# 199. MYRTACEAE 桃金娘科

XIA Nian-he 夏念和 • GUO Yong-bing 郭永兵

Evergreen trees or shrubs. Leaves simple, opposite, sometimes alternate or pseudo-whorled, entire, often with pellucid dots, exstipulate. Inflorescence a spike, cyme, corymb, panicle, or head, axillary or terminal, or rarely flowers solitary. Flowers bisexual, sometimes polygamous, regular, or somewhat irregular. Hypanthium usually adnate to ovary and prolonged above it. Calyx lobes (3–)4–5 or more, distinct or connate into a calyptra. Petals (3–)4–5 or more, sometimes absent, distinct or connate into a calyptra. Stamens usually numerous, in 1–several whorls; filaments distinct or connate into 5 bundles opposite petals; anthers 2-celled, dorsifixed or basifixed, dehiscing by longitudinal slits or rarely by apical pores; connectives usually terminating in 1 or more apical glands. Ovary inferior, semi-inferior, or rarely superior, 2–5(–16)-locular, pseudoseptum sometimes present; ovules 1–several per locule, placentation axile, occasionally parietal. Style simple. Fruit a capsule, berry, drupe, or nut, 1–many-seeded. Seeds without endosperm or endosperm sparse and thin; testa cartilaginous or thinly membranous; embryo straight or curved.

About 130 genera and 4500–5000 species distributed in tropical America, Australia and tropical Asia; ten genera and 121 species in

China; 12 genera and 26 species in Hong Kong.

In addition to species recorded here, *Callistemon pinifolius* Sweet, *Eugenia ventenatii* Benth., *Leptospermum scoparium* Forst. & Forst. f., *Lophostemon suaveolens* (Soland. ex Gaertn.) Peter G. Wilson & J. T. Waterh., *Melaleuca armillaris* Sm., *M. genistifolia* Sm., *M. nodosa* Sm., *M. parviflora* Lindl., *Psidium cattleianum* Sabine var. *littorale* (Raddi) Mattos, *Syncarpia glomulifera* (Sm.) Nied., *Syzygium cumini* (L.) Skeels and *S. samarangense* (Blume) Merr. & L. M. Perry are occasionally cultivated in Hong Kong.

- 1a. Leaves linear, less than 1 mm wide; stamens 5–10..... 1. *Baeckea*  
 1b. Leaves not linear, much broader; stamens many.  
 2a. Leaves often alternate, rarely opposite; fruit a capsule.  
 3a. Leaves heteromorphic or polymorphic; calyx united with corolla and forming a calyptra ..... 2. *Eucalyptus*  
 3b. Leaves isomorphic; calyx not united with petals.  
 4a. Stamens not in bundles ..... 3. *Callistemon*  
 4b. Stamens in 5 bundles.  
 5a. Flowers sessile ..... 4. *Melaleuca*  
 5b. Flowers pedicellate ..... 5. *Lophostemon*  
 2b. Leaves opposite; fruit a berry or a drupe.  
 6a. Leaves with 3–5 basal veins ..... 6. *Rhodomyrtus*  
 6b. Leaves pinnately veined.  
 7a. Calyx forming a calyptra ..... 7. *Cleistocalyx*  
 7b. Sepals distinct or united before anthesis and separated at anthesis.  
 8a. Fruit 1–2-seeded; testa membranous.  
 9a. Anther-cells divaricate, dehiscing by apical pores ..... 8. *Acmena*  
 9b. Anther-cells parallel, dehiscing by longitudinal slits.  
 10a. Flowers 3–many in cymes or thyrses; seeds often with a pseudotesta ± adhering to pericarp ..... 9. *Syzygium*  
 10b. Flowers solitary or clustered; testa separating from pericarp ..... 10. *Eugenia*  
 8b. Fruit many-seeded; testa hard.  
 11a. Leaves conspicuously dotted; flowers and fruit small ..... 11. *Decaspermum*  
 11b. Leaves without conspicuous dots; flowers and fruit large ..... 12. *Psidium*

### 1. *Baeckea* L. 崗松屬

Shrubs or small trees. Leaves opposite, linear, sessile, with pellucid dots. Flowers bisexual, axillary, solitary or in cymes, white or red, small, 5-merous, shortly pedicellate or sessile. Bracteoles 2, small, caducous. Hypanthium campanulate or semiglobose, usually adnate to ovary; lobes 5, membranous, persistent. Petals 5, suborbicular. Stamens 5–10(–20), shorter than petals; filaments short; anthers dorsifixed. Ovary inferior or semi-inferior, rarely superior, 2–3-loculed; ovules many per locule; style short; stigma slightly enlarged. Capsule dehiscing into 2–3 valves, each valve with 1–3 or more seeds. Seeds reniform, angular; embryo straight; endosperm absent; cotyledons short.

About 70 species distributed in S and SE Asia, Australia; one species in China; also in Hong Kong.

**1. *Baeckea frutescens* L. 崗松 (Fig. 109; Photo 216)**  
 Sp. Pl. 1: 358. 1753; FHK 118. 1861; FKH 104. 1912; FGZ 207. 1956; FHN 2: 2, fig. 286. 1965; FRPS 53(1): 57, pl. 9: 4–8. 1984; FFJ 4: 79, fig. 62. 1989; FGX 1: 873. 1991; FGD 3: 162, fig. 116. 1995; FOC 13: 330. 2007.

*Baeckea chinensis* Gaertn., Fruct. 1: 157, t. 31. 1788.

*Baeckea frutescens* var. *brachyphylla* Merr. & L. M. Perry, J. Arnold Arb. 20: 102. 1939.

Shrub or sometimes small tree; branches slender. Petioles 0.5–0.6 mm; leaf blade linear, 5–10 × ca. 1 mm, apex sharp pointed, grooved adaxially, with pellucid oil glands abaxially; midvein 1, lateral veins absent. Flowers solitary, small. Pedicels 1–1.5 mm. Hypanthium campanulate, ca. 1.5 mm. Calyx-lobes 5, triangular, small, apex acute. Petals white, distinct, orbicular, ca. 1.5 mm, base clawed. Stamens 10 or less, in pairs opposite to calyx lobes. Ovary inferior, 2–3-locular. Style persistent. Capsule ca. 2 mm.



Figure 109. *Baeckea frutescens* L.

1. flowering branch; 2. flower; 3. stamens; 4. portions of leaves. (drawn by H. P. Yu)

Locality: Common in Hong Kong. *Y. S. Lau* 332, 1289; *L. T. Lo* 444.

Distribution: Hainan, Guangdong, Guangxi, Jiangxi, Zhejiang, Fujian; tropical Asia to Australia.

Ecology: Thickets, sunny hillslopes. Flowering: Summer to autumn.

Uses: Medicinal (folklore), essential oil.

## 2. *Eucalyptus* L'Hér. 桉屬

Trees or shrubs, often containing tanniferous resin. Leaves simple, often polymorphic with different juvenile and mature forms, sometimes with intermediate forms; leaves of juvenile plants opposite, shortly petiolate or sessile, often glandular hairy; leaves of adult plants alternate, petiolate, often with pellucid dots. Inflorescence an umbel or panicle, axillary or terminal. Flowers bisexual, pedicellate or sessile. Hypanthium campanulate, obconic, or semiglobose, apex usually truncate. Sepals rarely distinct. Petals connate, either adnate to sepals into a 1-layered calyptra or not adnate to sepals and then forming a 2-layered calyptra; calyptra deciduous at anthesis. Stamens many, usually distinct, in several whorls; anthers 2-celled, parallel or bifurcate, dehiscing by longitudinal slits or occasionally by apical pores. Ovary adnate to hypanthium, 3–6-locular; ovules many per locule. Style persistent. Capsule completely or partly included in the expanded hypanthium. Seeds many, mostly sterile, developed seeds ovoid or angular; testa rigid, sometimes enlarged into wings.

About 700 species mainly distributed in Australia; about 110 species cultivated in China; six species cultivated in Hong Kong.

- 1a. Leaves of adult plants without black glands on both surfaces, pubescent abaxially ..... 1. *E. torelliana*  
 1b. Leaves of adult plants glabrous and with black glands on both surfaces.  
   2a. Inflorescence a panicle ..... 2. *E. citriodora*  
   2b. Inflorescence an umbel.  
     3a. Fruit valves included in hypanthium ..... 3. *E. robusta*  
     3b. Fruit valves exerted from hypanthium.  
       4a. Bark thick, rough, fissured, persistent ..... 4. *E. exserta*  
       4b. Bark thin, smooth, exfoliating, sometimes persistent at trunk base.  
         5a. Calyptra semiglobose at base, abruptly constricted above middle, apex acute and beaked .....  
           ..... 5. *E. camaldulensis*  
         5b. Calyptra conic, 7–10 mm, apex acuminate ..... 6. *E. tereticornis*

### 1. *Eucalyptus torelliana* F. Muell. 毛葉桉

(Photos 217–218)

Fragm. 10: 106. 1877. FRPS 53(1): 37. 1984; FFJ 4: 81, fig. 64. 1989; FGX 1: 882, pl. 344: 5–8. 1991; FGD 3: 165. 1995; FYN 7: 98. 1997; FOC 13: 323. 2007.

*Corymbia torelliana* (F. Muell.) K. D. Hill & L. A. S. Johnson, *Telopea* 6(2–3): 385. 1995.

Tree; bark greyish green, smooth, exfoliating but persistent at trunk base. Branchlets terete, hirsute. Leaves of juvenile plants: peltate, shortly petiolate; leaf blade ovate, 7–15 × 4–9 cm, abaxially pubescent. Leaves of adult plants: petioles 1–2 cm, hirsute; leaf blade thinly leathery, ovate, 10–14 × 1–7 cm, base rounded, apex acute, grey and pubescent abaxially. Inflorescences paniculate, terminal or axillary, 8–11 cm, umbels 3–7-flowered; peduncle pubescent. Flower buds obovoid, ca. 10 × 6–7 mm. Pedicels 1–3 mm, glabrous. Hypanthium semiglobose, ca. 6 mm; calyptra 4–4.5 mm, apex rounded. Stamens 8–10 mm. Style 5–7 mm. Capsule globose, 1–1.3 cm in diam., constricted distally; valves 3, included in hypanthium.

Locality: Cultivated. *HK sheet* 11247, 34515.

Distribution: Guangdong, Guangxi, Yunnan (cultivated); native to Australia.

Ecology: Flowering: Oct.–Nov.

Uses: Environmental.

### 2. *Eucalyptus citriodora* Hook. 檸檬桉 (Fig. 110)

J. Exped. Trop. Australia 235. 1848; FHN 2: 2, fig. 287. 1965; FRPS 53(1): 37. 1984; FFJ 4: 81, fig. 63. 1989; FGX 1: 877, pl. 342: 1–3. 1991; FGD 3: 165. 1995; FYN 7: 99. 1997; FOC 13: 324. 2007.

*Eucalyptus maculata* Hook. var. *citriodora* (Hook.) L. H. Bailey, *Man. Cult. Pl.* 540. 1924; FGZ 213. 1956.

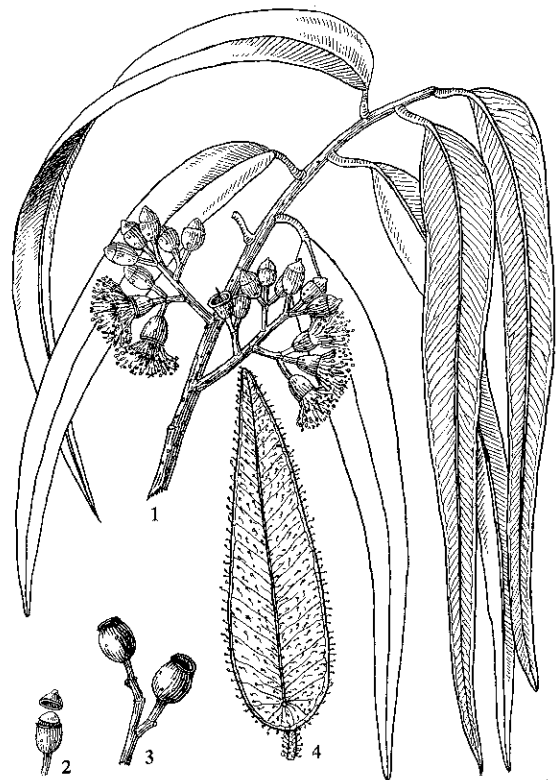


Figure 110. *Eucalyptus citriodora* Hook.

1. flowering branch; 2. flower; 3. fruit; 4. juvenile leaf. (drawn by H. P. Yu)



*Corymbia citriodora* (Hook.) K. D. Hill & L. A. S. Johnson, *Telopea* 6(2–3): 388. 1995.

Tree, to 28 m tall, strongly lemon scented. Bark smooth, greyish white, exfoliating. Leaves of juvenile plants: peltate, petiolate; leaf blade lanceolate, base rounded, glandular hairy, with black glands on both surfaces. Leaves of adult plant: petioles 1.5–2 cm; leaf blade narrowly lanceolate, 10–25 × ca. 1–4 cm, slightly twisted, with black glands on both surfaces. Inflorescences paniculate, terminal or axillary, umbels 1–3-flowered; peduncle 3–4 mm, 2-ridged. Flower buds long obovoid, 6–7 mm. Pedicels 3–4 mm, ridged. Hypanthium ca. 5 × 4 mm; calyptra ca. 1.5 mm, slightly wider than hypanthium, apex rounded, apiculate. Stamens 6–7 mm, in 2 whorls. Capsule urceolate, 1–1.2 × 0.8–1 cm; valves 3 or 4, inclusive in hypanthium.

Locality: Cultivated. *Y. S. Lau* 1527; *L. T. Lo* 322.

Distribution: S China (cultivated); native to Australia.

Ecology: Flowering: Apr.–Dec.

Uses: Environmental, timber, essential oil, ornamental.

### 3. *Eucalyptus robusta* Sm. 大葉桉

Spec. Bot. New Holland 39, t. 13. 1793; FGZ 216. 1956; FHN 2: 3. 1965; FRPS 53(1): 40, pl. 7: 1–3. 1984; FFJ 4: 88, fig. 73. 1989; FGX 1: 890, pl. 347: 8–10. 1991; FGD 3: 169. 1995; FYN 7: 104, fig. 31: 3–4. 1997; FOC 13: 325. 2007.

Tree, to 20 m tall. Bark persistent, dark brown, rough and fissured. Young branchlets angulate. Leaves of juvenile plants: petiolate; leaf blade thickly leathery, ovate, ca. 11 × 7 cm. Leaves of adult plants: petioles 1.5–2.5 cm; leaf blade thickly leathery, ovate-lanceolate, 8–17 × 3–7 cm, base oblique, with glands on both surfaces. Inflorescence an umbel, axillary, 4–8-flowered; peduncle less than 2.5 cm, compressed. Flower buds 1.4–2 × 0.7–1 cm. Pedicels short and thick. Hypanthium semiglobose to obconic, 7–9 × 6–8 mm; calyptra nearly as long as hypanthium, apex constricted into a beak. Stamens 1–1.2 cm. Capsule kettle-shaped, sometimes somewhat constricted in middle, 1–1.5 cm; disk broad; valves 3 or 4, included in hypanthium.

Locality: Cultivated. *Y. S. Lau* 1421; *HK sheet* 11250, 11253.

Distribution: S & SW China (cultivated); native to E Australia.

Ecology: Flowering: Almost year-round.

Uses: Timber, essential oil, medicinal (folklore), environmental.

### 4. *Eucalyptus exserta* F. Muell. 窿緣桉

J. Proc. Linn. Soc., Bot. 3: 85. 1859; FGZ 217. 1956; FHN 2: 3. 1965; FRPS 53(1): 46. 1984; FFJ 4: 90, fig. 75. 1989; FGX 1: 898, pl. 348: 3–6. 1991; FGD 3: 169. 1995; FYN 7: 104. 1997; FOC 13: 326. 2007.

Tree, 15–18 m tall. Bark persistent, greyish brown, rough, and fissured. Young branchlets obtusely angulate, slender, usually pendulous. Leaves of juvenile plants: shortly petiolate; leaf blade narrowly lanceolate, less than 1 cm wide. Leaves of adult plants: petioles slender, ca. 1.5 cm; leaf blade narrowly lanceolate, 8–15 × 1–1.5 cm, slightly twisted, with many minute black glands on both surfaces. Inflorescence an umbel, axillary, 3–8-flowered; peduncle 4–20 mm, terete. Flower buds long ovoid, 8–10 mm. Pedicels 3–4 mm. Hypanthium semiglobose, 2.5–3 × ca. 4 mm; calyptra long conic, 5–7 mm, apex acuminate. Stamens 6–7 mm. Capsule subglobose, 6–7 mm in diam.; valves 4, strongly exserted from hypanthium.

Locality: Cultivated. *HK sheet* 34326, 34672, 35810.

Distribution: S China (cultivated); native to Australia.

Ecology: Flowering: May–Sep.

Uses: Environmental, timber, essential oil.

### 5. *Eucalyptus camaldulensis* Dehnh. 赤桉

Cat. Pl. Hort. Camald., ed. 2, 20. 1832; FGZ 217. 1956; FRPS 53(1): 44. 1984; FFJ 4: 84, fig. 68: 1–2. 1989; FGX 1: 879. 1991; FZJ 4: 284, fig. 359. 1993; FGD 3: 165, fig. 118: 1–3. 1995; FYN 7: 100, fig. 30: 3. 1997; FOC 13: 326. 2007.

*Eucalyptus rostrata* Schlecht., *Linnaea* 2: 655. 1847.

Tree, to 25 m tall. Bark smooth, dark grey, exfoliating but persistent at trunk base. Branches terete, youngest parts angulate. Leaves of juvenile plants: petiolate; leaf blade broadly lanceolate, 6–9 × 2.5–4 cm. Leaves of adult plants: petiole slender, 1.5–2.5 cm; leaf blade thinly leathery, narrowly lanceolate, 6–30 × 1–2 cm, slightly twisted, with small black glands on both surfaces. Inflorescence an umbel, axillary, 5–11-flowered; peduncle 1–1.5 cm, slender, terete. Flower buds ovoid, 5–8 mm. Pedicels 5–7 mm. Hypanthium semiglobose, ca. 3 mm; calyptra semiglobose at base, 5–7 mm, abruptly constricted above middle, apex acute and beaked. Stamens 5–7 mm. Capsule subglobose, 5–6 mm in diam.; valves (3 or) 4 (or 5), exserted from hypanthium.

Locality: Cultivated. *Y. S. Lau* 1433; *HK sheet* 34746.

Distribution: S & SW China (cultivated); native to Australia.

Ecology: Flowering: Dec.–Aug.

Uses: Environmental, timber, essential oil.

### 6. *Eucalyptus tereticornis* Sm. 細葉桉

Spec. Bot. New Holland 1: 41. 1795; FGZ 218. 1956; FRPS 53(1): 43, pl. 7: 4–6. 1984; FFJ 4: 83, fig. 66. 1989; FGX 1: 881, pl. 343: 7–10. 1991; FGD 3: 165. 1995; FYN 7: 100. 1997; FOC 13: 325. 2007.

*Eucalyptus umbellata* (Gaertn.) Domin, *Biblioth. Bot.* 89: 467. 1928, *nom. illeg.*, non *Eucalyptus umbellata* Desf. (1814).

*Leptospermum umbellatum* Gaertn., Fruct. Sem. Pl. 1: 174, pl. 35. 1788.

Tree, to 25 m tall. Bark greyish white, smooth, exfoliating in long strips, sometimes persistent at trunk base. Branchlets terete, slender, pendulous. Leaves of juvenile plants: ovate to broadly lanceolate, to 10 cm wide. Leaves of adult plants: petioles 1.5–2.5 cm; leaf blade narrowly lanceolate, 10–25 × 1.5–2 cm, slightly twisted, with small glands on both surfaces. Inflorescence an umbel, axillary, 5–8-flowered; peduncle 1–1.5 cm, stout, terete. Flowers buds long ovoid, 8–12 mm. Pedicels 3–6 mm. Hypanthium hemispheric, 2.5–3 × 4–5 mm; calyptra conic, 7–10 mm, apex acuminate. Stamens 6–9 mm. Capsule subglobose to ovoid, 6–8 mm in diam.; valves 4 or 5, exerted from hypanthium.

Locality: Cultivated. *HK sheet 34749*.

Distribution: S & SW China (cultivated); native to Australia.

Ecology: Flowering: Jun.–Aug.

Uses: Timber, essential oil, environmental.

### 3. *Callistemon* R. Br. 紅千層屬

Trees or shrubs. Leaves alternate, petiolate or sessile. Inflorescence a spike or head, terminal or lateral; bracts deciduous. Flowers bisexual. Hypanthium subglobose or campanulate. Sepals 5, caducous or persistent. Petals 5. Stamens many; filaments distinct or slightly connate at base, red or yellow, usually several times as long as petals; anthers dorsifixed, cells parallel, dehiscing longitudinally. Ovary slightly adnate to hypanthium, 3(–4)-locular; ovules many per locule; style linear; stigma not enlarged. Capsule semiglobose to globose, apex truncate, valves included in hypanthium. Seeds linear; testa thin; embryo straight.

About 20 species distributed in Australia; three species introduced to China; two species commonly cultivated in Hong Kong.

- 1a. Branchlets rigid, erect; inflorescences rigidly erect; bark thinly flaking ..... 1. *Callistemon rigidus*  
 1b. Branchlets lax and flexible, usually drooping; inflorescences hanging down; bark thick, longitudinally cracked ..... 2. *Callistemon viminalis*

#### 1. *Callistemon rigidus* R. Br. 紅千層

(Photo 219)

Bot. Reg. 5: t. 393. 1819; DC., Prodr. 3: 223. 1828; FGZ 208, fig. 100. 1956; FHN 2: 4, fig. 288. 1965; FRPS 53(1): 53, pl. 9: 1–3. 1984; FFJ 4: 92, fig. 77. 1989; FGX 1: 900. 1991; FGD 3: 171, fig. 120. 1995; FYN 7: 106. 1997.

Small tree. Bark dark grey; young branchlets angulate, covered with long silky hairs at first, glabrescent. Petioles very short; leaf blade leathery, linear 5–9 × 0.3–0.6 cm, apex acute, with conspicuous oil glands, silky hairy at first, glabrescent; midvein prominent on both surfaces. Spikes terminal, ca. 10 cm; rachis growing into normal branches after flowering. Hypanthium slightly hairy. Sepals semiorbicular, membranous. Petals green, ovate, ca. 6 × 4.5 mm, with oil glands. Stamens 2.5 cm, brightly red; anthers dark purple, ellipsoidal. Styles slightly longer than stamens, red with green apex. Capsule semiglobose, 5 × 7 mm, apex truncate, dehiscing into 3 valves. Seeds linear, 1 mm.

Locality: Cultivated. *H. C. Tang 508, 861; Y. S. Lau 599*.

Distribution: Guangdong, Guangxi (cultivated); native to Australia.

Ecology: Flowering: Jun.–Aug.

Uses: Environmental, ornamental.

#### 2. *Callistemon viminalis* G. Don 串錢柳

(Photo 220)

Hort. Brit. 197. 1830.

Small tree, 2–5 m. Bark thick, longitudinally-cracked; branchlets lax and flexible, usually drooping. Petioles absent; leaf blade linear, 8–9 × 0.7–0.8 cm, apex acute, with numerous conspicuous oil glands; midvein more prominent on abaxial surface; margin entire, not swollen. Spikes terminal, ca. 15 cm, usually hanging down. Hypanthium hairy. Sepals 5, surmounting the floral tube. Petals greenish, ca. 8 mm. Stamens numerous, 2.5 cm, red, united at base. Ovary inferior, 3-locular each with numerous ovules; styles slender, red. Capsule 5–8 mm.

Locality: Cultivated. *Y. S. Lau 727; L. T. Lo 13*.

Distribution: Guangdong (cultivated); native to Australia.

Ecology: Flowering: Mar.–May; fruiting: Aug.

Uses: Ornamental, environmental.

### 4. *Melaleuca* L. 白千層屬

Trees or shrubs. Leaves alternate, rarely opposite, petiolate or sessile. Inflorescence a spike or head, terminal or lateral; bracts deciduous. Flowers bisexual. Hypanthium subglobose or campanulate. Sepals 5, caducous or persistent. Petals 5. Stamens many; filaments basally connate into 5 bundles opposite to petals; anthers dorsifixed, cells parallel, dehiscing longitudinally. Ovary slightly adnate to hypanthium, 3-locular; ovules many per locule; style linear; stigma ± enlarged. Capsule semiglobose to globose, valves included in hypanthium. Seeds cylindrical to subtriangular; testa thin; embryo straight.

About 150 species mainly distributed in Australia; several species cultivated in China; one species commonly cultivated in Hong Kong.

**1. *Melaleuca cajuputi* Roxb. subsp. *cumingiana* (Turcz.) Barlow 白千層**

(Photo 221)

Novon. 7: 113. 1997; FOC 13: 329. 2007.

*Melaleuca cumingiana* Turcz., Bull. Soc. Imp. Naturalistes Moscou 20: 164. 1847.*Melaleuca leucadendra* auct. non (L.) L.: FGZ 209. 1956; FHN 2: 5. 1965; FRPS 53(1): 54–55. 1984; FFJ 4: 93, fig. 78. 1989; FGX 1: 900. 1991; FGD 3: 172. 1995; FYN 7: 106. 1997.

Tree to 18 m tall. Bark white, thick and soft, peeling off in thin layers. Branchlets greyish white. Leaves alternate, fragrant; petioles very short; leaf blade leathery, narrowly elliptic to lanceolate, 5–10 × 1–2 cm, acute at both ends, with many oil glands; basal veins 3–5(–7). Spikes pseudoterminal, 15 cm; rachis shortly hairy. Flowers white. Hypanthium ovoid, ca. 3 mm, pubescent or glabrous. Sepals orbicular, ca. 1 mm. Petals ovate, 2–3 × ca. 3 mm. Stamens ca. 1 cm. Style slightly longer than stamens. Capsule subglobose, 5–7 mm in diam.

Locality: Cultivated. *HK sheet 30220, 35088, 35846.*

Distribution: Native to Australia, widely cultivated in tropical Asia, Australia.

Ecology: Flowering: Nov.

Uses: Environmental, essential oil.

Notes: The species was reported as *Melaleuca quinquenervia* (Cav.) S. T. Blake previously (Check List HK Plants 163. 2002; 59. 2004).**5. *Lophostemon* Schott 紅膠木屬**

Trees or shrubs. Leaves alternate or clustered at apex of branches, rarely opposite. Inflorescence an axillary cyme; bracts caducous or absent. Flowers bisexual, 5-merous. Hypanthium ovoid or obconic, pubescent. Sepals imbricate, persistent. Petals white or yellow, pubescent. Stamens many; filaments usually connate into 5 bundles opposite to petals; anthers dorsifixed, cells parallel, dehiscing longitudinally. Ovary inferior or semi-inferior, 3-locular; ovules many. Style shorter than stamens; stigma slightly enlarged. Capsule semiglobose or cup-shaped, apex truncate, dehiscing into 3 valves, valves included in hypanthium. Seeds several, linear, sometimes winged.

Four species distributed in Australia and S New Guinea; one species introduced to China; it is also cultivated in Hong Kong.

**1. *Lophostemon confertus* (R. Br.) Peter G. Wilson & J. T. Waterh. 紅膠木**

(Photos 222–223)

Austral. J. Bot. 30(4): 424. 1982; FOC 13: 329. 2007.

*Tristania conferta* R. Br., Hort. Kew. (ed. 2) 4: 417. 1811 [1812]; FGZ 208. 1956; FHN 2: 6, fig. 290. 1965; FRPS 53(1): 31, pl. 6: 1–2. 1984; FGX 1: 899. 1991.

Tree, to 20 m tall. Bark blackish brown, ± persistent. Branchlets flat and angulate at first, later becoming terete, puberulous. Leaves clustered at apex of branches; petioles 1–2 cm, flat; blade leathery, oblong to ovate-lanceolate, 7–15 × 3–7 cm, base cuneate, apex acuminate, with pellucid oily dots adaxially, sometimes greyish abaxially; lateral veins 12–18 pairs, slightly prominent abaxially, reticulate veins conspicuous. Cymes 2–3 cm, 3–7-flowered; peduncle 0.6–1.5 cm. Pedicels 3–6 mm. Hypanthium obconic, 4–5 mm, covered with greyish white silky hairs. Sepals triangular, 3–4 mm, apex sharply pointed. Petals obovate, ca. 6 mm, pubescent abaxially. Stamen bundles 1–1.2 cm; filaments partly distinct; anthers ca. 0.5 mm. Capsule semiglobose, 8–10 mm in diam.

Locality: Cultivated. *H. C. Tang 83, 825; HK sheet 40141.*

Distribution: Guangdong, Guangxi, Hainan, Taiwan, and Yunnan (cultivated); native to Australia.

Ecology: Flowering: May–Jul.; fruiting: Aug.–Sep.

Uses: Environmental, ornamental, timber.

**6. *Rhodomyrtus* (DC.) Rchb. 桃金娘屬**

Shrubs or trees. Leaves opposite, tripliveined, petiolate. Inflorescence a cyme, 1–3-flowered, axillary. Hypanthium ovoid to subglobose. Calyx-lobes 4–5, leathery, persistent. Petals 4–5, larger than calyx-lobes. Stamens many, distinct, in many whorls, usually shorter than petals; anthers dorsifixed to nearly basifixed, versatile, dehiscing longitudinally. Ovary inferior, adnate to hypanthium, 3(–4)-locular, sometimes with false transverse septa; ovules arranged in 2 lines per locule. Style linear; stigma capitate or peltate. Berry urceolate or globose. Seeds many, flat, reniform; testa hard; embryo curved or spiral.

About 18 species distributed in tropical Asia, Australia, SW Pacific Islands; one species in China, also in Hong Kong.

**1. *Rhodomyrtus tomentosa* (Aiton) Hassk. 桃金娘 (崗檢)**

(Fig. 111; Photo 224)

Flora 25(Beibl.): 35. 1842; FHK 121. 1861; FKH 104. 1912; FGZ 201. 1956; FHN 2: 7, fig. 291. 1965; FRPS 53(1): 121, pl. 32: 1–2. 1984; FFJ 4: 95, fig. 80. 1989; FGX 1: 914. 1991; FGD 3: 173, fig. 123. 1995; FYN 7: 129, fig. 36: 3–4. 1997; FOC 13: 331. 2007.

*Myrtus tomentosa* Aiton, Hort. Kew. 2: 159. 1789.*Myrtus canescens* Lour., Fl. Cochinch. 311. 1790.

Shrub, 1–2 m tall. Young branchlets greyish pubescent. Petioles 4–7 mm; leaf blade leathery, elliptic to obovate, 3–8 × 1–4 cm, base broadly cuneate, apex rounded to obtuse, often slightly emarginate, pubescent at first, glabrescent adaxially, grey tomentose abaxially; reticulate veins conspicuous. Flowers long-pedicellate, often solitary, purplish red, 2–4 cm in diam. Hypanthium obovoid,

ca. 6 mm, grey tomentose. Calyx-lobes 5, suborbicular, 4–5 mm, persistent. Petals 5, obovate, 1.3–2 cm. Stamens red, 7–8 mm. Ovary inferior, 3-locular. Style ca. 1 cm. Berry purplish black when mature, urceolate, 1.5–2 × 1–1.5 cm.

Locality: Common in Hong Kong. *P. S. Choi 142; K. L. Yip 4189, 4402.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan Guizhou, Hunan, Jiangxi, Fujian, Taiwan; India, Sri Lanka, Myanmar, Laos, Vietnam, Philippines, Japan (Ryukyu Islands), Malaysia, Indonesia.

Ecology: Thickets. Flowering: Apr.–May; fruiting: Late summer to early autumn.

Uses: Edible (fruit), medicinal (folklore).

### 7. *Cleistocalyx* Blume 水翁屬

Trees or shrubs. Leaves opposite, petiolate, sparsely pinnately-veined. Inflorescence a thyrse, terminal or axillary; bracts small, caducous. Hypanthium obconic. Calyx-lobes 4–5, connate and forming a calyptra. Petals 4–5, distinct. Stamens many, distinct, in many whorls, anthers 2-celled, cells parallel, dehiscing longitudinally. Ovary inferior, 2-locular; ovules several per locule; style linear, shorter than stamens; stigma slightly enlarged. Fruit drupaceous, 1-seeded. Seeds often with a thin pseudotesta; cotyledons thick; embryo straight.

About 20 species distributed in tropical Asia and Australia; two species in China; one species in Hong Kong.

#### 1. *Cleistocalyx nervosum* (DC.) Kosterm.

水翁 (Fig. 112; Photo 225)

Bull. Bot. Surv. India 29(1-4): 17. 1987 [1989].

*Cleistocalyx operculatus* (Roxb.) Merr. & L. M. Perry, J. Arnold Arbor. 18(4): 337. 1937; FGZ 206. 1965; FHN 2: 22. 1965; Icon. Corm. Sin. 2: 996, fig. 3721. 1972; FRPS 53(1): 118. 1984; FGX 1: 901, pl. 356: 3. 1991; FGD 3: 196, fig. 135. 1995; FYN 7: 128. 1997.

*Eugenia operculata* Roxb., [Hort. Bengal. 37. 1814] Fl. Ind. ed. 2, 2: 486. 1832; FKH 105. 1912.

*Syzygium nervosum* DC., Prodr. 3: 260. 1828; FOC 13: 344. 2007.

Tree, to 15 m tall, multibranched. Bark thick, greyish brown. Young branchlets flattened, furrowed. Petioles 1–2 cm; leaf blade thinly leathery, oblong to elliptic, 11–17 × 4.5–7 cm, base broadly cuneate to slightly rounded, apex acute to acuminate, glandular punctate on both surfaces; lateral veins 9–13 on each side of midvein, reticulate veins conspicuous. Thyrses lateral on leafless branches, 6–12 cm. Flowers 2–3 in clusters, sessile. Flower-buds oval, ca. 5 × 3.5 mm. Hypanthium semiglobose, ca. 3 mm. Calyptra 2–3 mm, apex beaked. Petals obsolete. Stamens 5–8 mm. Style 3–5 mm. Fruit purplish black when mature, broadly ovoid, 1–1.2 cm.

Locality: Common in Hong Kong. *Y. S. Lau 1871; HK sheet 30218.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Xizang; India, Sri Lanka, Myanmar, Thailand, Vietnam, Malaysia, Indonesia, N Australia.

Ecology: Places near water. Flowering: May–Jun.

Uses: Medicinal (folklore), essential oil.

Notes: The species was reported as *Cleistocalyx operculatus* (Roxb.) Merr. & L. M. Perry previously (Check List HK Plants 161. 2002; 59. 2004).

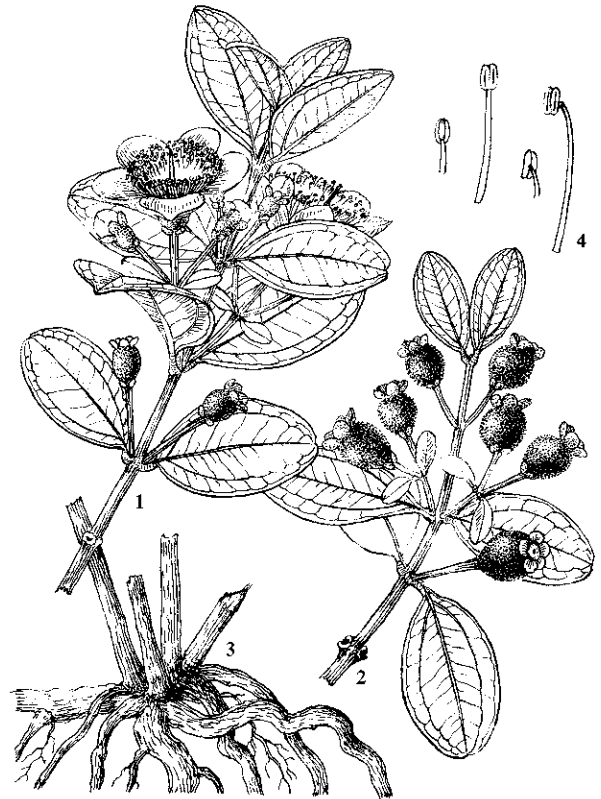


Figure 111. *Rhodomyrtus tomentosa* (Aiton) Hassk.

1. flowering branch; 2. fruiting branch; 3. root; 4. stamens. (drawn by H. P. Yu)

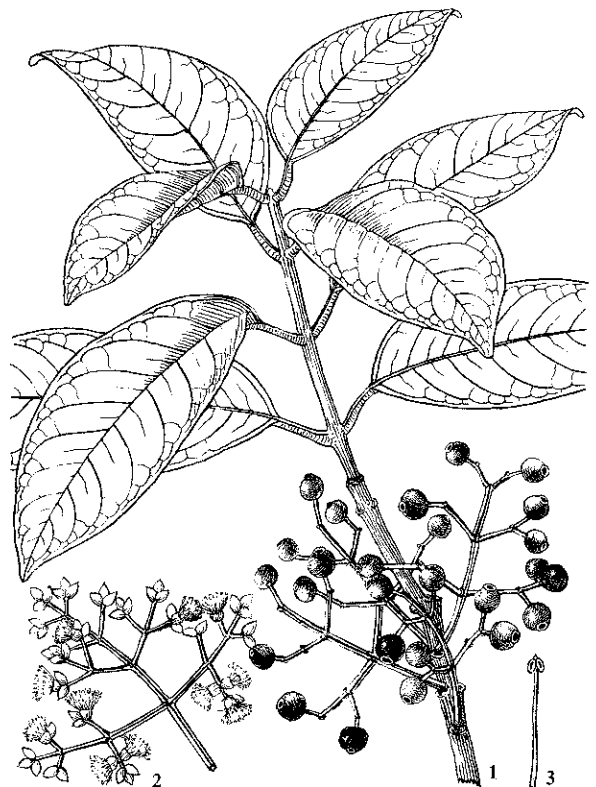


Figure 112. *Cleistocalyx nervosum* (DC.) Kosterm

1. fruiting branch; 2. inflorescence; 3. stamen. (drawn by H. P. Yu)

8. *Acmena* DC. 肖蒲桃屬

Trees or shrubs. Leaves opposite, pinnately-veined, with oil glands, petiolate. Inflorescence a cyme or thyrses; bracts small, deciduous after flowering. Flowers bisexual, small. Hypanthium obconic or semiglobose. Calyx-lobes 4–5, incurved. Petals 5, distinct or united into a calyptra. Stamens many, distinct, in several whorls; filaments short; anthers minute, 2-celled; cells divergent, dehiscing by an apical pore. Ovary inferior, 2–3-locular; ovules many per locule. Style linear, short. Fruit drupaceous, 1-seeded. Seeds often with a pseudotesta adhering to pericarp; embryo straight, not lobed.

About 11 species distributed in India, Malaysia, Indonesia to Australia; one species in China, also in Hong Kong.

1. *Acmena acuminatissima* (Blume) Merr. & L. M. Perry  
肖蒲桃 (Fig. 113)

J. Arnold Arbor. pl. 1019: 205. 1938; FHN 2: 11, fig. 295. 1965; Icon. Corm. Sin. 2: 995, fig. 3720. 1972; FRPS 53(1): 60, pl. 10: 1–6. 1984; FGX 1: 914. 1991; FGD 3: 180, fig. 128. 1995.

*Eugenia acuminatissima* (Blume) Kurz, Prelim. Rep. Forest Pegu App. A 63, App. B 51. 1875; FKH 105. 1912.

*Syzygium acuminatissimum* (Blume) DC., Prodr. 3: 261. 1828; FOC 13: 343. 2007.

*Myrtus acuminatissima* Blume, Bijdr. 1088. 1826.

Tree, to 20 m tall. Branchlets terete or obtusely angulate. Petioles 5–8 mm; leaf blade leathery, ovate-lanceolate to narrowly lanceolate, 5–12 × 1–3.5 cm, base broadly cuneate, apex caudate-acuminate and with a ca. 2 cm acumens, with numerous oil glands adaxially; lateral veins many. Inflorescence a thyrses composed of 3-flowered cymes, terminal, 3–6 cm; rachis ridged. Flower-buds obovoid, 3–4 mm. Pedicels short. Hypanthium obconic, upper margin incurved. Calyx lobes inconspicuous. Petals white, distinct, ca. 1 mm. Stamens ca. 1 mm. Fruit blackish purple when mature, globose, ca. 1.5 cm in diam.

Locality: Victoria Peak. Y. S. Lau 3270.

Distribution: Hainan, Guangdong, Guangxi, Taiwan, India, Myanmar, Malaysia, Thailand, Philippines, Indonesia, New Guinea, Pacific Islands.

Ecology: Forests. Flowering: Jul.–Oct.

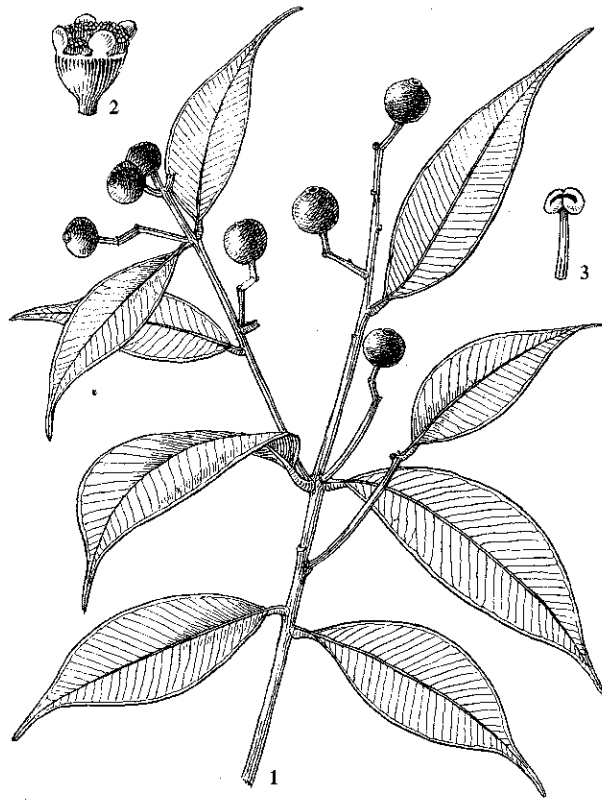


Figure 113. *Acmena acuminatissima* (Blume) Merr. & Perry  
1. fruiting branch; 2. flower; 3. stamen. (drawn by H. P. Yu)

9. *Syzygium* Gaertn. 蒲桃屬

Trees or shrubs. Branchlets sometimes 2–4-angulate, usually glabrous. Leaves opposite or sometimes whorled, rarely alternate, petiolate to subsessile, pinnately-veined, with conspicuous glands. Inflorescence a thyrses, composed of 3–many-flowered cymes, terminal or axillary; bracts small, deciduous after flowering. Flowers stipitate or not. Hypanthium obconic or sometimes clavate. Calyx lobes 4–5 or rarely more, usually short, caducous or persistent. Petals 4–5 or rarely more, distinct or united into a calyptra. Stamens many, distinct, rarely slightly connate at base; anthers minute, versatile, 2-celled; cells parallel, dehiscing longitudinally; connectives usually terminating in an apical gland. Ovary inferior, 2–3-locular; ovules many per locule. Style linear. Fruit drupaceous, 1 (or 2)-seeded. Seeds often with a pseudotesta ± adhering to pericarp; embryo straight; cotyledons thick, adhering in a mass.

About 500 species mainly distributed in tropical Asia, with a few in Australia and Africa; 77 species in China; nine species in Hong Kong.

- 1a. Young branchlets ± angled.
  - 2a. Midvein impressed adaxially.....1. *S. impressum*
  - 2b. Midvein not impressed adaxially.
    - 3a. Leaf blade broadly elliptic to elliptic, 1.5–3 × 1–2 cm; hypanthium obconic, ca. 2 mm; fruit globose, 5–7 mm in diam. ....2. *S. buxifolium*
    - 3b. Leaf blade narrowly oblong to elliptic, 3–6(–9) × 1–2 cm; hypanthium clavate, 8–10 mm; fruit long-ellipsoidal, ca. 1.2 cm .....3. *S. championii*
- 1b. Young branchlets terete, sometimes slightly flattened.
  - 4a. Petals distinct.
    - 5a. Leaves lanceolate to oblong, 12–25 × 3–4.5 cm .....4. *S. jambos*
    - 5b. Leaves oblong to narrowly elliptic or obovate, 3–8 × 1.5–4 cm.
      - 6a. Young branchlets not scurfy, blackish brown when dry; flowers sessile.....5. *S. hancei*

- 6b. Young branchlets scurfy, greyish white when dry; flowers shortly pedicellate.....  
..... 6. *S. levinei*
- 4b. Petals united into a calyptra.
- 7a. Fruit globose, 6–7 mm in diam. ....  
..... 7. *S. euonymifolium*
- 7b. Fruit ellipsoidal-ovoid or ellipsoidal to urceolate, 1.5–2 × ca. 1 cm.
- 8a. Leaf blade 4–7 × 2.5–3.5 cm, apex abruptly acuminate and with an obtuse acumen .....  
..... 8. *S. rehderianum*
- 8b. Leaf blade 6–12 × 3.5–7 cm, apex rounded to obtuse and with a short cusp.....  
..... 9. *S. cumini*

1. *Syzygium impressum* N. H. Xia, Y. F. Deng & K. L. Yip  
凹脈赤楠 (Fig. 114)

J. Trop. Subtrop. Bot. 16: 19–22. 2008.

Shrubs, ca. 2 m tall, glabrous throughout; branchlets blackish brown when dry, tetragonal. Leaves opposite; petioles ca. 2 mm, glabrous; leaf blades thin leathery, broadly obovate, 1–1.8 × 0.7–1 cm, base cuneate, apex obtuse to retuse, margin entire, slightly revolute, glabrous, abaxially brown when dry and densely covered with glandular dots, adaxially dark brownish when dry, midvein impressed adaxially, prominent abaxially, lateral veins 6–8 pairs, ca. 1.5 mm apart, at an angle of ca. 50° with midvein, adaxially inconspicuous, abaxially slightly conspicuous, intramarginal veins very closed to margin. Inflorescences terminal or axillary, cymose, 0.6–1 cm, few-flowered; peduncles 2–4 mm, glabrous; pedicels 1–2 mm, glabrous; bracts subulate, ca. 1 mm, glabrous; bracteoles subulate, ca. 1 mm, glabrous; hypanthium campanulate, ca. 1 × 0.5 mm, glabrous; calyx lobes 4, ovate, ca. 0.5 mm, apart, glabrous; petals 4, white, distinct, suborbicular, ca. 2 mm, glabrous; stamens ca. 2 cm, glabrous; ovary glabrous; styles ca. 2 mm, glabrous. Fruit globose, ca. 4 mm in diam., glabrous.

Locality: Sunset Peak. *Y. S. Lau* 2598; *Y. W. Lam* 468; *HK sheet* 11425.

Distribution: Endemic to Hong Kong.

Ecology: Streamsides in montane forests. Flowering: Jun.–Aug.; fruiting: Oct.–Dec.

Notes: The holotype specimen (*Y. S. Lau* 2598, HK) was collected from Sunset Peak in Jul. 1975.

2. *Syzygium buxifolium* Hook. & Arn.  
赤楠 (Fig. 115; Photo 226)

Bot. Beechey Voy. 187. 1833; FHK 118. 1861; FGZ 205. 1956; FHN 2: 19. 1965; FRPS 53(1): 90. 1984; FFJ 4: 99, fig. 85. 1989; FGX 1: 911. 1991; FGD 3: 189. 1995; FOC 13: 351. 2007.

*Eugenia sinensis* Hemsl., J. Linn. Soc., Bot. 23: 298. 1887; FKH 105. 1912.

Shrub or small tree. Young branchlets 4–6-angled, blackish brown when dry. Leaves opposite or whorled; petioles ca. 2 mm; leaf blade leathery, broadly elliptic to elliptic, sometimes broadly obovate, 1.5–3 × 1–2 cm, base broadly cuneate or obtuse, apex rounded or obtuse, or sometimes acute and with an obtuse cusp, dark brown and not glossy when dry adaxially, glandular and slightly pale when dry abaxially; lateral veins many, inconspicuous or depressed adaxially, slightly raised abaxially. Cymes terminal, ca. 1 cm, several-flowered. Flower-buds ca. 3 mm. Pedicels ca. 1–2 mm. Hypanthium obconic, ca. 2 mm. Calyx-lobes shallowly

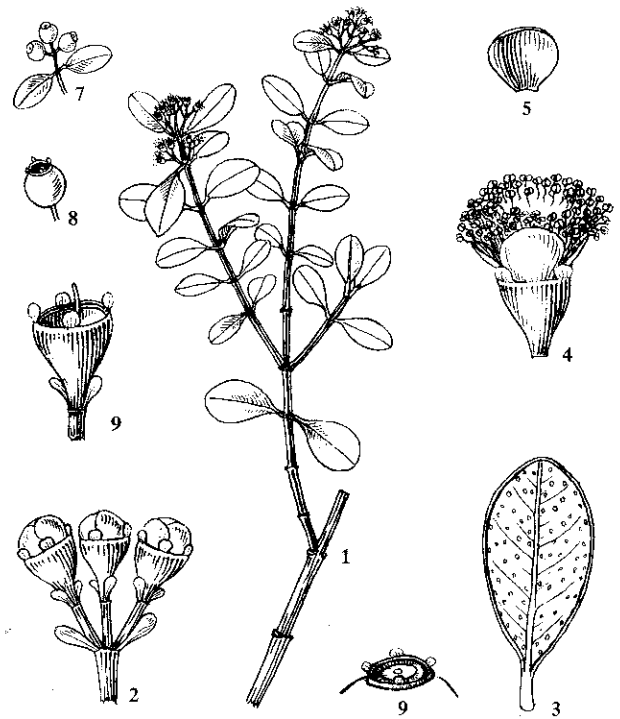


Figure 114. *Syzygium impressum* N. H. Xia, Y. F. Deng & K. L. Yip  
1. flowering branch; 2. inflorescence; 3. adaxial surface of leaf; 4. flower; 5. petal; 6. flower with petals and stamens removed; 7. infructescence; 8. fruit; 9. fruit apex. (drawn by H. P. Yu)



Figure 115. *Syzygium buxifolium* Hook. & Arn.  
1. flowering branch; 2. fruiting branch; 3. flower; 4. vertical section of flower; 5. fruit. (drawn by H. P. Yu)

wavy. Petals 4, white, distinct, ca. 2 mm. Stamens ca. 2.5 mm. Style as long as stamens. Fruit purplish black when mature, globose, 5–7 mm in diam.

Locality: Common in Hong Kong. *L. T. Lo 100; Y. W. Lam 468; F. W. Xing 9337.*

Distribution: Areas S of Changjiang River; Vietnam, Japan.

Ecology: Thickets and secondary forests. Flowering: Jun.–Aug.; fruiting: Oct.–Dec.

Uses: Timber, fruit (edible).

**3. *Syzygium championii* (Benth.) Merr. & L. M. Perry 灶地烏骨木(子凌蒲桃) (Photo 227)**

*J. Arnold Arbor.* 19: 219. 1938; *FHN* 2: 15. 1965; *FRPS* 53(1): 75, pl. 13: 3. 1984; *FGX* 1: 908, pl. 354: 1. 1991; *FOC* 13: 347. 2007.

*Acmena championii* Benth., *Hooker's J. Bot. Kew Gard. Misc.* 4: 118. 1852; *FHK* 119. 1861.

*Eugenia championii* (Benth.) Hemsl., *J. Linn. Soc., Bot.* 23: 296. 1887.

Shrub to tree. Young branchlets 4-angled, greyish white when dry. Leaves opposite; petioles 2–3 mm; leaf blade leathery, narrowly oblong to elliptic, 3–6(–9) × 1–2 cm, base broadly cuneate, apex acute and with a ca. 1 cm cusp, both surfaces greyish green when dry; lateral veins many. Cymes terminal or sometimes axillary, ca. 2 cm, 6–10-flowered. Flower-buds clavate, ca. 1 cm, basal part narrow. Pedicels very short. Hypanthium clavate, 8–10 mm. Calyx-lobes 4, shallowly wavy. Petals white or pink, connate into a calyptra. Stamens 3–4 mm. Style as long as stamens. Fruit red, long-ellipsoidal, ca. 1.2 cm, shallowly grooved when dry, 1–2-seeded.

Locality: Victoria Peak, Mount Parker, Tai Tam, Deep Water Bay, Cape D'Aguilar, Pat Sin Leng, Ng Tung Chai, Sai Kung. *Y. W. Lam 477, 580; F. W. Xing 8055.*

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Secondary forests. Flowering: Aug.–Nov.; fruiting: Oct.–Dec.

Notes: The type specimen was collected from Happy Valley by J. G. Champion between 1847 and 1850.

**4. *Syzygium jambos* (L.) Alston 蒲桃 (Photos 228–229)**

*Handb. Fl. Ceylon.* 6: 115. 1931; *FGZ* 203. 1956; *FHN* 2: 14, fig. 291. 1965; *FRPS* 53(1): 68. 1984; *FFJ* 4: 97, fig. 82. 1989; *FGX* 1: 905. 1991; *FGD* 3: 185, fig. 132. 1995; *FYN* 7: 110. 1997; *FOC* 13: 344. 2007.

*Eugenia jambos* var. *sylvatica* Gagnep., *Fl. Indo-Chine* 2: 835. 1921.

*Eugenia jambosa* L., *Sp. Pl.* 1: 470. 1753; *FKH* 104. 1912.

*Jambosa vulgaris* DC., *Prodr.* 3: 286. 1828, *nom. illeg. superfl.*; *FHK* 120. 1861.

*Syzygium jambos* var. *sylvaticum* (Gagnep.) Merr. & L. M. Perry, *J. Arnold Arbor.* 19(1): 114. 1938.

Tree, to 10 m tall. Branches spreading; branchlets terete or subterete. Leaves opposite; petioles 6–8 mm; leaf blade leathery or firmly papery, lanceolate to oblong, 12–25 × 3–4.5 cm, base broadly cuneate, apex long acuminate, both surfaces with many small pellucid glands; lateral veins 12–16 on each side, obviously prominent abaxially, reticulate veins conspicuous. Cymes terminal, several-flowered; peduncle 1–1.5 cm. Flowers greenish white, 3–4 cm in diam. Pedicels 1–2 cm. Hypanthium obconic, 0.8–1 cm. Calyx lobes 4, semiorbicular or triangular-ovate, 5–8 mm. Petals distinct, broadly ovate, 1.4–1.5 cm. Stamens 2–2.8 cm; anthers ca. 1.5 mm. Style as long as stamens. Fruit pale yellow or red when ripe, globose, 3–5 cm in diam., with oil glands, 1–2-seeded, pericarp fleshy. Seeds with many embryos.

Locality: Cultivated & naturalized. *H. C. Tang 166, 531; Y. S. Lau 221.*

Distribution: S China; Indochina, Malaysia, Indonesia.

Ecology: Flowering: Mar.–Apr.; fruiting: May–Jun.

Uses: Ornamental, edible (fruit).

**5. *Syzygium hancei* Merr. & L. M. Perry 韓氏蒲桃(紅鱗蒲桃) (Photo 230)**

*J. Arnold Arbor.* 19: 242. 1938; *FGZ* 205. 1956; *FHN* 2: 21. 1965; *FRPS* 53(1): 106. 1984; *FFJ* 4: 101, fig. 87. 1989; *FGX* 1: 912. 1991; *FGD* 3: 193. 1995; *FOC* 13: 366. 2007.

*Eugenia minutiflora* Hance, *J. Bot.* 9: 5. 1871, non *Syzygium minutiflorum* Miq. (1860) nec *S. minutiflorum* Gamble (1919); *FKH* 105. 1912.

Shrub or tree, to 10 m tall. Young branchlets terete, blackish brown when dry. Leaves opposite; petioles 3–6 mm; leaf blade leathery, oblong to narrowly elliptic or obovate, 3–7 × 1.5–4 cm, base broadly cuneate to narrow, apex obtuse to slightly acute, both surfaces dark brown when dry, not glossy and with many small impressed glands adaxially; lateral veins inconspicuous on both surfaces. Thyrses axillary, 1–1.5 cm, many-flowered. Flowers sessile, buds obovoid, ca. 2 mm. Hypanthium obconic, ca. 1.5 mm. Calyx-lobes inconspicuous. Petals 4, distinct, orbicular, ca. 1 mm. Stamens slightly shorter than petals. Style as long as petals. Fruit globose, 5–8 mm in diam.

Locality: Common in Hong Kong. *P. S. Choi 76; Y. W. Lam 104; HK sheet 40805.*

Distribution: S China; Vietnam.

Ecology: Secondary forests. Flowering: Jul.–Sep.; fruiting: Nov.–Jan.

Uses: Timber.

**6. *Syzygium levinei* (Merr.) Merr. & L. M. Perry 山蒲桃 (Photo 231)**

*J. Arnold Arbor.* 19: 110. 1938; *FGZ* 204. 1956; *FHN* 2: 18. 1965; *FRPS* 53(1): 115, pl. 29: 1–2. 1984; *FGX* 1: 908, pl. 353: 2. 1991;

FGD 3: 195. 1995; FOC 13: 358. 2007.

*Eugenia levinei* Merr., Lingnan Sci. J. 13: 39. 1934.

Shrub to tree, to 14 m tall. Young branchlets terete, scurfy, greyish white when dry. Leaves opposite; petioles 5–7 mm; leaf blade leathery, elliptic to ovate-elliptic, 4–8 × 1.5–3.5 cm, base broadly cuneate, apex acute, both surfaces greyish brown when dry and with minute glands. Thyrses terminal or axillary on apex of branchlets, 3–7 cm, many-flowered; peduncles and rachis squarrose or papillate. Flower-buds obovoid, 4–5 mm. Flowers white, shortly pedicellate. Hypanthium obconic, ca. 3 mm. Calyx lobes very short. Petals 4, distinct, orbicular, 2.5–3 mm. Stamen ca. 5 mm. Style ca. 4 mm. Fruit subglobose, 7–8 mm in diam., 1-seeded.

Locality: Common in Hong Kong. *S. P. Lau 164*; *Y. W. Lam 1069*; *S. C. Ng 4028*.

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Forests. Flowering: Jul.–Sep.; fruiting: Feb.–May.

Uses: Timber.

**7. *Syzygium euonymifolium*** (F. P. Metcalf) Merr. & L. M. Perry 衛矛葉蒲桃

J. Arnold Arbor. 19: 242. 1938; FGZ 205. 1956; FRPS 53(1): 105, pl. 25. 1984; FFJ 4: 103, fig. 91. 1989; FGX 1: 912, pl. 353: 3. 1991; FGD 3: 193. 1995; FOC 13: 356. 2007.

*Eugenia euonymifolia* F. P. Metcalf, Lingnan Sci. J. 11: 22. 1932.

Tree, to 12 m tall. Young branchlets terete or compressed, grey when dry, puberulous; old branches greyish white. Leaves opposite; petioles 0.8–1 cm; leaf blade thinly leathery, elliptic, 5–9 × 3–4 cm, base cuneate and decurrent, apex acuminate and with a 1–1.5 cm cusp, both surfaces greyish green when dry and with many small glands; lateral veins slightly raised abaxially. Cymes axillary, ca. 1 cm, 6–11-flowered. Flower-buds ca. 2.5 mm. Hypanthium obconic, 1.5–2 mm, glandular punctate. Calyx-lobes 4, short, obtuse. Petals white, distinct, orbicular, ca. 2 mm. Stamens 2.5–3 mm. Style as long as stamens. Fruit globose, 6–7 mm in diam.

Locality: Tai Po. *Y. W. Lam 2118*; *S. C. Ng 4027*; *HK sheet 38883*.

Distribution: Fujian, Hainan, Guangdong, Guangxi.

Ecology: Forests. Flowering: May–Aug.; fruiting: Dec.–Jan.

**8. *Syzygium rehderianum*** Merr. & L. M. Perry 紅枝蒲桃

(Photo 232)

J. Arnold Arbor. 19: 243. 1938; FRPS 53(1): 99, pl. 21: 2. 1984; FFJ 4: 101, fig. 88. 1989; FGX 1: 912, pl. 355: 3. 1991; FGD 3: 193. 1995; FOC 13: 355. 2007.

*Eugenia millettiana* auct. non Hemsf.: FKH 105. 1912.

Shrub or tree. Young branchlets red, brown when dry, terete, slightly compressed; old branchlets greyish brown. Leaves opposite; petioles 7–9 mm; leaf blade leathery, elliptic to narrowly elliptic, 4–7 × 2.5–3.5 cm, base broadly cuneate, apex abruptly acuminate and with an obtuse acumen, greyish brown to blackish brown and not glossy when dry adaxially, slightly pale when dry abaxially, both surfaces with many small glands; lateral veins slightly prominent abaxially. Thyrses axillary, 1–2 cm, usually 5–6-branched. Flowers sessile, buds ca. 3.5 mm. Hypanthium obconic, ca. 3 mm, apex truncate. Calyx-lobes inconspicuous. Petals white, united into a calyptra. Stamens 3–4 mm. Style slender, as long as stamens. Fruit black, ellipsoidal-ovoid, 1.5–2 × ca. 1 cm.

Locality: Ma On Shan, Lantau Island. *Y. W. Lam 1293*; *F. W. Xing 8492, 8684*.

Distribution: Guangdong, Guangxi, Hunan, Fujian.

Ecology: Secondary forests or fung shui woods. Flowering: Jul.–Aug.; fruiting: Nov.–Jan.

Uses: Timber.

**9. *Syzygium cumini*** (L.) Skeels 烏墨(海南蒲桃)

(Photo 233)

U.S.D.A. Bur. Pl. Industr. Bull. 248: 25. 1912. FGZ 204. 1956; FNH 2: 18. 1965; FRPS 53(1): 101. 1984; FFJ 4: 102, fig. 90. 1989; FGX 1: 909, pl. 353: 3. 1991; FGD 3: 187, fig. 133: 1. 1995; FOC 13: 355. 2007.

*Myrtus cumini* L., Sp. Pl. 1: 471. 1753.

*Eugenia cumini* (L.) Druce, Bot. Exch. Club Soc. Brit. Isles 3(5): 418. 1914.

*Eugenia jambolana* Lam., Encycl. 3(1): 198. 1789; FKH 105. 1912.

Tree, to 15 m tall. Young branchlets terete, greyish white when dry. Leaves opposite; petioles 1–2 cm; leaf blade leathery, elliptic, 6–12 × 3.5–7 cm, base broadly cuneate, rarely rounded, apex rounded to obtuse and with a short cusp, brownish green to blackish brown and slightly glossy when dry adaxially, slightly pale when dry abaxially, both surfaces with small glands; lateral veins many and dense. Thyrses axillary, rarely terminal, to 11 cm. Flowers white, 3–5 in clusters, shortly pedicellate or sessile. Hypanthium obconic, ca. 4 mm. Calyx-lobes inconspicuous. Petals 4, white or light purple, united into a calyptra, ovate and slightly rounded, ca. 2.5 mm. Stamens 3–4 mm. Style as long as stamens. Fruit red to black, ellipsoidal to urceolate, 1–2 cm, 1-seeded; persistent calyx tube 1–1.5 mm.

Locality: Cultivated. *H. C. Tang 857*; *Y. S. Lau 1955*; *HK sheet 36078*.

Distribution: Fujian, Hainan, Guangdong, Guangxi, Yunnan; Nepal, Bhutan, India, Sri Lanka, Laos, Thailand, Vietnam, Malaysia, Indonesia, Australia.

Ecology: Secondary forests. Flowering: Feb.–May; fruiting: Jun.–Sep.



10. *Eugenia* L. 番櫻桃屬

Trees or shrubs. Leaves opposite, pinnately-veined, petiolate. Flowers bisexual, solitary or clustered at axils of leaves, 4-merous. Hypanthium short. Calyx-lobes 4. Petals 4. Stamens many; anthers parallel, dehiscing longitudinally. Ovary 2–3-locular; ovules many per locule. Fruit a berry, with persistent sepals at apex; pericarp thin, separating from testa. Seed usually 1, testa smooth, sometimes bony; embryo straight, fleshy.

About 100 species mostly distributed in tropical America, a few in Africa, S and SE Asia, Australia, New Caledonia, and the Pacific Islands; five species introduced to China; one species cultivated in Hong Kong.

1. *Eugenia uniflora* L. 紅果仔

(Photo 234)

Sp. Pl. 1: 470. 1753; FGZ 207. 1956; FRPS 53(1): 58. 1984; FFJ 4: 95, fig. 81. 1989; FYN 7: 108. 1997; FOC 13: 331. 2007.

Shrubs or trees, to 5 m tall, glabrous. Petioles ca. 1.5 mm; leaf blade papery, ovate to elliptic, 3.2–4.2 × 2.3–3 cm, base rounded or slightly cordate, apex acuminate, mucronate, or obtuse, dark green and glossy adaxially, pale green abaxially, and with many pellucid glands on both surfaces; lateral veins ca. 5 on each side of midvein, slightly conspicuous. Flowers white, slightly fragrant. Calyx-lobes long elliptic, reflexed. Berries dark red when mature, globose, 1–2 cm in diam., 8-ribged, 1–2-seeded.

Locality: Cultivated. *Y. S. Lau 1551*; *P. S. Choi 152*; *HK sheet 11311*.

Distribution: S China (cultivated); native to Brazil.

Ecology: Flowering: Spring.

Uses: Ornamental, edible (fruit).

11. *Decaspermum* J. R. & G. Forst. 子棟屬

Shrubs or trees, often androdioecious. Stipules small, caducous. Leaves opposite, punctate, pinnately-veined, petiolate. Inflorescence a thyrse or panicle, axillary and 1–3-flowered. Flowers bisexual or sometimes staminate, 3–5-merous, often fragrant; bracteoles often small, sometimes caducous. Hypanthium globose, urceolate, or obconiform. Calyx-lobes persistent. Petals pink or white, punctate. Stamens many, in several whorls, distinct; filaments filiform; anthers 2-celled, dorsifixed, dehiscing longitudinally; connectives usually terminating in an apical gland. Ovary inferior, 4–9-locular, placentation axile; ovules 2–many per locule. Style filiform; stigma capitate or peltate. Fruit a berry, globose, vertically ribbed, usually 1–2-seeded per locule. Seeds separated by a vertical false septum, reniform or subglobose; seed coat and pericarp separate; testa bony; embryo horseshoe-shaped; hypocotyl long; cotyledons small.

About 30 species distributed in tropical Asia, Australia and Pacific Islands; seven species in China; one species in Hong Kong.

1. *Decaspermum gracilentum* (Hance) Merr. & L. M. Perry

子棟樹(桑枝米碎葉)

(Fig. 116)

J. Arnold Arbor. 19: 202. 1938; FHN 2: 10, fig. 293. 1965; FRPS 53(1): 129, pl. 32: 5–6. 1984; FGX 1: 901, pl. 352: 8. 1991; FGD 3: 177, fig. 125. 1995; FOC 13: 333. 2007.

*Eugenia gracilenta* Hance, J. Bot. 23: 7. 1885; FKH 105. 1912.

*Decaspermum fruticosum* auct. non J. R. & G. Frost.: Merr., Lingnan Sci. J. 5: 137. 1927.

Shrub or tree, to 4 m tall. Young branchlets greyish brown or grey pubescent, obtusely angled. Petioles 4–6 mm, glabrous; leaf blade papery or thinly leathery, elliptic, sometimes oblong or lanceolate, 4–9 × 2–3.5 cm, base cuneate to obtuse, apex acuminate, pubescent on both surfaces at first, later glabrescent, glossy green turning blackish when dry adaxially, yellowish green and with small glands abaxially; lateral veins 10–13 on each side of midvein, inconspicuous. Thyrses axillary, to 6 cm; rachis firmly appressed pubescent. Flowers bisexual or staminate, white, 3-merous; bracteoles small, subulate, caducous. Pedicels 3–8 mm, hairy. Hypanthium campanulate to funnel-shaped, greyish pubescent. Calyx-lobes ovate, ca. 1 mm, apex obtuse and ciliate. Petals obovate, ca. 2–2.5 mm, puberulous abaxially, margin ciliate. Stamens slightly shorter than petals. Fruit black, globose, ca. 4 mm in diam., 3–5-ribbed, sparsely pubescent. Seeds 3–5 per fruit, ca. 1.5 mm.

Locality: New Territories. *C. Ford 433*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hunan, Taiwan; Vietnam.

Ecology: Forests. Flowering: Mar.–May.



Figure 116. *Decaspermum gracilentum* (Hance) Merr. & L. M. Perry  
1. flowering branch; 2. fruiting branch; 3. flower;  
4. berry. (drawn by H. P. Yu)

**12. Psidium L. 番石榴屬**

Shrubs or small trees. Bark grey, smooth. Young branchlets hairy. Leaves opposite, pinnately-veined, petiolate. Flowers axillary, large, usually 1–3 per axil, 4–5-merous. Bracts 2. Hypanthium campanulate or urceolate. Calyx-lobes unequal. Petals white. Stamens many, distinct, in many whorls; anthers ellipsoidal, basifixed, cells parallel, dehiscing longitudinally. Ovary inferior, connate to hypanthium, 4–5-locular or more; ovules many per locule; style linear; stigma expanded. Berry globose to pyriform, many-seeded, apex with persistent calyx-lobes; placenta well developed, fleshy. Seed coat hard; embryo curved; hypocotyl long; cotyledons short.

About 150 species distributed in tropical America; two species introduced to China; one species cultivated in Hong Kong.

**1. Psidium guajava L. 番石榴****(Photo 235)**

Sp. Pl. 1: 470. 1753; FKH 104. 1912; FGZ 200. 1956; FHN 2: 11, fig. 294. 1965; FRPS 53(1): 123, pl. 32: 3–4. 1984; FFJ 4: 104, fig. 92. 1989; FGX 1: 903. 1991; FYN 7: 131, fig. 36: 1–2. 1997; FOC 13: 332. 2007.

*Myrtus guajava* (L.) Kuntze, Revis. Gen. Pl. 3(2): 91. 1898.

Tree, to 13 m tall. Bark exfoliating in strips. Young branchlets angular, pubescent. Petioles ca. 5 mm; leaf blade leathery, oblong to elliptic, 6–12 × 3.5–6 cm, base rounded, apex acute to obtuse, slightly rough adaxially, pubescent abaxially; lateral veins 12–15 on each side of midvein, usually impressed adaxially, reticulate veins obvious. Flowers solitary or 2–3 in cymes. Hypanthium campanulate, ca. 5 mm, hairy. Calyx cap suborbicular, 7–8 mm, irregularly dehiscent. Petals 1–1.4 cm. Stamens 6–9 mm. Style as long as stamens. Berry globose, ovoid, or pyriform, 3–8 cm, with persistent calyx lobes at apex; flesh white or yellow; placenta reddish, well developed, fleshy.

Locality: Cultivated. *Y. S. Lau* 870, 3106; *L. T. Lo* 39.

Distribution: Fujian, Hainan, Guangdong, Guangxi, Yunnan (cultivated or naturalized); native to S America.

Ecology: Flowering: Aug.–Sep.

Uses: Edible (fruit).

**200. PUNICACEAE 安石榴科**

XIA Nian-he 夏念和

Deciduous shrubs or small trees, often spiny. Leaves opposite or subopposite, simple, entire, exstipulate. Flowers terminal and subterminal, solitary or several in clusters, actinomorphic, bisexual. Calyx leathery, tube adnate to ovary; lobes 5–9, valvate, persistent. Petals 5–9, showy, free, crumpled. Stamens numerous, inserted at calyx-tube; filaments free; anthers dorsifixed, 2-celled, dehiscing longitudinally. Ovary inferior, 8–13-locular, locules often in 2 or 3 layers, ovules numerous, axile and parietal; style slender; stigma capitate. Fruit berry-like with leathery rind, subglobose, apex with persistent calyx. Seeds many, embryo straight, endosperm wanting.

One genus and two species distributed from SE Europe to the Himalayas; one species introduced to China; it is also cultivated in Hong Kong.

**1. Punica L. 安石榴屬**

Morphological characters and geographical distribution are the same as those of the family.

**1. Punica granatum L. 安石榴****(Photo 236)**

Sp. Pl. 1: 472. 1753; FRPS 52(2): 120. 1983; FGD 2: 103, fig. 71. 1991.

Shrub or small tree, 3–5(–10) m tall; branchlets with many axillary leafless or leafy spurs, often spine-tipped, glabrous. Leaves opposite; petiole 2–10 mm; leaf blade papery, oblong-lanceolate, 2–9 × 1–2 cm, base attenuate, apex obtuse or mucronate, margins entire, glabrous; lateral veins slender. Flowers large, terminal, 1–5-fasciculate at branch apex, bright red, fleshy, sessile or subsessile. Calyx red or pale yellow, tube funnel-shaped, ca. 2–3 cm, leathery; lobes ovate-triangular, 8–13 mm, with a yellowish green gland at apex, papillate at margin, persistent. Petals bright red, rounded or obovate, 1.5–3 × 1–2 cm, crumpled, rounded at apex. Stamens numerous, yellow, filaments to 13 mm. Style bent near apex, 8 mm; stigma capitate. Fruit subglobose, variously coloured, yellowish green, white or reddish, 5–12 cm in diam., crowned by the persistent calyx. Seeds red, pink or yellowish white.

Locality: Cultivated in gardens. *H. C. Tang* 196.

Distribution: Caucasus, C, W & S Asia, widely cultivated in temperate and tropical regions.

Ecology: Flowering: Summer; fruiting: Autumn.

Uses: Edible (fruit).

## 201. ONAGRACEAE 柳葉菜科

XIA Nian-he 夏念和

Herbs or shrubs, annual or perennial, rarely trees. Leaves simple, alternate or opposite, or occasionally whorled; stipules present and usually caducous, or absent. Flowers often solitary and axillary, or in racemes or spikes, bisexual, rarely unisexual, actinomorphic or zygomorphic. Calyx 4–5(–6)-lobed; lobes valvate. Petals as many as sepals or rarely absent, imbricate or convolute and occasionally clawed. Stamens as many as sepals in one series or twice as many as sepals in 2 series; anthers 2-celled, opening by longitudinal slits. Ovary inferior or rarely semi-inferior, with as many carpels and locules as sepals, septa sometimes thin or absent at maturity; placentation axile or parietal, ovules 1–many per locule; style 1; stigma with as many lobes as sepals. Fruit a loculicidal capsule or indehiscent nut or berry. Seeds many, small, embryo straight, endosperm wanting.

About 24 genera and 650 species widely distributed in temperate and subtropical areas of the world; six genera and 64 species in China; two genera and five species in Hong Kong.

- 1a. Sepals persistent after anthesis; calyx-tube not prolonged beyond ovary; capsules dehiscent irregularly or by a terminal pore..... 1. *Ludwigia*  
 1b. Sepals deciduous after anthesis; calyx-tube prolonged, often well beyond ovary; capsules dehiscent loculicidally .... 2. *Oenothera*

1. *Ludwigia* L. 丁香蓼屬

Annual or perennial herbs; stems branched or not, erect to prostrate and rooting at nodes. Leaves alternate or opposite, usually entire; stipules present. Flowers solitary in leaf axils, rarely in clusters or arranged in terminal spikes or racemes, sessile or shortly pedicellate, bisexual, actinomorphic. Bracteoles 2. Calyx tube not prolonged beyond ovary; lobes (3–)4–5, green, persistent after anthesis. Petals as many as sepals or absent, yellow or white, caducous. Stamens as many as or twice as many as sepals. Ovary with as many locules as sepals, rarely more; ovules many per locule, in 2–many series; style 1; stigma capitate. Capsules linear to cylindrical, dehiscing irregularly or by a terminal pore. Seeds many, obovoid, glabrous, free or embedded in powdery or woody endocarp, raphe small or conspicuous.

About 75 species widely distributed throughout the world; nine species in China; four species in Hong Kong.

- 1a. Stamens twice as many as calyx-lobes.  
 2a. Stems creeping or floating, rooting at nodes; calyx-lobes 5; seeds in one row per locule..... 1. *L. adscendens*  
 2b. Stems erect; calyx-lobes 4; seeds in many rows per locule.  
 3a. Stems densely yellowish brown hirsute..... 2. *L. octovalvis*  
 3b. Stems puberulous when young..... 3. *L. hyssopifolia*  
 1b. Stamens as many as calyx-lobes ..... 4. *L. perennis*

1. *Ludwigia adscendens* (L.) Hara 水龍

(Photo 237)

J. Jap. Bot. 28: 291. 1953; FYN 4: 187. 1986; FRPS 53(2): 35, pl. 10: 5–6. 2000; FGD 8: 6. 2007.

*Jussiaea adscendens* L., Mantissa 1: 69. 1767.

*Jussiaea repens* L., Sp. Pl. 1: 388. 1753; FHN 1: 430. 1965; FFJ 4: 141, fig. 120. 1989.

Perennial herb, with creeping or floating stems, rooting at nodes, with white, erect pneumatophores at nodes of floating stems. Terrestrial stems 20–60 cm, floating stems to 400 cm, much branched. Leaves alternate; petiole 5–20 mm; leaf blade oblong to oblong-oblancheolate, 2–5 × 0.5–2.5 cm, base narrowly cuneate or attenuate, apex obtuse to subacute, margin entire, glabrous. Flowers solitary, white or pale yellow. Pedicels nearly as long as calyx-tube. Calyx-lobes 5, lanceolate, ca. 7 mm, glabrous or villous abaxially. Petals obovate, 9–18 × 6–10 mm. Stamens 10; filaments white, 2.5–4 mm; anthers 0.7–1.8 mm. Ovary sparsely villous abaxially; style 4–10 mm, glabrous; stigma capitate, 5-lobed. Capsules cylindrical or terete, light brown with dark brown ribs, 1.2–2.7 cm, 3–4 mm in diam., glabrous or villous, thickly walled, tardily and irregularly dehiscent. Seeds many, oblong or elliptic, pale brown, 1.1–1.3 mm, raphe inconspicuous.

Locality: Lai Chi Kok, Tai Po, Lam Tsuen, Mui Tsz Lam, Wu Kau Tang, Lantau Island. *H. C. Tang* 2464; *Y. S. Lau* 694, 2159.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Jiangxi, Zhejiang, Fujian, Taiwan; S and SE Asia, Australia and Africa.

Ecology: Damp to wet places, marshes, margin of ponds. Flowering: Apr.–Nov.; fruiting: May–Nov.

Uses: Medicinal (folklore).

**2. *Ludwigia octovalvis* (Jacq.) P. H. Raven**

毛草龍 (Fig. 117; Photo 238)

Kew Bull. 15: 476. 1962; FTW 3: 893, pl. 857. 1977; FTW ed. 2, 3: 958, pl. 479. 1993; FYN 4: 183, pl. 55: 1–7. 1986; FRPS 53(2): 29, pl. 9: 1–3. 2000; FGD 8: 6. 2007.

*Oenothera octovalvis* Jacq., Enum. Pl. Carib. 19. 1760.

*Jussiaea suffruticosa* L., Sp. Pl. 1: 388. 1753; FHN 1: 430. 1964; FFJ 4: 142. 1989.

*Ludwigia pubescens* (L.) H. Hara, J. Jap. Bot. 28(10): 293. 1953.

Perennial herb, up to 2 m tall. Stems erect, well-branched, densely hirsute at least on upper part, slightly ribbed. Leaves alternate; petioles 1–10 mm; leaf blade linear to subovate, 1–14 × 0.3–4 cm, base narrowly or broadly cuneate, apex acuminate, entire, yellowish hirsute on both surfaces. Flowers solitary in leaf axils, large, yellow, sessile to subsessile. Calyx-tube slender; lobes 4, ovate or lanceolate, 6–15 mm, triveined. Petals 4, broadly obovate, 6–17 × 5–17 mm, apex emarginate. Stamens 8; filaments 1–4 mm; anthers 1.2–4 mm. Ovary 4-locular; style 1.5–3.5 mm; stigma subglobose, shallowly 4-lobed. Capsule cylindrical, terete, pale brown with 8 ribs, 1.7–4.5 cm, 2–8 mm in diam. Seeds many, in 2 or more rows per locule, free, brown, 0.6–0.75 mm, raphe inflated and equal to seed body in size, evenly transversely ridged.

Locality: Hong Kong Island, Tai Po, Mai Po, Sheung Shui, Sai Kung, Lantau Island, Po Toi Islands. *Y. S. Lau* 1278; *P. S. Choi* 345; *Y. W. Lam* 1045.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Jiangxi, Zhejiang, Fujian, Taiwan; Africa, S and SW Asia, Australasia, Europe, N America, Pacific Islands, S America.

Ecology: Ditches, rice paddies and other wet places. Flowering & fruiting: Mar.–Nov.

**3. *Ludwigia hyssopifolia* (G. Don) Exell 草龍**

Garcia de Orta 5: 471. 1957; Raven, Reinwardtia 6: 385. 1963; FTW ed. 2, 3: 955, pl. 478. 1993; FYN 4: 186, pl. 55: 11–13. 1986; FGD 8: 7. 2007.

*Jussiaea hyssopifolia* G. Don., Gen. Syst. 2: 693. 1832.

*Jussiaea linifolia* Vahl, Ecl. Am. 2: 32. 1798; FHN 1: 430. 1965.

Annual erect herb, 0.6–2 m tall; stems often woody at base, 3–4-ridged at upper part, branched, puberulous when young. Petiole 0.2–1 cm; leaf blade lanceolate to linear, 2–10 × 0.5–1.5 cm, base narrowly cuneate, apex acuminate, subglabrous or puberulous. Sepals 4, ovate-lanceolate, 2–4 mm, finely puberulous. Petals yellow, obovate to subelliptic, 2–3 × 1–2 mm, apex obtuse. Stamens 8; anthers 0.4–0.6 mm; pollen in monads. Style 1–1.5 mm; stigma depressed-globose. Capsule 4-angled when young, subterete when mature, 1.5–3 cm, finely puberulous. Seeds in 2 or more rows per locule in upper capsule, in one row per locule in lower capsule.

Locality: Tai Lam Chung. *H. C. Tang* 1889.

Distribution: Hainan, Taiwan, Guangdong, Guangxi, Yunnan; widespread in SE Asia, Africa, Australia, Pacific Islands and S America.

Ecology: Ditches, marshes and other damp to wet places. Flowering & fruiting: Nearly all year round.

Notes: This species was recorded as *Ludwigia prostrata* Roxb. previously (Corlett et al. 2000; Check List HK Plants 165. 2002; 60. 2004.)

**4. *Ludwigia perennis* L. 細花丁香蓼**

Sp. Pl. 1: 119. 1753; FTW 3: 897. 1977; FTW ed. 2, 3: 960, pl. 480. 1993; FYN 4: 184, pl. 55: 8–10. 1986; FRPS 53(2): 32, pl. 9: 8. 2000; FGD 8: 7. 2007.

*Jussiaea caryophyllea* Lam., Encycl. 3: 331. 1789.

*Jussiaea perennis* (L.) Brenan, Kew Bull. 8: 163. 1953.

*Ludwigia caryophyllea* (Lam.) Merr. & Metcalf, Lingnan Sci. J. 16: 396. 1937; FHN 1: 428, fig. 234. 1964; FFJ 4: 139, fig. 119. 1989.

Annual erect herb, 15–100 cm tall, with taproot. Stems branched, often purplish, subglabrous. Petiole 2–15 mm, winged; leaf blade narrowly elliptic to lanceolate, 1–11 × 0.3–2.7 cm, base narrowly cuneate, apex subacute. Flowers solitary in leaf axils, yellow, shortly pedicellate. Calyx-lobes 4(–5), lanceolate, (1.3–)2–3.5 mm, ± puberulent. Petals elliptic, 1–3 × 0.7–2 mm. Stamens as many as sepals, or rarely more; filaments 0.3–0.7 mm; anthers 0.5–0.7 mm. Style 0.7–1.5 mm; stigma globose. Capsule terete, often nodding, pale brown, 3–16(–19) mm, 2.5–5 mm in diam., glabrous or puberulent. Seeds many, in 2 or more rows per locule, free, brown with fine

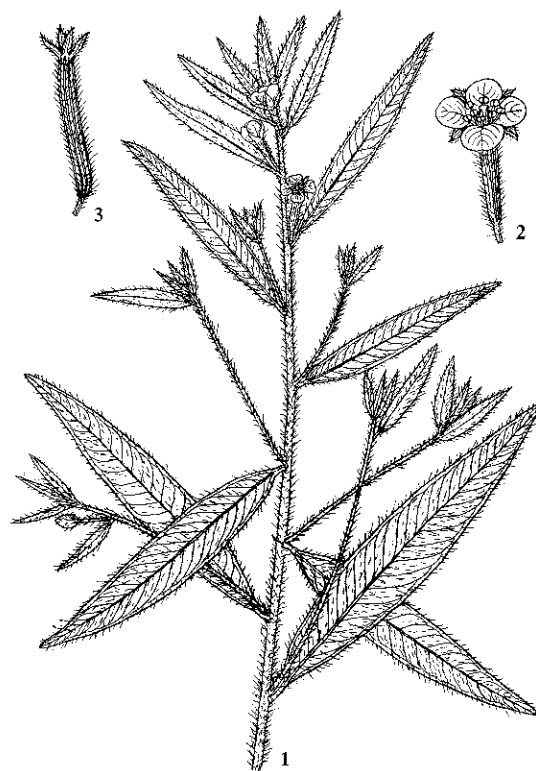


Figure 117. *Ludwigia octovalvis* (Jacq.) P. H. Raven

1. upper part of plant; 2. flower; 3. capsule. (drawn by H. P. Yu)

brown lines, 0.3–0.5 mm, raphe very narrow and inconspicuous.

Locality: Sha Tin, Tai Mo Shan. *Y. S. Lau 2379; HK sheet 11890, 11892.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; SE and SW Asia, Australia, Pacific Islands (New Caledonia).

Ecology: Rice paddies and other low moist to wet places. Flowering & fruiting: Jan.–Nov.

## 2. *Oenothera* L. 月見草屬

Annual, biennial or perennial herbs, caulescent or acaulescent. Leaves alternate or rosette, exstipulate. Flowers bisexual, actinomorphic, solitary, axillary, sometimes in terminal leafy spikes, racemes, or corymbs. Calyx-tube prolonged, often well beyond ovary; lobes 4, green or yellowish, often tinged or striped red or purple, reflexed, deciduous soon after anthesis. Petals 4, yellow, purple, pink, or white. Stamens 8. Ovary inferior, 4-locular; ovules many; stigma unlobed or 4-lobed. Fruit a capsule, straight or curved, terete to 4-angled or winged, dehiscent loculicidally. Seeds many, in 1 or 2 (or 3) rows or in clusters, angled or not.

About 80 species distributed in temperate to subtropical areas of N, C, and S America, naturalized elsewhere; ten species in China; one species in Hong Kong.

### 1. *Oenothera drummondii* Hook.

海濱月見草

(Fig. 118; Photo 239)

Bot. Mag. 61: t. 3361. 1834; FRPS 53(2): 67. 2000; FGD 8: 5. 2007.

*Oenothera littoralis* Schtdl., *Linnaea* 12: 268. 1838; FFJ 4: 138. 1989.

Annual to perennial herb, erect to procumbent, 10–50 cm tall. Stems simple or branched, densely strigillose. Leaves variable in shape, linear-lanceolate to long elliptic-oblancoate, 2–5 × 0.5–1 cm, base cuneate, apex rotund, margin entire or shallowly dentate, rarely lyrate, densely strigillose, sometimes also glandular puberulent, veins inconspicuous. Inflorescence a lax, open spike. Flowers large and showy. Calyx-tube 2.5–6 cm, upcurved in bud; lobes lanceolate, 1.3–3.3 cm, hairy abaxially. Petals yellow, 2–4.5 cm. Anthers 4–12 mm. Ovary densely strigillose to villous, sometimes also glandular puberulent; stigma exerted above anthers. Capsules cylindrical, 2.5–5.5 cm, sessile. Seeds in two rows per locule, ellipsoidal to suborbicular, 1.1–1.7 mm.

Locality: Sai Kung. *Y. W. Lam 33, 467; HK sheet 39278.*

Distribution: Guangdong, Fujian; N America, native to coastal areas of SE United States and NE Mexico, naturalized in Africa, SW Asia, Australia, Europe, and S America.

Ecology: Sandy beaches. Flowering; Jul.–Nov.; fruiting: May–Dec.

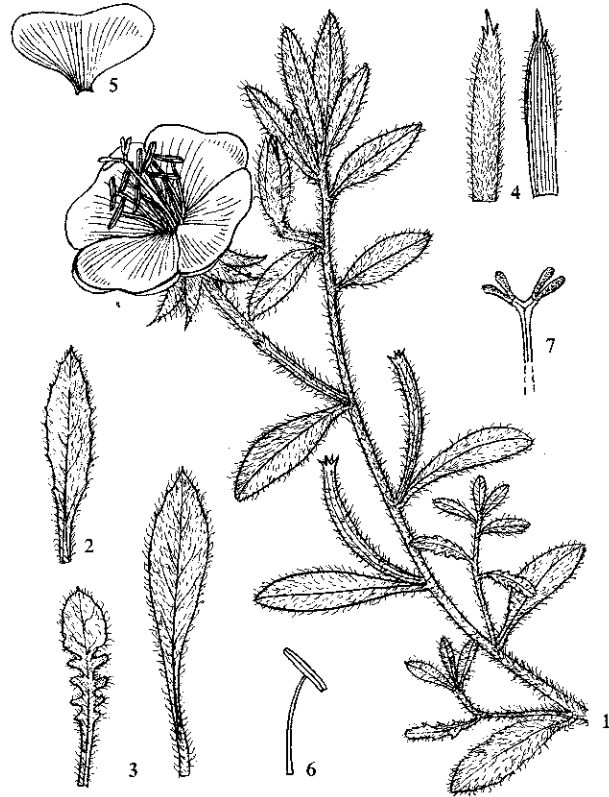


Figure 118. *Oenothera drummondii* Hook.

1. upper part of plant; 2–3. leaves; 4. calyx; 5. petal; 6. stamen; 7. stigma. (drawn by H. P. Yu)

## 203. MELASTOMATACEAE 野牡丹科

WEN Xiang-ying 文香英

Herbs, shrubs, or trees, erect or climbing. Branches opposite. Stipules absent. Leaves simple, commonly opposite and verticillate, or decussate with one of a pair slightly smaller than the other. Leaf blade margin entire or serrulate, usually 1–4(–5)-basiveined. Inflorescences cymose, umbellate, corymbose, in paniculate clusters, or cincinnus, rarely flowers solitary. Flowers bisexual, actinomorphic but androecium often slightly zygomorphic, usually (3–)4–5(–6)-merous. Bracteoles opposite, usually caducous. Calyx-tube enclosing the ovary and usually cohering with its angles, or sometimes entirely free or adherent; the limb entire, or with as many teeth or lobes as petals. Petals usually 4 or 5, sometimes 3 or 6 or more inserted intermediately below the calyx-teeth, twisted in the bud. Stamens isomorphic or dimorphic, usually as many as or more times than petals and in 2 whorls; filaments often geniculate; anthers typically 2-celled, introrse, basifixed, opening apically by 1 or 2 pores; connective shapes various, usually inflated, decurrent to long stalk or short spur. Ovary usually inferior or half-inferior, rarely superior; locules usually as many as petals, rarely 1-locular; stigma minute, capitate or truncate; placentation axile, free-central, rarely parietal; ovules numerous or few. Fruit a dry or fleshy capsule or a berry, encircled in calyx-tube, longitudinally dehiscent or indehiscent.

About 150–160 genera and 4140 species widely distributed in tropical and subtropical regions of all continents; 21 genera and 114 species in China; eight genera and 14 species in Hong Kong.

- 1a. Leaves pinnately-veined; ovary 1-locular; seed 1, large ..... 1. *Memecylon*  
 1b. Leaves palmately-veined; ovary more than 2-locular; seeds numerous, small.

- 2a. Seeds curved through half a circle (cochleate or hippocrepiform).  
 3a. Stamens isomorphic, equal in length.....2. *Osbeckia*  
 3b. Stamens dimorphic, unequal in length.....3. *Melastoma*  
 2b. Seeds straight, not curved.  
 4a. Ovary without membranous crown at apex.  
 5a. Stamens 4, equal in length.....4. *Blastus*  
 5b. Stamens 8, unequal in length.....5. *Barthea*  
 4b. Ovary with membranous crown at apex.  
 6a. Flowers 3-merous.....6. *Sonerila*  
 6b. Flowers 4- or 5-merous.  
 7a. Stamens isomorphic, equal in length.....7. *Bredia*  
 7b. Stamens dimorphic, unequal in length.....8. *Fordiophyton*

### 1. *Memecylon* L. 谷木屬

Shrubs or small trees, often glabrous. Branches terete or quadrangular, much branched. Leaves petiolate or sessile, usually leathery, pinnately-veined, margin entire. Inflorescences axillary or terminal, cymose or umbellate. Flowers 4-merous, small. Calyx-tube hemispherical or campanulate; the limb entire or obtusely 4(-5)-lobed. Petals 4(-5), ovate or orbicular. Stamens twice as many as petals, all similar; anthers shorter than filaments, with a thick connective, forming a conical spur at the base. Ovary inferior, entirely adnate to the calyx, 1-locular, apex truncate, with 8 radiated sulci, margin of sulci raised or forming narrow wings; ovules 6-12, attached to a central placenta. Fruit a baccate drupe, often globular, apex with annular persistent calyx, exocarp usually succulent. Seeds solitary or rarely 2 or 3, bony, with convolute cotyledons.

About 300 species distributed in tropical regions of Africa, Asia, Australia, Madagascar, and Pacific Islands; 11 species (six endemic) in China; two species in Hong Kong.

- 1a. Pedicel 1-4 mm, bearded at base and nodes.....1. *M. ligustrifolium*  
 1b. Pedicel 0.5 mm, glabrous.....2. *M. nigrescens*

#### 1. *Memecylon ligustrifolium* Champ. ex Benth. 谷木

(Fig. 119; Photo 240)

Hooker's J. Bot. Kew Gard. Misc. 4: 117. 1852; FHK 117. 1861; FHN 2: 40. 1965; FKH 108. 1912; FRPS 53(1): 289. 1984.

Shrub or small tree, 1.5-5(-7) m tall, many-branched. Branchlets terete or sometimes quadrangular. Petiole 3-5 mm. Leaf blade leathery, elliptic, ovate, or ovate-lanceolate, 5.5-8 × 2.5-3.5 cm, glabrous, base cuneate, apex acuminate with an obtuse tip, margin entire, midvein depressed adaxially, raised abaxially, lateral veins inconspicuous. Inflorescences axillary, cymose, ca. 1 cm. Peduncle 1-3 mm; bracts ovate, ca. 1 mm. Pedicels 1-4 mm, bearded at base and nodes. Calyx-tube hemispherical, 1.5-3 mm; calyx-teeth 4, very broad and short. Petals white or yellowish green or purple, suborbicular, ca. 3 × 4 mm. Stamens blue, ca. 4.5 mm; theca and conical connective 1-2 mm. Ovary inferior, ovoid, apex truncate. Fruit a baccate drupe, globose, ca. 1 cm in diam., densely tuberculate, apex with an annular persistent calyx.

Locality: Common in Hong Kong. *P. S. Choi 132, 441; K. Y. Tam 124; C. Wang 32396 (IBSC); W. Y. Chun 6805, 105 (IBSC); N. K. Chun 40266, 40202, 40084 (IBSC).*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian.

Ecology: Forests, mountain slopes, valleys, damp places.  
 Flowering: May-Aug.; fruiting: Dec.-Feb.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion in Jan. 1850.

#### 2. *Memecylon nigrescens* Hook. & Arn. 黑葉谷木

Bot. Beechey Voy. 186. 1833; FKH 108. 1912; FHN 2: 41. 1965; FRPS 53(1): 293. 1984.

Shrub or small tree, 2-8 m tall, multibranched. Branchlets terete, glabrous. Petiole 2-3 mm. Leaf blade papery, brownish yellow-green when dry, elliptic or rarely ovate-oblong, 3-6.5 × 1.5-3 cm, both surfaces glabrous and glossy, base cuneate, apex obtuse to acute, sometimes with a retuse tip, margin entire, midvein depressed adaxially, lateral veins slightly raised abaxially.

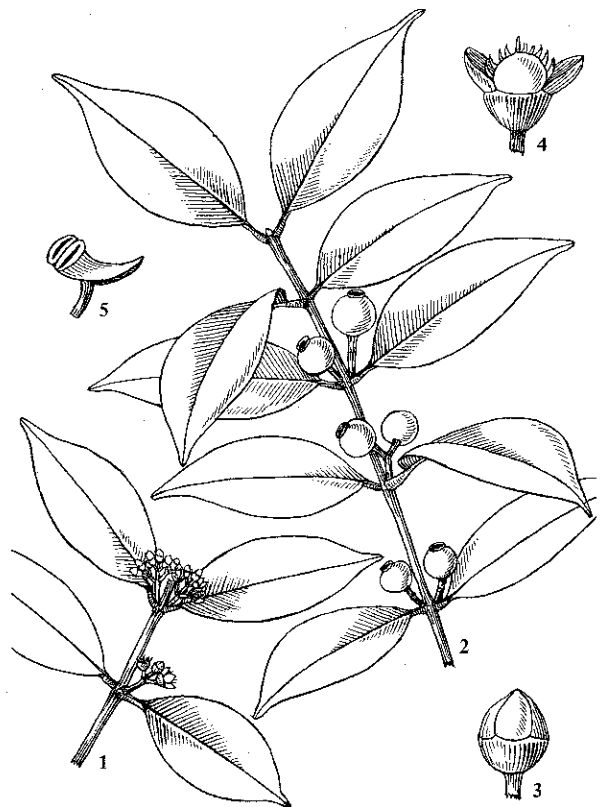


Figure 119. *Memecylon ligustrifolium* Champ.

1. flowering branch; 2. fruiting branch; 3. flower bud;  
 4. flower; 5. stamen. (drawn by H. P. Yu)

Inflorescences axillary, cymose, nearly capitate, less than 1 cm, 2–3-branched, many-flowered. Peduncle very short; bracts very small, caducous. Pedicel ca. 0.5 mm., glabrous. Calyx-tube shallowly cup-shaped, ca. 1.5 × 2 mm, glabrous, apex truncate and shallowly 4-lobed. Petals blue or white, broadly lanceolate, ca. 2 × 1 mm, base unguiculate, apex acuminate, margin irregularly 1–2-dentate. Stamens ca. 2 mm; filaments 1.2–1.5 mm; theca and conical connective ca. 0.8 mm. Fruit a berry-like drupe, black when dry, globular, 6–7 mm in diam., apex with annular persistent calyx.

Locality: Common in Hong Kong. *N. K. Chun 40208*; *Y. S. Lau 406*; *F. W. Xing 8262*; *W. Y. Chun 3150* (IBSC).

Distribution: Hainan, Guangdong; Vietnam.

Ecology: Forests, thickets, hillsides. Flowering: May–Jun.; fruiting: Dec.–Feb.

## 2. *Osbeckia* L. 金錦香屬

Erect herbs, subshrubs or shrubs. Leaves opposite or sometimes in whorls of 3, petiolate or sessile, 3–7-basiveined. Inflorescences terminal, capitate or paniculate. Flowers 4–5-merous, usually bracteate. Calyx-tube urceolate or flask-shaped; the limb of 4–5 lobes or teeth, often with bristle-like appendages or stalked tuft of hairs between them. Petals as many, obovate to broadly ovate. Stamens twice as many, equal or subequal; anthers opening in a single pore, connectives without appendage at base. Ovary half-inferior, 4–5-locular, apex with a ring of bristles. Fruit capsular, ovoid or oblong ovoid, middle part often contracted, usually ribbed, longitudinally dehiscent by 4–5 apical pores. Seeds numerous, curved (cochleate), densely granulate.

About 50 species distributed in tropical W Africa, tropical and subtropical Asia; five species in China; one species in Hong Kong.

### 1. *Osbeckia chinensis* L. 金錦香 (Fig. 120; Photo 241)

Sp. Pl. 345. 1753; FHK 114. 1861; FKH 106. 1912; FRPS 53(1): 140. 1984; S. S. Renner, Fl. Thailand 7(3): 451. 2001.

Erect herb or subshrub, 20–60 cm tall. Stems quadrangular, with appressed short stiff hairs. Leaves opposite, very shortly petiolate or subsessile; leaf blade papery, linear, linear-lanceolate, oblong-ovate, elliptic-ovate, or rarely ovate-lanceolate, 2–5(–9) × 0.3–1(–3.2) cm, base obtuse to rounded, or subcordate, apex acute, margin entire, strigose on both surfaces, 3–5-basiveined. Inflorescences terminal, capitate, 2–10-flowered, with 2–6 foliaceous involucre bracts at base. Bracts sessile, ovate or ovate-lanceolate. Calyx-tube usually pink, 6–6.5 mm, glabrous or with 1–5 setose tubercles; lobes 4(–5), triangular-lanceolate, margin with 4 accessory ciliate scales inserted between and a little below them on the outside. Petals 4 or 5, pink or purplish, obovate, 1–1.5 × 1.3 cm, ciliate. Stamens 8 or 10, turning to one side; filaments as long as anthers; anthers narrowly lanceolate, apex beaked; connective slightly inflated at base. Ovary subglobose, 4–5-locular, apex densely setose or strigose. Fruit capsular, purplish red, ovoid-globose, ca. 6 × 4 mm, glabrous or with bristle-like tubercles.

Locality: Tai Mo Shan, Fanling, Lantau Island. *Y. S. Lau 1007*, 1304; *P. S. Choi 278*; *W. Y. Chun 6521*, 23675 (IBSC); *S. C. Chen 11149* (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam, N Australia.

Ecology: Grassy areas on open slopes, thin forests, roadsides. Flowering: Jul.–Sep.; fruiting: Sep.–Nov.

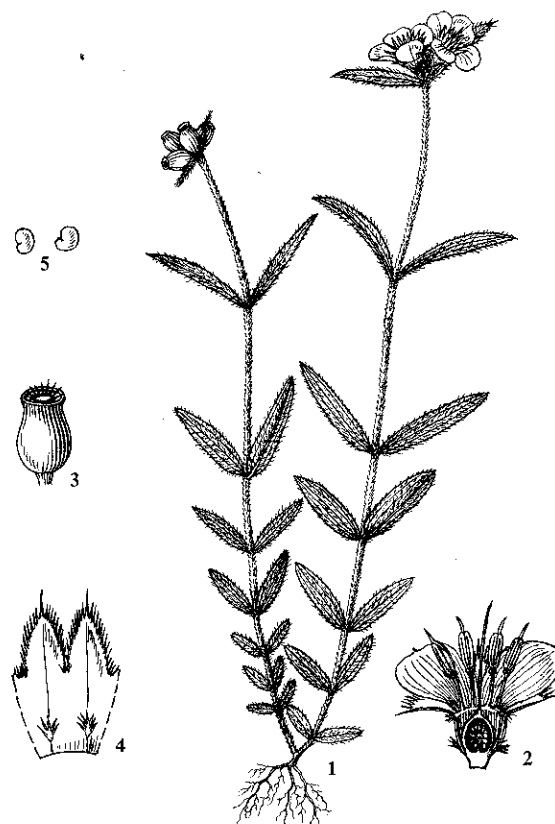


Figure 120. *Osbeckia chinensis* L.

1. whole plant; 2. vertical section of flower; 3. portion of calyx tube and lobes; 4. fruit; 5. seed. (drawn by H. P. Yu)

## 3. *Melastoma* L. 野牡丹屬

Shrubs or subshrubs. Leaves opposite, petiolate, usually hairy, entire, 5–7-basiveined, rarely 9-basiveined. Flowers terminal, solitary or in panicles, usually large and showy. Calyx-tube urceolate-globose, usually covered with bristles or scales; the limb of 5(–6) deciduous lobes or teeth, and often with as many accessory ones. Petals as many, obovate or obovate. Stamens twice as many, unequal in length, 5 longer alternating with 5 shorter ones, longer stamens purplish, anthers lanceolate, curved, without tubercles at base, connective extended at base, stalked, curved, the end 2-lobed; shorter stamens with yellow anthers, connective not extended. Ovary half-inferior, ovoid, 5-locular, apex usually densely covered with hairs; ovules numerous, placentation axile, sometimes fleshy in fruiting. Fruit capsular, more or less succulent, opening irregularly. Seeds small, cochleate.

About 22 species distributed in SE Asia, N Australia, Pacific Islands; five species in China; four species in Hong Kong.

- 1a. Stems creeping or ascending, less than 60 cm tall; leaves 1–4 × 0.8–2 cm.  
 2a. Leaves glabrous or only with a few stiff hairs along the margin; branchlets sparsely strigose when young..... 1. *M. dodecandrum*  
 ..... 1. *M. dodecandrum*  
 2b. Adaxial surface of leaves and branchlets densely strigose..... 2. *M. intermedium*  
 1b. Stems erect, 0.5–3 m tall; leaves 4–15 × 1.4–5 cm.  
 3a. Calyx and branchlets covered with long, spreading, and incurved bristles..... 3. *M. sanguineum*  
 3b. Calyx and branchlets covered with pressed, chaffy hairs..... 4. *M. malabathricum*

**1. *Melastoma dodecandrum* Lour. 地蕊**

(Photo 242)

Fl. Cochinch. 1: 274. 1790; FRPS 53(1): 154. 1984; K. Meyer, Blumea 46(2): 362. 2001.

*Melastoma repens* Desr., Encycl. 4(1): 54. 1797; FHK 113. 1861; FKH 106. 1912.

Perennial herb or subshrub, 10–30 cm tall. Stems creeping or ascending, rooting at nodes, multibranched, sparsely covered with appressed bristles when young, later glabrous. Leaves opposite; petiole 2–6(–15) mm; leaf blade ovate or elliptic, 1–4 × 0.8–2(–3) cm, base broadly cuneate, apex rounded to acute, margin entire, glabrous on both surfaces except some appressed bristles along the margin on adaxial surface, 3–5-basiveined. Inflorescences 1(–2)-flowered, in upper leaf axils. Pedicel 2–10 mm, strigose, with 2 bracteoles at apex; bracteoles ovate, abaxially strigose, margin ciliate. Calyx-tube ca. 5 mm, strigose; calyx-lobes lanceolate, 2–3 mm, sparsely strigose. Petals purplish red to purple, rhomboid-obovate, 1.2–2 × 1–1.5 cm, ciliate along the margin. Stamens dimorphic, outer ones with longer filaments than inner ones. Ovary adnate to the hypanthium for ca. 2/3 of its length, sparsely strigose. Fruit a berry, globose, ca. 7 × 10 mm, dark purple when mature.

Locality: Common in Hong Kong. *Y. S. Lau 1811, 1841; L. T. Lo 104; N. K. Chun 40156 (IBSC); S. Y. Hu 13809 (IBSC); W. Y. Chun 6622 (IBSC).*

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Anhui, Zhejiang, Fujian; Vietnam.

Ecology: Open fields, hillslopes, thickets, roadsides, alt. 900 m. Flowering: May–Jul.; fruiting: Jul.–Sep.

Uses: Ornamental, food (fruit edible).

**2. *Melastoma intermedium* Dunn 細葉野牡丹**

(Photo 243)

J. Linn. Soc. Bot. 38: 360. 1908; FKH 106. 1912; FHN 2: 26. 1965; FRPS 53(1): 154. 1984.

Subshrub, 20–30 cm tall. Stems creeping or ascending, multibranched, appressed strigose. Petioles 2–6 mm, strigose; leaf blade elliptic or oblong-elliptic, 2–4 × 1–1.5 cm, base acute to rounded, apex obtuse to acute, margin entire, papery, adaxially densely appressed strigose, the hairs immersed in epidermis with a projecting tip, abaxially sparsely strigose along veins, (3–)5-basiveined. Inflorescences terminal or nearly terminal, corymbose, 3–5-flowered, with 2 foliaceous bracts at base. Pedicel 3–5 mm, densely strigose. Calyx-tube ca. 7 mm, ca. 5 mm in diam, densely strigose; calyx lobes lanceolate, ca. 7 mm, strigose abaxially, glabrous adaxially, with 1 lobule between the lobes. Petals purplish red, rhomboid-obovate, 1–1.4 cm, upper part ± oblique, minutely ciliate, apex ± emarginate, with a bundle of bristle. Stamens 10 or rarely more; anthers ovate-lanceolate, 2–2.2 mm; connective of longer stamens extended and with 2 tubercles at base, connective of shorter stamens not extended, with 2 tubercles at base. Ovary globose, 5-locular, apically hispidulous. Capsule, subglobose, ca. 10 mm in diam.; persistent calyx densely strigose.

Locality: Fei Ngo Shan Rd., Tai Mo Shan, Fanling. *W. J. Tutcher 10520; S. P. Lau 41; HK sheet 40827.*

Distribution: Guangdong, Guangxi, Guizhou, Fujian, Taiwan.

Ecology: Grassy hillslopes, banks of hillsides, roadsides. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

**3. *Melastoma sanguineum* Sims 毛蕊 (Fig. 121; Photo 244)**

Bot. Mag. 48: pl. 2241. 1821; FKH 106. 1912; FHN 2: 27. 1965; FRPS 53(1): 161. 1984; K. Meyer, Blumea 46(2): 379. fig. 7. 2001; S. S. Renner et al., Fl. Thailand 7(3): 447. 2001.

*Melastoma decemfidum* Roxb., Fl. Ind., ed. 1820, 2: 406. 1824; FHK 114. 1861.

Shrub, 1.5–3 m tall. Stems, branches, petioles and pedicels densely covered with spreading bristles up to 8 mm. Leaves papery; petiole 1–2.5(–4) cm; leaf blade lanceolate to elliptic-lanceolate, (4.5–)8–15(–22) × (1.7–)2.5–5(–8) cm, base obtuse to rounded, apex acuminate, margin entire, strigose on both surfaces, with 2

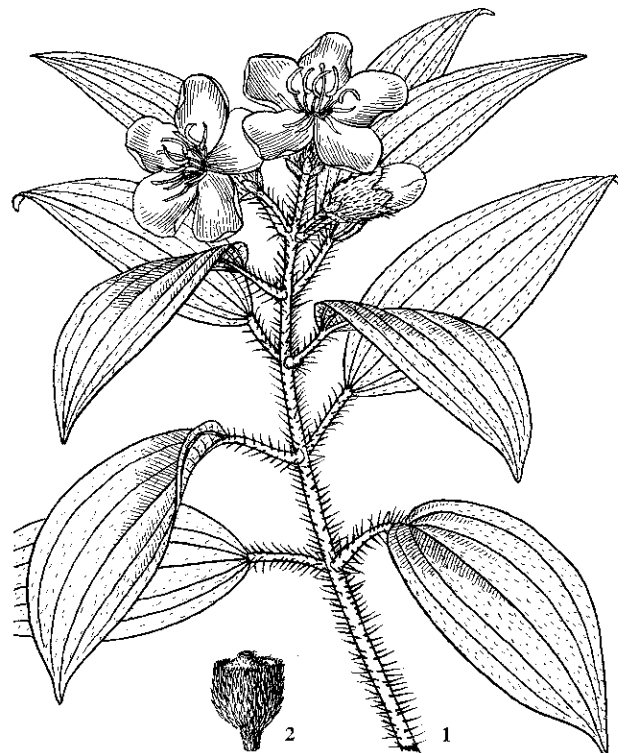


Figure 121. *Melastoma sanguineum* Sims  
 1. flowering branch; 2. fruit. (drawn by H. P. Yu)



pairs of lateral primary veins on each side of midvein. Flowers terminal, 5(–7)-merous, solitary or 3–5 in cymes. Pedicels 2–5 mm. Calyx-tube 1–2 cm, densely covered with spreading red bristles; calyx-lobed, narrowly triangular to linear, 6–10 mm. Petals purple, broadly obovate, (2–)3–5 × (1.5–)2–2.2 cm, apically slightly oblique, apex emarginate. Stamens 10, rarely 8 or 12, dimorphic, outer anthers 12–15 mm, purple, connective prolongation 16–18 mm, inner anthers ca. 11 mm, purplish or yellow; connective not prolonged. Ovary crowned by golden bristles. Capsule fleshy, 1.5–2.2 × 1.5–2 cm, dehiscent irregularly at maturity.

Locality: Common in Hong Kong. *Y. S. Lau* 1924; *S. P. Lau* 134, 142; *T. C. Chen et al* 177 (IBSC); *W. Y. Chun* 5006, 5025 (IBSC); *Y. Tsiang* 277 (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Fujian; Vietnam, Cambodia, Myanmar, Thailand and Malesia.

Ecology: Disturbed forests, streamsides, thickets on low hills, roadsides. Flowering & fruiting: All year round, usually Aug.–Oct.

#### 4. *Melastoma malabathricum* L. 野牡丹

(Photo 245)

Sp. Pl. 1: 390. 1753; *K. Meyer*, *Blumea* 46(2): 364. 2001, *p. excl. syn. M. intermedium* Dunn; *S. S. Renner et al.*, *Fl. Thailand* 7(3): 441. 2001.

*Melastoma affine* D. Don, *Mem. Wern. Nat. Hist. Soc.* 4: 288. 1823; *FHN* 2: 28. 1965; *FRPS* 53(1): 156. 1984.

*Melastoma candidum* D. Don, *Mem. Wern. Nat. Hist. Soc.* 4: 288. 1823; *FKH* 106. 1912; *FHN* 2: 27, fig. 300. 1965; *FRPS* 53(1): 157. 1984.

*Melastoma macrocarpum* auct. non D. Don: *FHK* 113. 1861; *FKH* 106. 1912, *pro syn. sub M. candidum* D. Don.

*Melastoma septemnervium* Lour., *Fl. Cochinch.* 1: t. 273. 1790.

Shrubs, 0.5–1.5 m tall. Stems obtusely quadrangular or sub-terete, covered with appressed or slightly spreading scaly bristles. Leaves papery; petioles 5–15 mm, densely covered with scaly bristles; leaf blade ovate to elliptic-ovate, 4–10 × 2–6 cm, base shallowly cordate or sub-rounded, apex acute, margin entire, strigose or subvillous on both surfaces, 5–7-basiveined. Inflorescences terminal, 1–5-flowered cymes; each flower subtended by a pair of foliaceous bracts; bracts lanceolate or narrowly lanceolate, densely villous. Pedicel ca. 5 mm long. Calyx-tube ca. 1 cm long, densely covered with closely pressed chaffy bristles; calyx-lobes lanceolate, 8–12 mm, hairy on both sides. Petals bright purple to violet, obovate, 3–4 cm, apex rounded and ciliate. Stamens dimorphic, outer ones with longer filaments and connectives. Ovary about half of its length adnate to the calyx-tube, the free part densely strigose. Fruit urceolate-globose, 8–12 × 7–10 mm, densely covered with chaffy bristles.

Locality: Common in Hong Kong. *Y. S. Lau* 3233; *K. M. Lau* 1331, 1332.

Distribution: Guangdong, Guizhou, Yunnan, Taiwan; Indochina, Philippines, Australia,

Ecology: Secondary forests, hillslopes, roadsides, streamsides, thickets. Flowering: Feb.–May; fruiting: Aug.–Dec.

Notes: The species was reported as *Melastoma affine* D. Don and *Melastoma candidum* D. Don previously (Check List HK Plants 166. 2002; 60–61. 2004).

#### 4. *Blastus* Lour. 柏拉木屬

Shrubs, usually branched. Stems usually terete, glandular pubescent, or rarely pilose. Leaves opposite, petiolate to almost sessile, margin entire or serrulate, 3–5(–7)-basiveined, indumentum like that of the branchlets. Inflorescences axillary or terminal, umbellate cymose or cymose paniculate. Bracts absent or small, caducous. Flowers (3–)4(–5)-merous. Calyx-tube campanulate to urceolate, usually 4-ribbed and glandular; calyx-lobes broadly triangular, apex cuspidate. Petals 4, white, rarely pink or purplish, ovate, oblong, or rarely lanceolate. Stamens 4(–5), equal in length; anthers linear, opening by a single pore, connective neither prolonged nor appendaged. Ovary partially or entirely adnate to the calyx-tube, 4-locular, apex with 4 tubercles; ovules numerous. Fruit capsular, ellipsoidal or obovoid, obscurely 4-ribbed, longitudinally dehiscent into 4 valves.

About 12 species distributed in Cambodia, China, E India, Indonesia, Japan (Ryukyu Islands), Laos, Myanmar, Thailand, Vietnam; nine species in China; two species in Hong Kong.

- 1a. Petioles glabrous and glandular; inflorescences axillary ..... 1. *B. cochinchinensis*  
 1b. Petioles densely puberulous and remotely glandular; inflorescences terminal..... 2. *B. pauciflorus*

1. *Blastus cochinchinensis* Lour. 柏拉木 (Fig. 122; Photo 246)  
*Fl. Cochinch.* 2: 526. 1790; *FKH* 107. 1912; *FHN* 2: 30, t. 303. 1965; *FRPS* 53(1): 182. 1984.

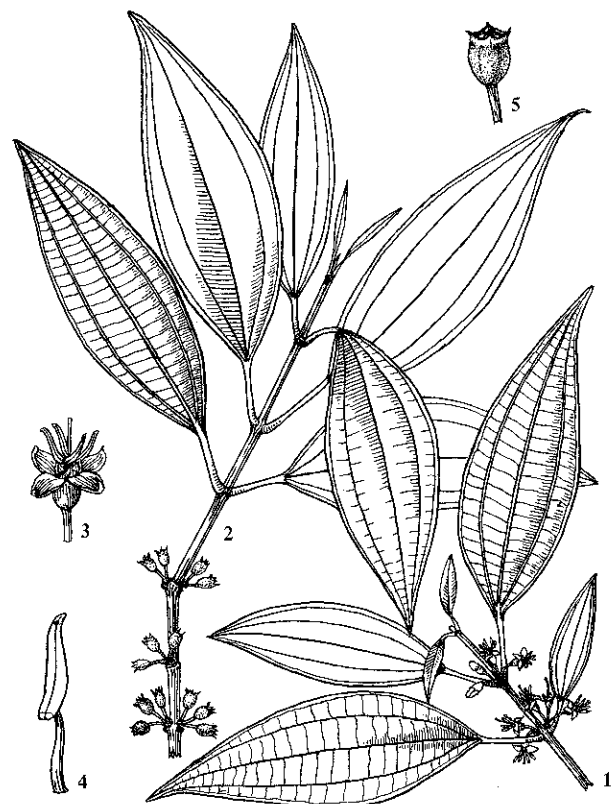


Figure 122. *Blastus cochinchinensis* Lour.

1. flowering branch; 2. fruiting branch; 3. flower; 4. stamen. 5. capsule. (drawn by H. P. Yu)

*Anplectrum parviflorum* Benth., FHK 116. 1861

*Blastus parviflorus* (Benth.) Triana, Trans. Linn. Soc. London 28(1): 116. 1871 [1872].

Shrub, 0.6–3 m tall. Stems terete; young branches, leaves, petioles and inflorescences with minute, yellow glands. Leaves opposite; petioles 1–2(–3) cm; leaf blade lanceolate, narrowly elliptic, or elliptic-lanceolate, 6–12(–18) × 2–4(–5) cm, base cuneate, apex acuminate, margin entire or obscurely denticulate. Inflorescences axillary, umbellate cymose; peduncle ca. 2 mm to almost absent; pedicels ca. 3 mm, densely glandular. Calyx-tube campanulate, ca. 4 mm, obtusely 4-sided, densely glandular; calyx-lobes 4(–5), broadly ovate, ca. 1 mm. Petals 4(–5), white or pink, ovate, ca. 4 mm, apex acuminate to subacute. Stamens 4(–5), equal; filaments ca. 4 mm; anthers pink, lanceolate, ca. 4 mm, geniculate; connective slightly inflated, decurrent at base of anther. Ovary urceolate, 4-locular, slightly glandular, apex 4-bulged. Fruit ca. 3 × 2–3 mm, quadrangular, encircled by persistent calyx which is equal to fruit.

Locality: Victoria Peak, Ng Tung Chai, Lai Chi Wo, Lantau Island. *Y. S. Lau* 2747; *Y. W. Lam* 526, 1897; *N. K. Chun* 41882 (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Fujian, Taiwan; Cambodia, India, Laos, Myanmar, Vietnam.

Ecology: Secondary forests, stony soil. Flowering: Jun.–Aug.; fruiting: Oct.–Dec.

## 2. *Blastus pauciflorus* (Benth.) Guillaumin 少花栳拉木

(Photo 247)

Bull. Soc. Bot. France 60: 90. 1913; FRPS 53(1): 187. 1984.

*Allomorphia pauciflora* Benth., Lond. J. Bot. 1: 485. 1842; FKH 107. 1912.

*Oxyspora pauciflora* Benth., FHK 116. 1861.

Shrub, ca. 0.7 m tall. Stems terete, much branched; branchlets and petioles and inflorescence puberulous and sparsely glandular when young. Leaves opposite; petiole 0.4–1.5(–2.8) cm; leaf blade ovate-lanceolate to ovate, (5–)10–12(–25) × (2–)3–7.3(–10) cm, base obtuse to rounded, sometimes slightly oblique, apex shortly acuminate, margin nearly entire to minutely denticulate, 3–5-basiveined, puberulous but densely so and with minute, yellow glands on abaxial surface. Inflorescences terminal, paniculate cymose, 7.5–13 × 3–7 cm; bracts inconspicuous. Pedicels 1–3 mm. Calyx-tube funnelform, 3.8–6(–8) mm, 4-sided, densely glandular; calyx-lobes shortly triangular or spatulate, less than 1 mm. Petals (3–)4, pink to reddish lavender, ovate, 2.5–4(–5) mm, inclined to one side, glandular, apex acute. Stamens (3–)4, equal; filaments 5–7(–10) mm, sparsely puberulous; anthers linear, (4.8–)6.2–7.4(–8) mm, slightly curved, with 2 tubercles or sagittate at base; connective not or only slightly inflated, extended to base. Ovary ovoid, (3–)4-locular, more or less glandular, apex (3–)4-bulged. Fruit ellipsoidal, 3.8–4.5 × 2.5–3 mm, encircled by persistent calyx, 4-sided, ca. 3 × 2 mm, dehiscent longitudinally.

Locality: Victoria Peak, Ma On Shan, Tai Mo Shan. *F. W. Xing* 7476, 9825; *HK sheet* 1794.

Distribution: Guangdong.

Ecology: Mixed forests, mountain slopes, low hills, valleys, stream banks, moist places, roadsides. Flowering: Jun.–Aug.; fruiting: Aug.–Nov.

## 5. *Barthea* Hook. f. 椴果花屬

Shrubs. Branchlets usually quadrangular, glabrous or slightly scurfy. Leaves opposite, petiolate, glabrous, margin entire, 5-basiveined. Inflorescences terminal, cymose, usually (1–)3-flowered. Flowers 4-merous. Calyx-tube ovoid or campanulate, 4-ribbed; calyx 4-lobed, without accessory teeth; lobes lanceolate or triangular. Petals 4, pink or white, rarely deep red, broadly obovate, glabrous. Stamens 8, dimorphic, unequal in length, 4 longer and 4 shorter; anthers of longer stamen lanceolate, with 2 bristles at base, apex beaked, connective extended into a short spur at base; anthers of shorter stamen oblong, with 2 bristles at base, apex not beaked, connective slightly inflated, sometimes with inconspicuous spur. Ovary partially adnate to the calyx-tube, pyriform, 4-ribbed, 4-locular, glabrous. Fruit capsular, oblong-globose, obtusely 4-ribbed, apex truncate, dehiscent into 4 valves. Seeds numerous and small.

One species endemic to SE and S China; it also occurs in Hong Kong.

### 1. *Barthea barthei* (Hance ex Benth.) Krasser

椴果花(芭茜)

(Fig. 123; Photo 248)

Nat. Pflanzenfam. 3(7): 175, fig. 768. 1893; FRPS 53(1): 179. 1984.

*Dissochaeta barthei* Hance ex Benth., FHK 115. 1861.

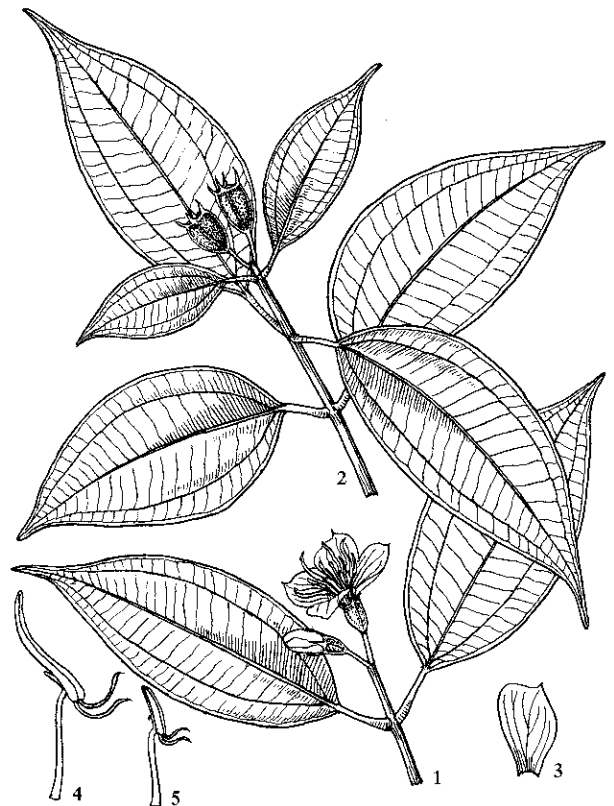


Figure 123. *Barthea barthei* (Hance) Krasser.

1. flowering branch; 2. fruiting branch; 3. petal; 4. long stamen; 5. short stamen. (drawn by H. P. Yu)

*Barthea chinensis* Hook. f., Gen. Pl. 1: 751. 1867, *nom. illeg. superfl.*; FKH 107. 1912.

Shrub, 0.7–1.5(–3) m tall. Branchlets ± quadrangular, puberulous and glandular scurfy when young. Leaves opposite; petiole 0.5–1.5 cm; leaf blade firmly papery to subleathery, elliptic, subrotund, ovate, or ovate-lanceolate, (3.5–)6–11(–15) × (1.8–)2.5–5.5 cm, base cuneate to broadly obtuse, apex acuminate, margin entire or serrulate, glabrous, scurfy abaxially, 5-basiveined, lateral veins inconspicuous. Inflorescences terminal, cymose, (1–)3-flowered but usually only 1 fertile; pedicels ca. 7 mm, 4-ribbed, scurfy. Calyx-tube ca. 0.6 or 1.4 cm, 4-ribbed, with narrow wings on ribs, densely scurfy; calyx-lobes triangular or linear-lanceolate, apex cuspidate, ca. 3 mm, margin membranous. Petals white, tinged with pink abaxially, oblong-elliptic to obovate, 1.1–1.8 × 1–1.6 cm, apically oblique. Anthers with 2 bristles at the base, the 4 longer stamens ca. 1 cm, with an oblong dorsal appendage or spur, the 4 others ca. 3 mm, without the dorsal appendage. Ovary 4-ribbed, glabrous, crowned by an irregularly lobed ring, with short glandular bristles. Capsule ellipsoidal, ca. 1 × 0.6 cm, opening in 4 valves.

Locality: Victoria Peak, Tai Mo Shan, Ma On Shan, Lantau Island. *Y. W. Lam 1286, 1382; HK sheet 1791; N. K. Chun 40219, 40153* (IBSC); *Y. Tsiang 41* (IBSC).

Distribution: Guangdong, Guangxi, Hunan, Fujian, Taiwan.

Ecology: Mixed forests, forested mountain slopes, open thickets, wooded ravines, along streams. Flowering & fruiting: Oct.–Dec. or May.

Notes: The syntype specimens were collected from Victoria Peak by Hance, Barthe and Wilford around 1850s. Listed in *Rare and Precious Plants of Hong Kong*.

## 6. *Sonerila* Roxb. 蜂斗草屬

Herbs or subshrubs, erect or creeping and rhizomatous. Branches usually quadrangular, winged or not. Leaves opposite or appearing verticillate due to the abbreviated internodes, petiolate or sessile, with 1–4 pairs of lateral primary veins or pinnately-veined. Inflorescences terminal or sometimes axillary, scorpioid cymose or subumbellate, pedunculate; bracts small, caducous. Flowers 3 (or 6)-merous. Calyx-tube tubular-campanulate, 3-ribbed, with trichomes. Calyx-lobes broadly triangular, small, very short. Petals pink, red, or purplish red, oblong-elliptic. Stamens 3 or 6, equal or unequal; filaments filiform; anthers opening by 1 or 2 pores, connective not inflated and usually without appendage. Ovary 3-locular, often crowned by membranous 3–6-lobed scales. Fruit capsular, obconical to cylindrical-obconical, more or less 3-edged.

About 150 species distributed in tropical regions of Asia; six species in China; two species in Hong Kong.

- 1a. Plant 20–50 cm tall; stems usually lenticellate, not winged ..... 1. *S. cantonensis*  
 1b. Plant 5–15 cm tall; stems not lenticellate, winged ..... 2. *S. erecta*

### 1. *Sonerila cantonensis* Stapf 蜂斗草

(Photo 249)

*Ann. Bot. (Oxford)* 6(23): 302. 1892; FKH 107. 1912; *FRPS* 53(1): 261. 1984.

Herb or subshrub, (15–)20–50 cm tall, sometimes stoloniferous. Stems obtusely quadrangular, covered with spreading coarse and fine, short hairs when young, glabrescent. Petioles 0.5–3(–6) cm, densely hirsute or villous. Leaf blade papery to submembranous, ovate, elliptic-ovate, narrowly lanceolate-oblong, or subelliptic, 3–5.5(–13) × 1.8–6 cm, base cuneate or obtuse and sometimes slightly oblique, apex shortly acuminate to acute, margin serrulate and with terminal bristle, with 2 pairs of lateral primary veins, adaxially glabrous or sparsely appressed-strigulose, abaxially purplish red, hirsute only on veins. Inflorescences terminal, scorpioid cymes or dichasial cymes, 3–7-flowered; peduncle 1.5–3 cm, puberulous and with sparse glandular hairs; bracts minute, caducous. Pedicel 1–3 mm, slightly 3-ribbed. Calyx-tube tubular-campanulate, 5–7 mm, 3-ribbed, 6-veined, puberulous or with sparse glandular hairs; calyx-lobes broadly triangular, ca. 1 mm, apex acute. Petals pink to pale rosy, oblong, 5–10 mm, with sparse glandular hairs or pilose on midvein abaxially, apex acute. Stamens 3, equal; filament ca. 7 mm; anthers ca. 8 mm, base slightly forked. Ovary flask-shaped, apex with a membranous crown. Fruit capsular, obconical, 5–7 × 4–5 mm, ± 3-ribbed.

Locality: Ping Fung Shan, Kwai Tau Leng. *Y. W. Lam 242; HK sheet 33091*.

Distribution: Guangdong, Guangxi, Yunnan, Fujian; Vietnam.

Ecology: Forests, hillsides, valleys, shaded damp places. Flowering: Sep.–Oct.; fruiting: Dec.–Feb.

### 2. *Sonerila erecta* Jack 三蕊草

(Fig. 124)

*Malayan Misc.* 1(5): 7. 1820; *S. S. Renner, Fl. Thailand* 7(3): 484, fig. 43. 2001.

*Sonerila tenera* Royle, *Ill. Bot. Himal. Mts.* 215, pl. 45, fig. 2. 1834; FKH 107. 1912; *FRPS* 53(1): 265. 1984.

Herb, 5–15 cm tall. Stems slender, slightly quadrangular, winged, glandular hairy and puberulent, branched from the apex or the base. Petiole 1–3 mm, slightly winged, with glandular hairs. Leaf blade membranous, narrowly elliptic to ovate, (5–)10–25 × (3–)4–7 mm, base cuneate, apex acuminate, margin serrulate, strigose, adaxially sparsely setose, abaxially glabrous or scurfy except for sparsely hairy on veins; lateral primary veins 1–2 pairs. Inflorescences terminal, scorpioid cymes, 2–5-flowered, 1–2.5 cm, with spreading glandular hairs; peduncle 8–15 mm. Pedicels 1–5 mm, covered with sparsely glandular hairs. Calyx-tube campanulate-tubular, ca. 4 mm, ± 3-angular, 6-veined, usually covered with sparsely glandular hairs only on veins; calyx-lobes very short, broadly ovate-triangular, ca. 0.5 mm. Petals pink, purplish red or bluish, oblong-elliptic, ca. 3 mm, apex acute, oblique, sparsely glandular hairy

on midvein abaxially; stamens 3, equal; anthers broadly ovate, ca. 1.8 mm, base forked, connective not extended. Ovary flask-shaped, membranous crown slightly 3-lobed. Capsule cylindrical, 6–11 × 2–2.5 mm, obtusely ribbed, smooth or sometimes sparsely pilose.

Locality: Mount Gough. *HK sheet 1800*.

Distribution: Guangdong, Guangxi, Jiangxi, Yunnan; India, Myanmar, Vietnam, Philippines.

Ecology: Thin forests, grovelands, roadsides, grassland. Flowering: Aug.–Oct.; fruiting: Oct.–Dec.

Notes: The species was reported as *Sonerila tenera* Royle previously (Check List HK Plants 167. 2002; 61. 2004).

### 7. *Bredia* Blume 野海棠屬

Herbs, shrublets, or shrubs, erect or creeping. Stems usually quadrangular. Leaves petiolate, margin entire or denticulate, with 1–2(–4) pairs of lateral primary veins, tertiary veins parallel. Inflorescences terminal, umbellate, cymose, cymose paniculate, or rarely umbellate cymose; bracts small, often caducous. Flowers (3 or) 4-merous. Calyx-tube funnellform, turbinate, or subcampanulate; calyx-lobes (3 or) 4, apex cuspidate. Petals pink, red or purplish red, ovate, obovate, or broadly ovate, usually oblique. Stamens twice as many as petals, dimorphic, unequal in length; longer stamens usually without tuberculate at the base of anthers; connective decurrent, slightly prolonged. Ovary turbinate, 4-locular; style filiform; stigma apiculate. Capsule turbinate, usually obtusely 4-sided, woody, apex truncate but with crown usually exerted from calyx; calyx lobes usually persistent. Seed numerous, very minute, cuneate, densely granulate.

About 15 species distributed in E and S Asia; 11 species in China; one species in Hong Kong.

1. *Bredia fordii* (Hance) Diels 葉底紅 (Fig. 125)  
Bot. Jahrb. Syst. 65(2–3): 110. 1933; Hansen, Bull. Mus. Natl. Hist. Nat. 14: 424. 1992.

*Phyllagathis fordii* (Hance) C. Chen, Bull. Bot. Res., Harbin, 4(3): 50. 1984; FRPS 53(1): 224. 1984.

*Otanthera fordii* Hance, J. Bot. 19(218): 47. 1881.

Shrublet, or shrubby herb, 20–50(–100) cm tall; young branches, petiole and inflorescences densely pilose and glandular pubescent. Leaves firmly papery; petiole 2.5–6.5 cm; leaf blade cordate, elliptic-cordate to ovate-cordate, 4–10(–13.5) × 2–5.5(–10) cm, apex shortly acuminate to obtusely acute, margin double denticulate, ciliate, sparsely pilose and pubescent on both surfaces, especially on veins of abaxial surface. Inflorescences terminal, umbellate, cymose, or cymose paniculate; peduncle 1–5.5 cm; pedicels 0.8–2 cm. Calyx-tube 5–7 mm, campanulate-funnelform; calyx-lobes linear-lanceolate to narrowly triangular, 3–5 mm. Petals purple to purplish red, 7–14 × 6–8 mm, ovate to broadly ovate, apex acuminate, sometimes glandular pubescent, slightly oblique, ciliate. Stamens ± unequal, 1.6–1.8 cm; anthers lanceolate, 7–11 mm, geniculate or slightly curved; connective decurrent, slightly inflated at base. Ovary ovoid, apex with a membranous crown. Capsule, cup-shaped, bristly, 6–10 × 8–12 mm, top truncate.

Locality: No precise locality. *HK sheet 11612*.

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Forests, hillsides, margins of woodlands, shaded

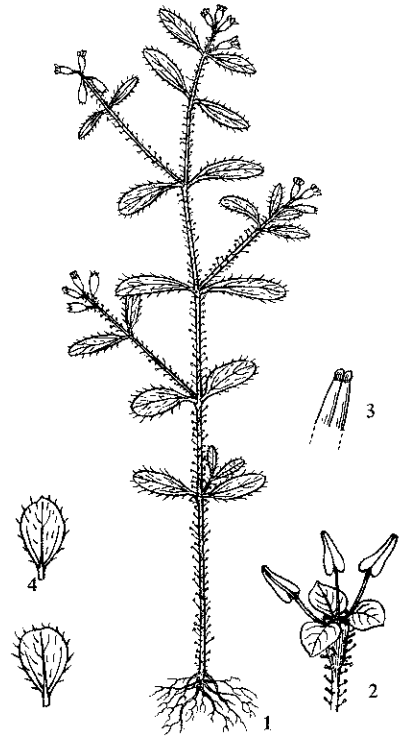


Figure 124. *Sonerila erecta* Jack

1. whole plant; 2. flower; 3. anther; 4. leaves. (drawn by H. P. Yu)

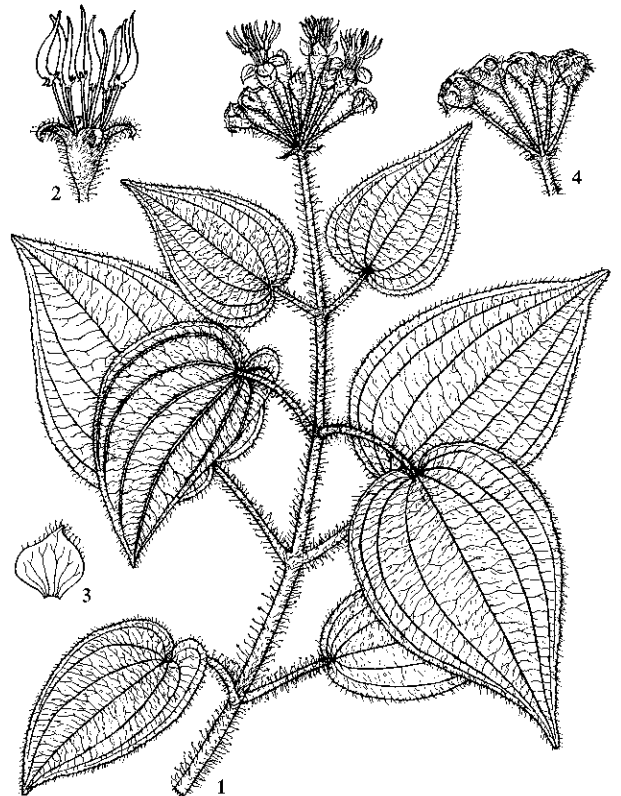


Figure 125. *Bredia fordii* (Hance) Diels

1. flowering branch; 2. flower with petals removed; 3. petal; 4. infructescence. (drawn by H. P. Yu)

damp places, valleys, streamsides, roadsides. Flowering: Jun.–Aug.; fruiting: Aug.–Oct.

Notes: The species was reported as *Phyllagathis fordii* (Hance) C. Chen previously (Check List HK Plants 167. 2002; 61. 2004). The type specimen of *Phyllagathis fordii* was collected from Happy Valley by C. Ford between 1879 and 1880.

### 8. *Fordiophyton* Stapf 異藥花屬

Herbs or shrublets, erect or creeping. Stems quadrangular, sometimes fleshy. Leaves opposite, petiolate to almost sessile, margin usually denticulate or serrulate, (3–)5–7(–9)-basiveined, lateral veins parallel. Inflorescences terminal, umbellate or cymose paniculate, bracteate at the base of peduncle. Flowers 4-merous. Pedicel usually quadrangular, 2-bracteolate. Calyx-tube obconical or funnelliform, membranous, 4-sided or 8-veined; calyx-lobes usually triangular, membranous, caducous. Petals pink, red, purple, or rarely white, oblong to obovate, apex oblique; stamens 8, unequal; 4 longer stamens usually pink to purplish red, anthers oblong to oblong-linear, longer than filaments, opening by 1 apical pore, base lengthened and forked, connective sometimes raised at base; 4 shorter stamens pale yellow or white, anthers oblong, 2/3 or 1/2 shorter than filaments, base usually not forked. Ovary inferior, obconical, apex with a membranous 4-lobed crown. Fruit capsular, obconical, apex truncate, opening by 4 apical pores; persistent calyx 8-ribbed.

About eight species distributed in China and Vietnam; one species in Hong Kong.

#### 1. *Fordiophyton peperomiifolium* (Oliv.) C. Hansen 無距花

(Fig. 126)

Bull. Mus. Natl. Hist. Nat., B, Adansonia 14(3–4): 425. 1992 [1993].

*Sonerila peperomiifolia* Oliv., Icon. Pl. 19: t. 1814. 1889.

*Fordiophyton brevicaule* C. Chen, Acta Phytotax. Sin. 18(1): 62. 1980; FRPS 53(1): 243, pl. 48: 2–3. 1984, *syn. nov.*

*Gymnagathis peperomiifolia* (Oliv.) Stapf, FKH 107. 1912.

*Stapfiophyton peperomiifolium* (Oliv.) H. L. Li, J. Arnold Arb. 25: 29. 1944; FRPS 53(1): 235, pl. 48: 1. 1984.

Herb, with thick rootstock. Stems very short, densely brown hirsute. Leaves 3–5, forming a basal or sub-basal rosette; petiole 4–14(–20) cm, densely hispid, with glandular hairs, or rarely glabrescent; leaf blade ovate, ovate-elliptic, or broadly ovate, 5.5–11 × 3–7.5 cm, base subcordate, cordate, or rarely rounded, apex broadly acute, margin denticulate, the teeth with a setose tip, abaxially usually purple and setose on veins, adaxially with white spots and tuberculate after shedding of dense hairs, lateral primary veins 3 or 4 on each side of midvein. Inflorescences compound cymes, hirsute on nodes otherwise glabrous; peduncle 14–35 cm. Pedicel to 1.2 cm, lengthening to 1.9 cm in fruit, with sparse glandular trichomes and puberulous. Calyx-lobes triangular, ca. 1.7 × 0.8 cm, oblique, apex acute to shortly acuminate with a setose tip. Longer stamens ca. 2.5 cm; anthers oblong-linear, ca. 1.2 cm. Shorter stamens ca. 1.2 cm; anthers oblong, ca. 4.5 mm. Ovary oblong, apex truncate and with a membranous ciliate crown. Capsule funnel-shaped, 4-sided, 8-ribbed, ± hispid, apex truncate.

Locality: Ma On Shan, Nam Chung, Lung Chu Tam. P. S. Choi 221; Y. W. Lam 2138; HK sheet 35343.

Distribution: Guangdong.

Ecology: Lowland damp places, moist soil on stones.

Flowering: Mar.–Apr.; fruiting: Jun.

Notes: The type specimen of *Fordiophyton brevicaule* (C. Wang 32407, IBSC) was collected from Hong Kong on 1 Jun. 1933.

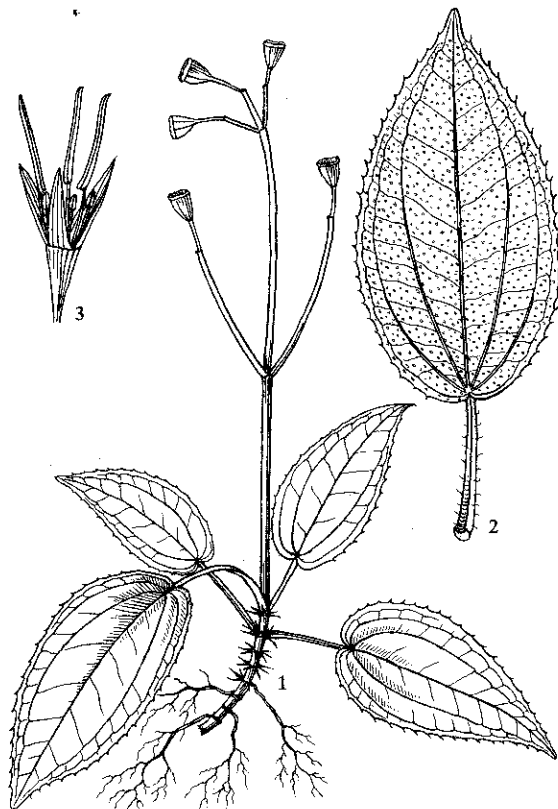


Figure 126. *Fordiophyton peperomiifolium* (Oliv.) C. Hansen  
1. fruiting plant; 2. leaf; 3. flower with petals removed. (drawn by H. P. Yu)

## 204. COMBRETACEAE 使君子科

XIA Nian-he 夏念和

Trees or shrubs, often scandent. Leaves simple, opposite or alternate, rarely whorled, entire, rarely serrate, petiolate, exstipulate, leaf base often with 2 gland-containing flask-shaped cavities. Inflorescence capitate, spicate, racemose or paniculate. Flowers often bisexual, actinomorphic, rarely zygomorphic. Calyx lobes 4–5(–8), valvate, persistent or deciduous. Petals 4–5 or absent, imbricate or valvate. Stamens often twice as many as calyx lobes, in 2 whorls, outer whorls sometimes reduced, rarely in pairs or triplets, anthers versatile with longitudinal slits. Disk epigynous. Ovary inferior, 1-locular, with 2–6 anatropous ovules; style 1; stigma capitate or inconspicuous. Fruit 1-seeded, usually indehiscent or drupaceous, often ribbed. Seeds without endosperm, embryo oily with 2 (or 3)

folded or spirally twisted cotyledons.

About 20 genera and 500 species distributed in tropical and subtropical areas of the world; six genera and 25 species in China; four genera and seven species in Hong Kong.

- 1a. Leaf blade glandular at base; petals absent..... 1. *Terminalia*
- 1b. Leaf blade not glandular at base; petals present.
  - 2a. Calyx-tube with 2 adnate bracteoles; calyx-lobes persistent; shrubs or small trees .....2. *Lumnitzera*
  - 2b. Calyx-tube without adnate bracteoles; woody vines.
    - 3a. Deciduous woody vines; calyx-tube long tubular; stamens not exerted; disk absent; fruit 5-ribbed ..... 3. *Quisqualis*
    - 3b. Evergreen woody vines; calyx-tube short; stamens exerted; disk present; fruit 4–5-winged..... 4. *Combretum*

### 1. *Terminalia* L. 欖仁樹屬

Trees with buttress, rarely shrubs. Leaves often alternate, usually pseudovercillate on branch apex, rarely opposite or subopposite, usually with 2 or more glands at the base of leaf blade. Inflorescence axillary or terminal, spicate or racemose, sometimes paniculate. Flowers small, (4–)5-merous, bisexual or polygamous; bracts deciduous. Calyx-tube cupular, prolonged beyond ovary, lobes 4 or 5, valvate; petals absent; stamens 8 or 10, in 2 whorls, anthers dorsifixed. Disk bearded or villous, rarely glabrous or subglabrous. Ovary inferior, 1-locular; ovules 2(–4); style 1. Fruit drupaceous, with 2–5 ribs or leathery wings. Seed 1; endosperm lacking, cotyledons convolute.

About 200 species distributed in tropical regions of the world; eight species in China; four species commonly cultivated in Hong Kong.

- 1a. Petioles without glands on apex.
  - 2a. Leaves larger, obovate or elliptic-obovate, 12–25 × 8–15 cm, with 1 pair of glands near margin at base ..... 1. *T. catappa*
  - 2b. Leaves smaller, obovate, 3–5 × 1–2 cm, without glands..... 2. *T. mantaly*
- 1b. Petioles with 1–2 pairs of glands on apex.
  - 3a. Leaf blade ovate or ovate-elliptic to long elliptic, 7–14 × 4.5–8.5 cm, base rounded or cuneate, densely tuberculate on both surfaces..... 3. *T. chebula*
  - 3b. Leaf blade oblong or elliptic, 10–15(–25) × 5–10 cm, base cordate, densely papillate adaxially ..... 4. *T. arjuna*

#### 1. *Terminalia catappa* L. 欖仁樹

(Photo 250)

Mant. Pl. 1: 128. 1767; FHN 2: 42, fig. 31f. 1965; FTW 3: 387, pl. 851. 1977; FRPS 53(1): 10. 1984; FGD 3: 198, fig. 136: 4–6. 1995.

Tree, to 20 m or taller; bark brown; branches spreading, densely yellowish brown tomentose. Leaves alternate, often fasciculate at branch apex. Petiole robust, 1–1.5 cm, rusty pubescent when young; leaf blade obovate or elliptic-obovate, 12–25 × 8–15 cm, base shallowly cordate or rounded, with one pair of glands near margin, apex rotund or mucronate, margin entire or slightly wavy, pilose abaxially when young, glabrescent; midvein impressed adaxially and elevated abaxially, lateral veins 10–12 on each side of midvein. Flowers polygamous, in axillary spikes, small, 5-merous. Calyx-tube white villous adaxially, lobes as long as tube. Stamens exerted. Disk 5-glanded, hairy. Ovary small, 2-ovuled. Fruit fusiform or ellipsoidal, 3–5 cm, 2–3.5 cm in diam., greenish black when mature, slightly compressed, 2-ribbed, narrowly winged on ribs.

Locality: Cultivated. *Y. S. Lau* 662, 989; *L. T. Lo* 384.

Distribution: Hainan, Guangdong, Yunnan, Taiwan; Indochina, Malaysia, India, Polynesia, S America.

Ecology: Flowering: Mar.–Jun.; fruiting: Jul.–Sep.

Uses: Ornamental.

#### 2. *Terminalia mantaly* H. Perrier 小葉欖仁

(Photo 251)

Ann. Inst. Bot.-Geol. Colon. Marseille, ser. 7, 1: 24, t. 5. 1953.

Tree, to 10 m tall; bark blackish brown; branches pseudovercillate, horizontally spreading. Leaves often 3–7-fasciculate on apex of short branches; petioles ca. 0.5 cm; leaf blade papery, obovate, 3–5 × 1–2 cm, base cuneate, apex obtuse or emarginate, margin sparsely crenate, glabrous on both surfaces, lateral veins 5–7 pairs, inconspicuous. Inflorescences 8–10 cm. Fruit unknown.

Locality: Cultivated in gardens. *HK sheet* 40662, 40745.

Distribution: Cultivated in S China; native to Madagascar.

Uses: Ornamental (roadside tree).

#### 3. *Terminalia chebula* Retz. 訶子

Observ. Bot. 5: 31. 1789; FGZ 225. 1956; FYN 1: 82, pl. 22: 1–2. 1977; FRPS 53(1): 13, pl. 3: 1–2. 1984; FGD 3: 199, fig. 136: 7–9. 1995.

Large tree, to 30 m tall; bark brownish black, greyish black or greyish brown, often fissured, glabrous, with elliptic lenticels. Leaves subopposite or alternate; petioles robust, 1.8–2.3(–3) cm, with 1–2 pairs of glands at apex; leaf blade subleathery or thickly papery, ovate or ovate-elliptic to long elliptic, 7–14 × 4.5–8.5 cm, base rounded or cuneate, slightly oblique, apex acute, margin entire or

minutely wavy, densely tuberculate on both surfaces, glabrous or slightly puberulous abaxially when young; lateral veins 6–10 pairs. Panicles composed of spikes, 5–10 cm. Flowers bisexual. Calyx-tube cupular, yellowish brown pubescent adaxially. Stamens exserted. Ovary small, 2-ovuled. Fruit fusiform or ovoid, 2.5–4 × 1.9–2.3 cm; pericarp rigid, green when mature, often ridged.

Locality: Cultivated in gardens. *Y. S. Lau 1702, 2847.*

Distribution: Guangxi, Yunnan; India, Myanmar, Thailand, Cambodia, Laos, Vietnam and Malaysia.

Ecology: Flowering: Mar.–Jun.; fruiting: Jul.–Dec.

Uses: Medicinal (folklore).

4. *Terminalia arjuna* Wight & Arn. 阿江欖仁  
Prodr. Fl. Ind. Orient. 34. 1834.

(Photo 252)

Large tree, 15–20 m tall; bark greyish white, exfoliating in flakes; branches alternate, spreading. Leaves subopposite; petioles shorter than 1.2 cm, with 1 pair of glands near apex; leaf blade thickly papery, oblong or elliptic, 10–15(–25) × 5–10 cm, base cordate, asymmetrical, apex obtuse or very shortly acute, margin slightly undulate to subentire, densely papillate adaxially, subglabrous abaxially, lateral veins 15–22 pairs, conspicuous on both surfaces. Bracteoles very small. Calyx-teeth nearly glabrous on both surfaces. Ovary short, densely covered with crisped brown or rusty hairs. Fruit obovoid, 2–2.6 cm in diam., ridged, wings usually truncate or suddenly narrowed at top.

Locality: Cultivated in gardens. *P. S. Choi 143; HK sheet 40698.*

Distribution: Cultivated in Guangdong, Taiwan; native to India and Sri Lanka.

Ecology: Flowering: Mar.–May; fruiting: Jul.–Sep.

Uses: Ornamental (roadside tree).

2. *Lumnitzera* Willd. 欖李屬

Evergreen shrubs or small trees. Leaves alternate, ± fleshy. Inflorescence terminal or axillary, racemose or spicate. Flowers short pedicellate or subsessile. Calyx-tube long tubular, with 2 bracteoles at base, the limb 5-lobed. Petals 5. Stamens 10, in 2 (or 1) whorls, or 5(–7); filaments slender; anthers opening by longitudinal slits. Ovary 1-locular; ovules 2, rarely 5; style subulate or clavate. Fruit drupaceous, woody, ribbed or striate. Seed 1.

Two species distributed in coastal areas of E hemisphere; two species in China; one species in Hong Kong.

1. *Lumnitzera racemosa* Willd. 欖李 (Fig. 127; Photo 253)  
Ges. Naturf. Freunde Berlin Neue Schriften 4: 187. 1803; FHN 2: 43. 1965; FTW 3: 875, pl. 850. 1977; FRPS 53(1): 15: 1984; FGD 3: 199, fig. 137. 1995.

Shrub or small tree, to 8 m tall, ca. 30 cm in diam.; bark brown or greyish black, rough; branchlets red or greyish black, with conspicuous leaf scars, pubescent when young, glabrescent. Leaves often fasciculate at apex of branches, sessile or shortly petiolate; leaf blade spatulate or narrowly obovate, 4.5–6.5(–7) × 1.5–2.5 cm, base attenuate, apex rotund or slightly emarginate, thick, fleshy, green when fresh, yellowish brown when dry; lateral veins 2–4 on each side of midvein. Racemes axillary, 2–6 cm, 6–12-flowered; peduncle compressed; bracteoles 2, scalelike, triangular, persistent. Calyx-tube prolonged well beyond ovary, ca. 5 mm; lobes 5, triangular, 1–2 mm. Petals white, fragrant, elliptic, 4.5–5 × 1.5 mm. Stamens 5 or 10, nearly as long as petals, filaments 4–5 mm, slightly flattened at base, apex curved, anthers small, ellipsoidal. Ovary fusiform, 6–8 mm; ovules 2–4; style terete, 4 mm. Fruit ovoid or fusiform, laterally compressed, woody, 1.4–2 cm, 5–8 mm in diam., 2–3-ribbed.

Locality: Aberdeen, Nai Chung, Kei Ling Ha, Yung Shue O, Plover Cove, Ting Kok, Lantau Island. *S. P. Lau 80; HK sheet 1727, 31563.*

Distribution: Hainan, Guangdong, Guangxi, Taiwan; tropical Asia, Africa, Australia.

Ecology: Mangroves. Flowering & fruiting: Dec.–Mar. of the following year.

Uses: Timber.



Figure 127. *Lumnitzera racemosa* Willd.

1. fruiting branch; 2. flower; 3. stamens; 4. fruit. (drawn by H. P. Yu)

3. *Quisqualis* L. 使君子屬

Woody vines or scandent shrubs. Leaves opposite or subopposite, entire. Inflorescence spicate. Flowers large, bisexual, white or red. Calyx-tube long and slender, prolonged well beyond ovary, lobes 5, small, deciduous. Petals 5, imbricate, enlarged after anthesis. Stamens 10, in 2 whorls. Disk present or absent. Ovary 1-locular, ovules 2–4; style filiform. Fruit drupaceous or capsular, with 5 ribs or narrow wings. Seed 1.

About 17 species distributed in S Asia and tropical Africa; two species in China; one species in Hong Kong.

1. *Quisqualis indica* L. 使君子

(Photo 254)

Sp. Pl. (ed. 2) 1: 556. 1762; FYN 1: 85. 1977; FRPS 53(1): 16, pl. 3: 8–9. 1984; FGD 3: 200, fig. 138. 1995.

*Quisqualis sinensis* Lindl., Bot. Reg. 30: t. 15. 1844.

Scandent shrub, 2–8 m tall; branchlets pale yellowish brown pubescent. Petioles 5–8 mm, rusty pubescent when young, persistent and like a spine after leaf falling off. Leaves thinly papery, ovate, oblong or elliptic, 5–11 × 2.5–5.5 cm, base rounded, apex short acuminate, margin entire or slightly wavy, glabrous adaxially, sometimes sparsely rusty pubescent abaxially; lateral veins 7–8 on each side of midvein. Inflorescence spicate, ca. 10-flowered; bracteoles linear. Calyx-tube long tubular, deciduous yellowish pubescent abaxially, lobes triangular. Petals 5, oblong or obovate-oblong, white at first, turning pale red later. Stamens 10, in 2 whorls, short, included. Ovary 1-locular; ovules 3. Fruit fusiform, 2.5–4 cm, 1.2–2.5 cm in diam., conspicuously 5-ribbed, brown when mature, dehiscent into 3–5 valves at apex, 1-seeded.

Locality: Cultivated. *S. T. Dunn 5268*; *W. J. Tutcher 9532*; *Y. S. Lau 1133*.

Distribution: Areas S of Changjiang River; India, Myanmar, Philippines.

Ecology: Flowering: Early summer; fruiting: Late autumn.

Uses: Ornamental, medicinal (folklore).

4. *Combretum* Loefl. 風車子屬

Woody vines, rarely scandent shrubs or small trees. Leaves opposite, alternate or subverticillate, petiolate, usually with scales, sometimes with a small cavity or a tuft of hairs. Inflorescence paniculate, spicate or racemose, terminal or axillary, densely covered with scales or pubescent. Flowers large, bisexual or polygamous, 4- or 5-merous; bracteoles small, caducous. Calyx-tube tubular, campanulate or infundibuliform, lobes 4–5. Petals 4–5. Stamens often twice as many as calyx-lobes, in 2 whorls. Disk adnate to calyx-tube, with a ring of hairs. Ovary inferior, 1-locular; ovules 2–6. Fruit drupaceous, 4–5-winged or -ribbed, indehiscent, 1-seeded.

About 250 species widely distributed in tropical Africa, tropical Asia and America; 11 species in China; one species in Hong Kong.

1. *Combretum alfredii* Hance 風車子 (Fig. 128; Photo 255)

J. Bot. 9(101): 131. 1871; FYN 1: 95, pl. 24: 9–12. 1977; FRPS 53(1): 27, pl. 5: 9–12. 1984, *excl. syn. Combretum extensum* Roxb. ex G. Don; FGD 3: 202, fig. 139: 7–9. 1995.

*Combretum kwangsiense* H. L. Li, J. Arnold Arbor. 24(4): 450. 1943.

Woody vine or scandent shrub, 15–20 m or longer; bark greyish brown, striate; branchlets, petioles, inflorescences and calyx densely rusty or white villous. Petiole very short; leaf blade ovate, long elliptic, ovate-oblong or oblong, 6–18 × (3–)5–8 cm, base rounded, truncate or shallowly cordate, apex acuminate or acute, adaxially pubescent at first, later puberulous along midvein; lateral veins 5–8(–10) on each side of midvein, impressed adaxially, elevated abaxially, reticulate veins conspicuous. Spikes densely flowered, rearranged in terminal panicles. Calyx-tube infundibuliform, lobes 5. Petals 5, pale red or scarlet, hairy abaxially. Ovary 5-ribbed, hairy; ovules 2. Fruit ellipsoidal or obovoid, 2.5–3.5 cm, 2–2.5 cm in diam. including the wings, pubescent and sparsely red scaly, with 5 membranous wings.

Locality: Shui Long Wo, Kei Ling Ha, Yung Shue O, Kai Kung Leng. *S. C. Ng 2522*; *S. Y. Hu & P. P. H. But 24073*; *HK sheet 39418*.

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi; India, Myanmar, Thailand, Cambodia, Laos and Vietnam.

Ecology: Forests. Flowering: Dec.–Mar.; fruiting: Apr.–Jul.

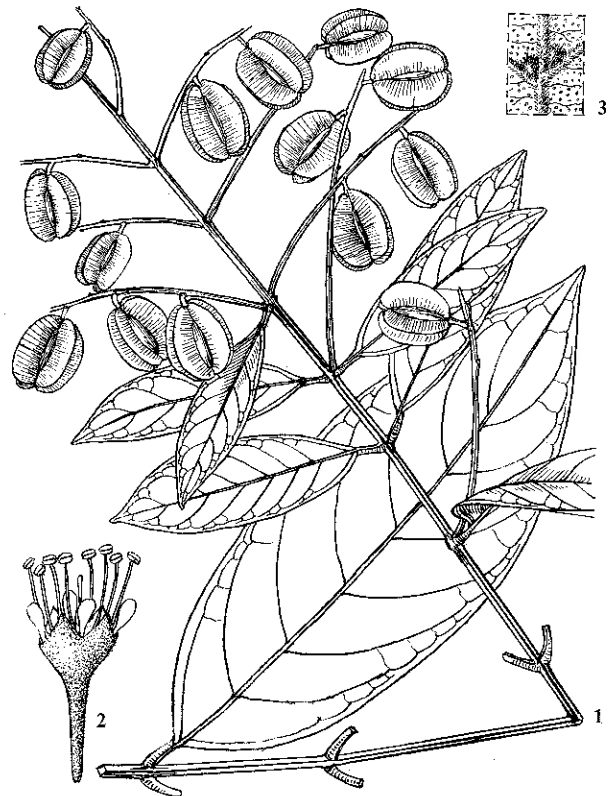


Figure 128. *Combretum alfredii* Hance

1. fruiting branch; 2. flower; 3. portion of a leaf (abaxial surface). (drawn by H. P. Yu)



## 205. RHIZOPHORACEAE 紅樹科

XIA Nian-he 夏念和

Evergreen trees or shrubs, often with aerial roots. Leaves simple, opposite, petiolate. Stipules interpetiolar, sheathing terminal bud, caducous. Inflorescences axillary, cymose or flowers solitary. Flowers usually bisexual, rarely unisexual, 4–5-merous, actinomorphic. Calyx-tube adnate to ovary or free, lobes 4–16, valvate. Petals usually as many as sepals, free, fleshy, usually caducous, margin entire, lacerate, or 2-cleft. Stamens 2–4 times as many as calyx lobes, often in pairs opposite to petals, filaments often connate at base; anther 4–many-celled, dehiscing longitudinally or by a ventral valve. Disk annular or absent. Ovary inferior or semi-inferior, rarely superior, 2–5(–6)-locular; ovules usually 2 per locule, pendulous; style 1; stigma entire, capitate, or lobed. Fruit a drupe or a berry, rarely a capsule. Seeds 1–several, sometimes arillate; embryos sometimes straight, linear, often green (viviparous in mangroves); endosperms copious and oily.

About 16 genera and about 130 species distributed in the tropical region of the world, especially in Old World; six genera and 13 species in China; three genera and three species in Hong Kong.

- 1a. Trees or shrubs of inland ecosystems; seeds not germinating while attached to parent plant ..... 1. *Carallia*  
 1b. Trees or shrubs of coastal mangrove ecosystems; seeds germinating and hypocotyls growing from fruit while attached to parent plant.  
 2a. Calyx lobes 8–16; petals 2-lobed or emarginate ..... 2. *Bruguiera*  
 2b. Calyx lobes 5 or 6; petals fringed with apical appendages or many-cleft, reflexed at anthesis ..... 3. *Kandelia*

1. *Carallia* Roxb. 竹節樹屬

Shrubs or trees. Stems usually with buttresses at base. Leaves decussate, petiolate, margin entire or serrate. Inflorescences axillary, dichasial cymes. Bracteoles 2, distinct or connate at base. Flowers bisexual, small. Calyx 5–8-lobed, lobes triangular. Petals as many as calyx lobes, membranous, conspicuously clawed. Stamens twice as many as petals, free; anthers 4-celled, dehiscing longitudinally. Disk annular, fleshy. Ovary inferior, (3–)5–8-locular; ovules 2 per locule; style filiform; stigma discoid, capitate, or obscurely lobed. Fruit a berry, 1–many-seeded. Seeds arillate, not viviparous.

About ten species distributed in tropical regions of the Old World; four species in China; one species in Hong Kong.

1. *Carallia brachiata* (Lour.) Merr.

竹節樹

(Fig. 129; Photo 256)

Philipp. J. Sci. 15(3): 249. 1919 [1920]; FHN 2: 48. 1965; FRPS 52(2): 139. 1983; FGD 1: 112. 1987.

*Diatoma brachiata* Lour., Fl. Cochinch. 1: 296. 1790.

*Carallia integerrima* DC., Prodr. 3: 33. 1828; FHK 111. 1861; FKH 103. 1912.

Tree, 7–10 m tall, with buttresses at base. Branches greyish brown. Stipules 1–2.5 cm. Petioles ca. 1 cm; leaf blade elliptic, obovate or oblong, 5–8 × 3–4.5 cm, thinly leathery, base broadly cuneate, apex acute, margin entire, with sparse, conspicuous purplish red spots abaxially. Inflorescences 1–6 cm; peduncle 0.8–1.2 cm. Flowers shortly pedicellate or sessile; bracteoles 2 or 3, partially connate into a cup. Calyx-lobes 6 or 7, triangular, 3–4 mm. Petals white, suborbicular, ca. 1.8–2 × 1.5–1.8 mm, apically lacerate. Stamens ca. 2 mm. Ovary globose, ca. 2 mm; style ca. 2 mm; stigma discoid, 4–8-lobed. Fruit subglobose, ca. 4–6 mm in diam., glossy, apex with persistent calyx-lobes. Seeds reniform or oblong.

Locality: Common in Hong Kong. *Y. S. Lau 1375, 2023*; *C. H. Tsou 1876*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; SE Asia, N Australia, Madagascar, Pacific Islands.

Ecology: Thickets. Flowering: Winter to spring; fruiting: Spring to summer.

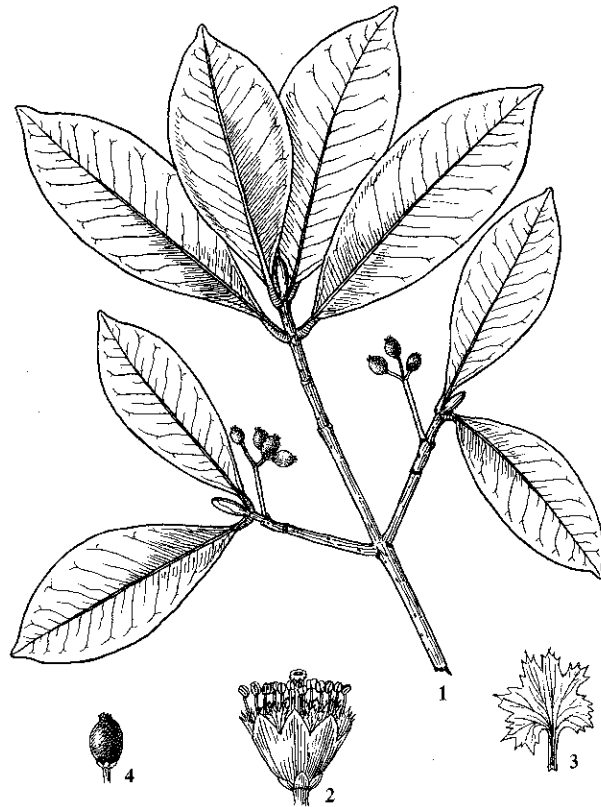


Figure 129. *Carallia brachiata* (Lour.) Merr.

1. fruiting branch; 2. flower; 3. petal; 4. fruit. (drawn by H. P. Yu)

2. *Bruguiera* Savigny 木欖屬

Trees or shrubs, often with kneelike pneumatophores. Leaves decussate, entire, glabrous, leathery, petiolate. Inflorescences cymose, 1–5-flowered, pedunculate. Flowers usually nodding; pedicels jointed. Calyx-tube obconical, 8–14(–16)-lobed. Petals as many as calyx lobes, usually 2-lobed and hairy at sinus. Stamens twice as many as petals; anthers introrse, 4-celled, dehiscing longitudinally. Ovary inferior, 2–4-locular; ovules 2 per locule. Fruit campanulate, enclosed by persistent calyx-tube. Seed usually solitary, viviparous.

Six species widely distributed in tropical region of the Old World; three species in China; one species in Hong Kong.

1. *Bruguiera gymnorrhiza* (L.)

Savigny 木欖

(Fig. 130; Photo 257–258)

Encycl. 4(2): 696. 1798; FKH 103. 1912; FHN 2: 443. 1965; FRPS 52(2): 136. 1983; FGD 1: 109. 1987.

*Rhizophora gymnorrhiza* L., Sp. Pl. 1: 443. 1753.

Tree 6–20 m tall; bark grey, coarsely fissured. Stipules often reddish, ca. 4 cm. Petiole 2–4.5 cm; leaf blade elliptic-oblong, 7–15 × 3–5.5 cm, base cuneate, or rarely obtuse, apex acute, thickly leathery, glabrous. Pedicel 1–2.5 cm. Flowers solitary, red or pinkish red, ca. 3–3.5 cm when full blooming. Calyx-tube dark yellowish red, smooth; lobes 11–13, linear, 1.5–2 cm, glabrous. Petals 1.1–1.5 cm, villous at lower half, 2-cleft, with 3 or 4 bristles at sinus. Stamens slightly shorter than petals; filaments filiform; anthers linear to lanceolate, 4–5 mm. Disk cup-shaped. Ovary 3-locular; style filiform, ca. 1.5 cm; stigma 3–4-lobed. Hypocotyls 15–25 cm, smooth.

Locality: Shek O, Sai Kung, Kiu Tsui, Yung Shue Au, Tai Po, Plover Cove, Mai Po, Lantau Island. *Y. S. Lau* 228; *L. T. Lo* 446; *P. S. Choi* 206.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; Cambodia, India, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam, E Africa, N Australia, Indian Ocean Islands, Madagascar, New Guinea, Pacific Islands.

Ecology: Mangrove forests. Flowering & fruiting: Nearly all year round.

Notes: The species is sometimes cited as "*Bruguiera gymnorrhiza* (L.) Lam., Tabl. Encycl., pl. 397. 1793", but no epithet occurs there whereas the plate description (with full name) occurs on 2: 517 in 1819; therefore this name was validly published as at 1819 and thus not of priority.

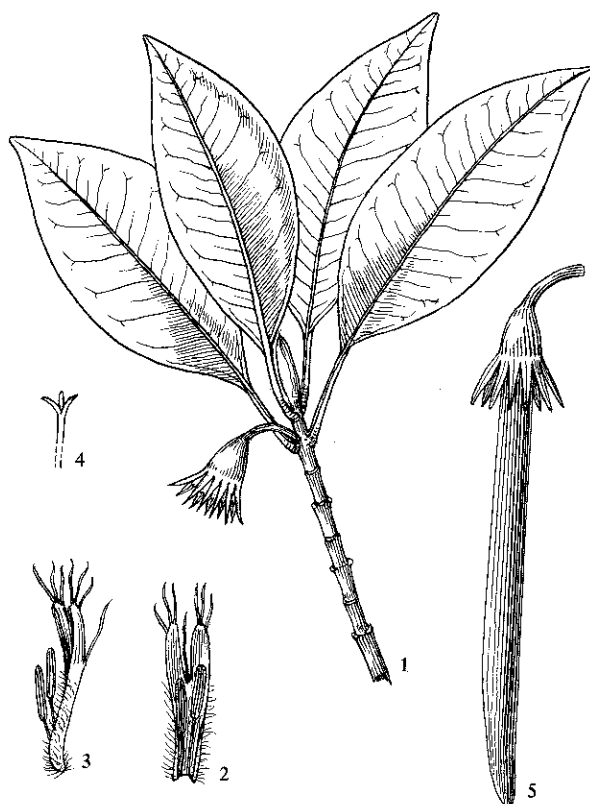


Figure 130. *Bruguiera gymnorrhiza* (L.) Savigny

1. flowering branch; 2. petal (ventral view); 3. petal (lateral view); 4. stigma; 5. hypocotyl. (drawn by H. P. Yu)

3. *Kandelia* Wight & Arn. 秋茄屬

Trees. Branches terete. Leaves leathery, entire. Inflorescences axillary, cymes, 4–9-flowered, pedunculate. Calyx deeply 5-lobed, subtended by connate, cup-like bracteoles. Petals 5; with long setae in sinus between petals, 2-lobed; lobes apically fimbriate. Stamens numerous, or rarely indefinite; anthers 4-celled, longitudinally dehiscent. Ovary inferior, 1-loculed; ovules 6 per locule. Style filiform; stigma 3-lobed. Fruit with persistent calyx, attached to plant until falling with viviparous seedling. Seed 1, germinating on plant. Hypocotyl cylindrical, spindle-shaped or clavate, apex pointed.

Two species distributed in E and SE Asia; one species in China; also in Hong Kong.

1. *Kandelia obovata* Sheue, H. Y. Liu & J. Yong 秋茄樹(紅茄、水筆仔)

(Fig. 131; Photo 259)

Taxon 52: 291, fig. 3: a–k. 2003.

*Kandelia rheedii* auct. non Wight & Arn.: FHK 110. 1861; FKH 102. 1912.

*Kandelia candel* auct. non (L.) Druce: Merr., Lingnan Sci. J. 6(4): 329. 1928; FHN 2: 51, fig. 317. 1965; FRPS 52(2): 133, pl. 37: 1–8. 1983; FGD 1: 111, fig. 119. 1987; FFIJ 4: 57, fig. 54. 1989.

Small tree to 3 m; bark smooth, reddish brown. Stipules 2–3 cm. Petioles 1–1.8 cm; leaf blade oblong to obovate-oblong, 5–10 × 2.5–4 cm, base broadly cuneate, apex rounded or obtuse, veins inconspicuous. Inflorescences 4–9(–13)-flowered; peduncle 1–3(–4) cm; pedicels (3–)5–6 mm; bracteoles U-shaped in outline, (2.5–)3 mm, 2-lobed, each lobe with ca. 30 colleters at base. Sepals white, lanceolate, 1.2–1.6 cm, reflexed when fruiting; petals white, bifid, with or without a long seta in the sinus, each lobe with (6–)8–12(–14) slightly sinuate threads. Filaments 7–13 mm, anthers 1.2–1.8 mm; ovary 1-locular, with 6 ovules, style filiform, 1.4–1.6 cm, stigmas 3. Fruit ovoid,

1.0–1.5 cm. Hypocotyl 12–20 cm, acuminate at apex.

Locality: Common in Hong Kong. *Y. S. Lau* 312, 2706; *K. L. Yip* 4201; *Hance* 603 (BM); *Hu* 5005, 11546, 13762 (K).

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; Japan (Ryukyu).

Ecology: Margins of mangrove swamps. Flowering & fruiting: All year round.

Notes: This species was recorded as *Kandelia candel* (L.) Druce before 2003 (e.g. Check List HK Plants 168. 2002.)

## 206. ALANGIACEAE 八角枫科

XIA Nian-he 夏念和

Deciduous trees or shrubs. Branches spiny or not, usually terete. Leaves simple, alternate, exstipulate, often oblique at base. Inflorescences axillary, in cymes or umbels, rarely flowers solitary. Flowers bisexual, actinomorphic, white or pale yellow, fragrant, often bracteate; pedicels jointed. Calyx-lobes 4–10, toothlike or obsolete. Petals as many as calyx lobes, valvate, linear to lorate, sometimes connate at base. Stamens isomerous and alternate with petals or 2–4 times as many as petals, distinct; anthers 2-celled, dehiscing longitudinally. Disk fleshy. Ovary inferior, 1–2-locular; ovule solitary, pendulous; style and stigma simple, or 2–4-lobed. Fruit a drupe, ellipsoidal, ovoid or subglobose. Seeds 1; embryo straight and large; endosperm copious.

One genus and ca. 20 species in tropical and subtropical regions of the Old World; 11 species in China; one species in Hong Kong.

### 1. *Alangium* Lam., *nom. cons.* 八角枫属

Morphological characters and geographical distribution are the same as those of the family.

#### 1. *Alangium chinense* (Lour.) Harms

八角枫 (Fig. 132; Photo 260)

Ber. Deutsch. Bot. Ges. 15: 24. 1897; Li, Woody Fl. Taiwan 637, fig. 252. 1963; FHN 3: 119. 1974; FRPS 52(2): 166. 1983; FGD 3: 288. 1995.

*Styloidium chinense* Lour., Fl. Cochinch. 221. 1790.

*Alangium lamarckii* auct. non Thwaites: FKH 120. 1912.

*Marlea begoniaefolia* Roxb., [Hort. Bengal. 28. 1814]; Pl. Corom. 3: 80, t. 283. 1819; FKH 138. 1861; FKH 120. 1912.

Shrub or small tree, 3–5(–15) m tall. Branchlets pubescent when young, glabrescent. Petioles reddish, 2.5–3.5 cm, puberulous, glabrescent; leaf blade suborbicular, elliptic or ovate, 13–19 × 3–7 cm, papery, base usually oblique, one side rounded and the other side cuneate, apex acuminate, entire or 3–7-lobed, adaxially glabrous, abaxially tufted pubescent at axils of veins; basal veins 3–5(–7). Inflorescences cymose, many-flowered. Flowers ca. 2 cm; pedicels 0.5–1.5 mm; bracteoles linear or lanceolate, ca. 3 mm. Calyx-lobes 6–8, toothlike, 0.5–1 × 2.5–3 mm. Petals 6–8, white at first, turning yellow later, linear, 1–1.5 cm. Stamens isomerous and as long as petals; filaments slightly flat, 2–3 mm, pubescent; anthers 6–8 mm, connectives glabrous. Style glabrous, stigma capitate, 2–4-lobed. Drupe ovoid, 5–7 × 5–8 mm, black when mature.

Locality: Common in Hong Kong. *H. C. Tang* 2392; *Y. S. Lau* 2502; *HK sheet* 2178.

Distribution: S, E, C & SW China; SE Asia, E Africa. •

Ecology: Thin forests. Flowering: May–Jul., Sep.–Oct.; fruiting: Jul.–Nov.

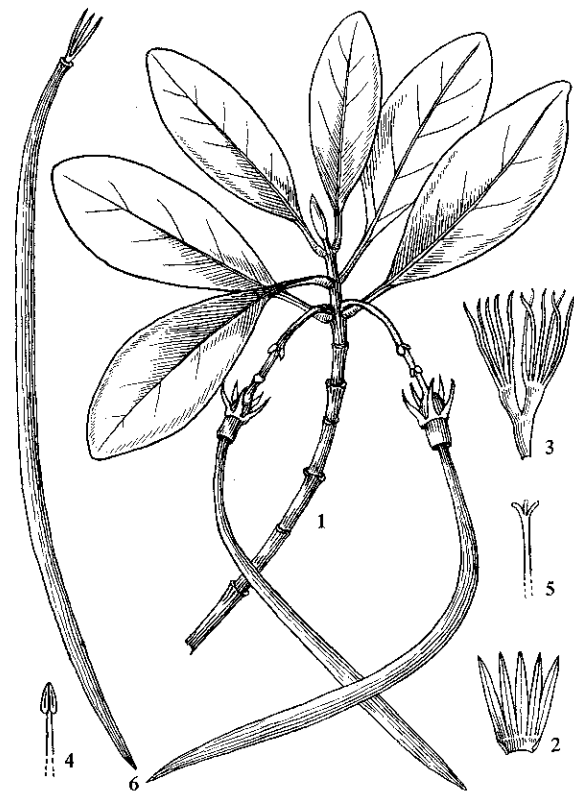


Figure 131. *Kandelia obovata* Sheue, H. Y. Liu & J. Yong  
1. fruiting branch; 2. calyx opened; 3. petal; 4. stamen;  
5. stigma; 6. seedling. (drawn by H. P. Yu)

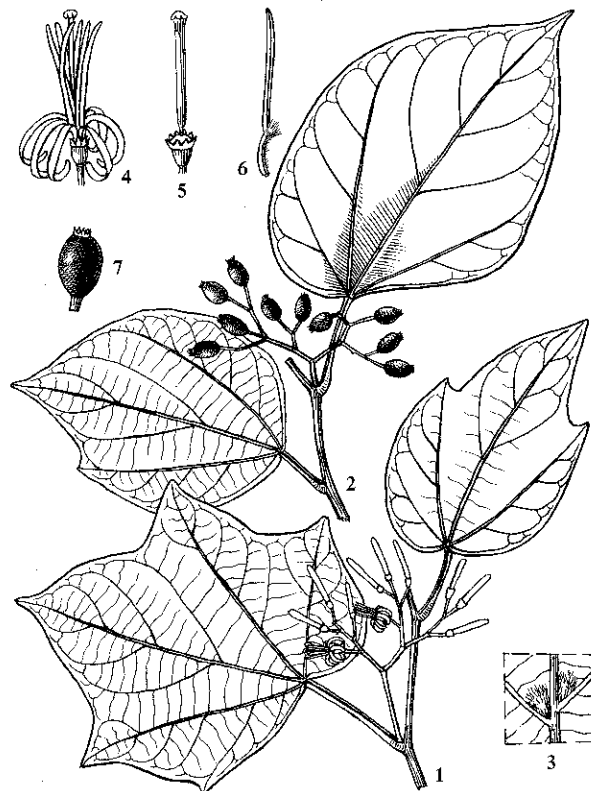


Figure 132. *Alangium chinense* (Lour.) Harms  
1. flowering branch; 2. fruiting branch; 3. portion of  
leaf abaxial surface; 4. flower; 5. stamen; 6. gynoecium;  
7. fruit. (drawn by H. P. Yu)

## 207. CORNACEAE (incl. NYSSACEAE) 山茱萸科

XIA Nian-he 夏念和

Trees, shrubs or rarely herbs. Leaves simple, opposite, rarely alternate, exstipulate. Inflorescence cymose or racemose, paniculate or capitate. Flowers usually bisexual, rarely unisexual (plant monoecious or dioecious) or polygamous, actinomorphic, small. Calyx-tube adnate to ovary, apex 4–5-toothed or truncate. Petals 4–5, rarely absent, often valvate, rarely imbricate. Stamens isomerous and alternate with petals; filaments short; anthers 2-celled, dehiscing longitudinally. Disk present. Ovary inferior, 1–4(–5)-locular, ovule 1 per locule, apical, pendulous; styles 1 or 2–5, distinct. Fruit usually a drupe, rarely a berry.

About 15–22 genera and 100 species mainly distributed in temperate and tropical regions; 12 genera and about 60 species in China; three genera and three species in Hong Kong.

- 1a. Leaves alternate; flowers 5-merous; inflorescence capitate ..... 1. *Camptotheca*  
 1b. Leaves opposite; flowers 4-merous; inflorescence cymose or paniculate.  
 2a. Inflorescence paniculate, without petaloid bracts; flowers unisexual; ovary 1-locular ..... 2. *Aucuba*  
 2b. Inflorescence cymose, with 4 petaloid bracts; flowers bisexual; ovary 2-locular ..... 3. *Dendrobenthamia*

1. *Camptotheca* Decne. 喜樹屬

Deciduous trees, polygamo-monoecious. Leaves simple, alternate, exstipulate, petiolate, pinnately-veined. Inflorescences terminal or axillary, capitate. Bracts 3. Calyx cupular, 5-toothed. Petals 5, caducous, imbricate. Stamens 10, unequal in length, inserted on disk, in 2 whorls; filaments slender, glabrous; anthers 4-celled. Ovary inferior, 1-locular; ovules 1 per locule; style glabrous, 2–3-lobed. Fruit a samara, ellipsoidal, sessile, clustered in globose heads.

Two species endemic to China; one species cultivated in Hong Kong.

1. *Camptotheca acuminata* Decne. 喜樹

(Photo 261)

Bull. Soc. Bot. France 20: 157. 1873; FRPS 52(2): 145, pl. 41. 1983; FGD 4: 285. 2000.

Tree to 20 m tall; bark grey, deeply fissured and furrowed; young branchlets purplish green, puberulous, old branchlets glabrous. Petiole 1.5–3 cm, puberulous; leaf blade papery, elliptic to ovate-oblong, 8–28 × 6–12 cm, base broadly cuneate or subrounded, apex acute, margin entire, dense greyish pubescent along veins abaxially, lateral veins 10–15 on each side of midvein. Heads, 1.5–2 cm in diam., often 2–9 heads rearranged in panicles; peduncle 3–6 cm, puberulous; bracts 3, triangular, 2.5–3 mm, both surfaces pubescent. Calyx cupular, shallowly 5-lobed; lobes triangular. Petals 5, ovate-oblong, pale green, ca. 2 mm, densely pubescent abaxially. Disk conspicuous. Stamens 10, outer 5 longer than petals, glabrous, inner 5 shorter, filaments slender. Style ca. 4 mm, glabrous, 2–3-lobed, lobes recurved. Samaras ellipsoidal, narrowly winged, grey-brown, 2.5–3.5 cm.

Locality: Cultivated. *P. S. Choi 187; Y. W. Lam 18, 2204.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Flowering: May–Jul.; fruiting: Sep.

Uses: Medicinal (folklore), ornamental (roadside tree).

2. *Aucuba* Thunb. 桃葉珊瑚屬

Small trees or shrubs, dioecious. Leaves simple, opposite, stipulate. Inflorescences terminal or axillary, paniculate or racemose-paniculate. Flowers 4-merous, unisexual, actinomorphic, subtended by 1 or 2 bracteoles. Male flowers: calyx small, 4-lobed; petals 4, valvate; stamens 4, filaments short and thick, anthers dorsifixed; pistillode absent. Female flowers: calyx-tube ovoid or subcylindrical, 4-lobed; petals as in males; staminodes absent; disk slightly fleshy; ovary 1-locular, ovule 1 per locule, pendulous; style short and thick, stigma capitate, straight or curving, slightly 2–4-lobed, oblique. Fruit a drupe, fleshy, red when mature, black when dry, crowned with persistent calyx-lobes and style. Seeds with membranous arils.

Ten species distributed in Bhutan, China, N India, Japan, Korea, Myanmar, Sikkim, Vietnam; ten species in China; one species in Hong Kong.

1. *Aucuba chinensis* Benth. 桃葉珊瑚

(Fig. 133; Photo 262)

FKH 138. 1861; Forb. & Hemsl., J. Linn. Soc. 23: 346. 1886; FKH 120. 1912; H. L. Li, Woody Fl. Taiwan 675, fig. 282. 1963; FHN 3: 117. 1974, *p.p.*, *excl. fl. descr.*; FFJ 4: 205. 1989; FTW ed. 2, 3: 979, pl. 488. 1993; FOC 14: 223. 2005.

Tree or shrub, 3–6(–12) m tall; branches dichotomous, stout. Petiole 2–4 cm; leaf blade elliptic to broadly elliptic, 10–20 × 3.5–8 cm, leathery, base broadly cuneate or cuneate, slightly oblique, apex acute or obtusely acuminate, margin slightly revolute, often serrate or glandular dentate; midvein raised abaxially, lateral veins 6–8(–10) on each side of midvein. Inflorescences terminal, paniculate. Male inflorescences 5–13 cm; peduncles ca. 3 mm, pubescent; bracteole 1. Male flowers purplish red; calyx 4-dentate, glabrous or sparsely pubescent; petals 4, oblong or ovate, 3–4 × 2–2.5 mm, apex cuspidate, pilose or glabrous abaxially; stamens 4, ca. 3 mm, anthers yellow, 2-celled. Female inflorescences 4–5 cm; bracteoles 2. Female flowers yellow green or yellowish; calyx and petals as in male flowers; ovary cylindrical; style stout; stigma capitate, slightly oblique. Drupes bright red or dark red, cylindrical or ovoid,

1.4–1.8 cm, 8–10(–12) mm in diam., apex with persistent calyx teeth and styles.

Locality: Mount Nicholson, Ma On Shan, Tai Mo Shan, Lantau Island. *L. T. Lo* 49, 666; *P. S. Choi s.n.* (HK sheet 34839).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; Myanmar, N Vietnam.

Ecology: Forests. Flowering: Jan.–Feb.; fruiting: Feb. of the following year.

Notes: The type specimen (*Harland s.n.*) was collected from Hong Kong Island in 1850s.

### 3. *Dendrobenthamia* Hutch. 四照花屬

Evergreen or deciduous small trees or shrubs. Leaves opposite, leathery, rarely papery, petiolate, pinnately-veined. Inflorescences terminal, cymose, with 4 petaloid bracts. Flowers small, bisexual. Calyx tubular, apex 4-toothed. Petals 4, distinct, rarely connate at base. Stamens 4, filaments slender, anthers 2-celled. Disk annular. Ovary inferior, 2-locular, ovule 1 per locule; style stout; stigma truncate or capitate. Fruit fused into a fleshy syncarpous compound, multiple stoned berry, globose or subglobose; stones asymmetric, seed 1.

Ten species distributed from Himalayas to E Asia; all occurs in China; one species in Hong Kong.

The genus was included in *Cornus* (*sensu lato*) in FOC 14: 206 (2005).

#### 1. *Dendrobenthamia hongkongensis* (Hemsl.) Hutch.

香港四照花 (Fig. 134; Photo 263)

*Ann. Bot. (Oxford)*, n.s., 6(21): 93. 1942; *FRPS* 56: 91, pl. 35: 1–7. 1990

*Benthamia japonica* auct. non Siebold & Zucc., *FHK* 138. 1861.

*Cornus hongkongensis* Hemsl., *J. Linn. Soc., Bot.* 23: 345. 1888; *FKH* 120. 1912; *FOC* 14: 217. 2005.

Evergreen tree or shrub, 5–15 m tall. Young branches sparsely appressed pubescent. Petioles 0.8–1.2 cm; leaf blade elliptic to oblong-elliptic, rarely obovate-oblong, 6–13 × 2.5–6 cm, leathery, base broadly cuneate to rounded, apex shortly acuminate, sparsely pubescent with white or brown and white trichomes when young; lateral veins 3 or 4( or 5) on each side of midvein. Capitulate cymes globose, ca. 1 cm in diam., 50–70-flowered; bracts white, broadly elliptic to broadly elliptic-obovate, 2.8–4.1 × 1.7–3.5 cm, both surfaces subglabrous; peduncle 3.5–10 cm, pubescent with brown appressed trichomes. Calyx tubular, 0.7–1.3 mm, shallowly 4-lobed, finely hairy abaxially. Petals light yellow, oblong-elliptic, 2.2–2.4 × 1–1.2 mm. Filaments ca. 2 mm, slightly pubescent; anthers dark brown, ellipsoidal. Style ca. 1 mm, minutely fine appressed hairy. Compound fruit globose, ca. 2.5 cm in diam., fine white hairy.

Locality: Mount Parker, Victoria Peak, Ng Tung Chai, Shing Mun, Tai Mo Shan, Lantau Peak. *Y. S. Lau* 634, 2766; *F. W. Xing* 8294.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Zhejiang, Fujian; Laos, Vietnam.

Ecology: Forests. Flowering: May–Jun.; fruiting: Nov.–Dec.

Uses: Timber, edible (fruit).

Notes: The type specimen (*Champion s.n.*, K) was collected from Happy Valley by J. G. Champion between 1847 and 1850.

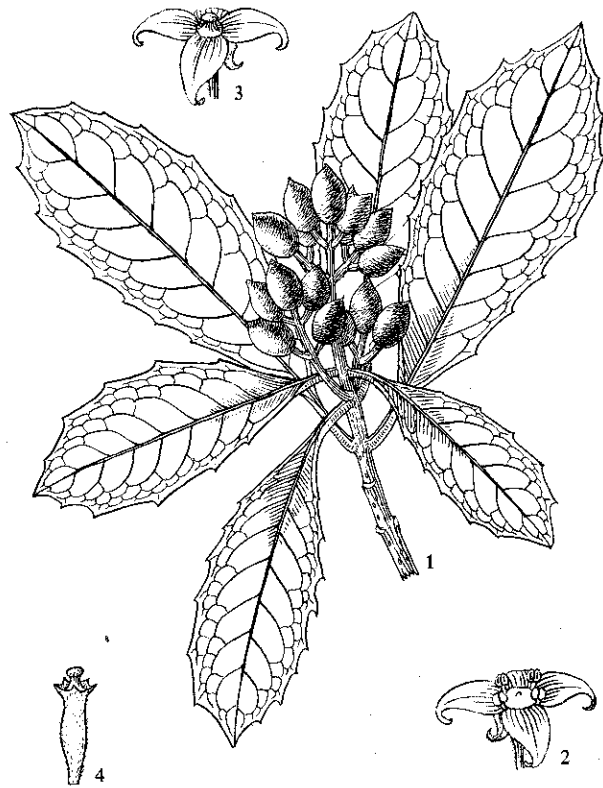


Figure 133. *Aucuba chinensis* Benth.

1. fruiting branch; 2. male flower; 3. female flower; 4. calyx and pistil. (drawn by H. P. Yu)

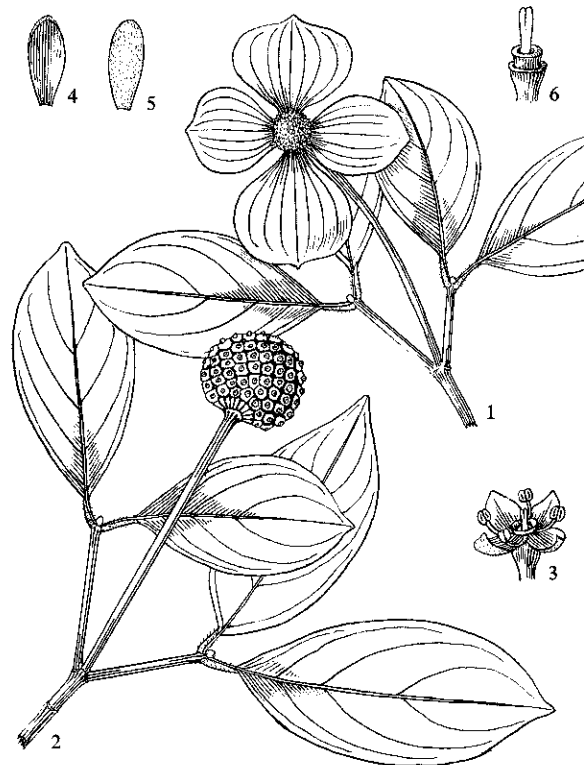


Figure 134. *Dendrobenthamia hongkongensis* (Hemsl.) Hutch.

1. flowering branch; 2. fruiting branch; 3. flower; 4. petal (ventral view); 5. petal (dorsal view); 6. disk and style. (drawn by H. P. Yu)

## 211. OLACACEAE 鐵青樹科

XIA Nian-he 夏念和

Shrubs, scandent shrubs, trees, or vines, sometimes hemiparasitic, often glabrous. Lateral shoots sometimes with bud scales at base. Leaves simple, alternate, rarely opposite, often entire, pinnately- or palmately-veined, rarely 3–5-veined, petiolate, exstipulate. Inflorescences axillary, rarely terminal, cymose, fasciculate, racemose, spicate, or umbellate; bracts small and inconspicuous. Flowers usually bisexual, actinomorphic, 3–7-merous, sometimes heterostylous. Calyx small at anthesis, cupular, discoid, or lobed, sometimes accrescent to partly or wholly covering fruit, sometimes fused to fruit. Petals free or connate at base, valvate. Disk cupular or annular, sometimes accrescent and covering fruit apex. Stamens 3–15; anthers usually 2-celled, opening by longitudinal slits. Ovary usually superior, sometimes inferior, rarely semisuperior, 2–5-locular or 2–5-semilocular; ovules 1 per locule, usually anatropous. Style simple; stigma 2–5-lobed. Fruit a drupe, sometimes with an accrescent calyx. Seed 1; testa thin; endosperm abundant; embryo small; cotyledons 2–4.

About 29 genera and 200 species distributed in tropical and warm-temperate regions of the world; five genera and ten species in China; one genus and one species in Hong Kong.

1. *Schoepfia* Schreb. 青皮木屬

Trees or shrubs. Branchlets unarmed, often caducous. Leaf blade pinnately-veined. Inflorescences racemose or spicate; peduncle sometimes with persistent bud scales at base; rachis slightly zigzagged. Flowers sometimes ± opposite, fragrant, often heterostylous. Bracts and bracteoles persistent. Calyx adherent to ovary, truncate or 4–5(–6)-denticulate, accrescent. Corolla tubular, campanulate, or urceolate; lobes 4–6, with a tuft of hairs behind each filament. Stamens 4–5(–6), epipetalous, opposite to petal-lobes; filaments short; anther 2-celled. Disk annular, fleshy. Ovary semisuperior, basally 3-loculed, apically 1-loculed; placenta central, free; ovules 3; style slender, shorter than or as long as corolla tube; stigma 3-lobed. Drupe united with calyx and apparently inferior, tipped with disk and calyx teeth, often ± longitudinally striate when dried, 1-seeded; endosperm copious.

About 30 species distributed in tropical and subtropical America and Asia; four species in China; one species in Hong Kong.

1. *Schoepfia chinensis* Gardner & Champ.

華南青皮木(青皮樹)

(Fig. 135; Photo 264)

Hooker's J. Bot. Kew Gard. Misc. 1: 308. 1849; FHK 52. 1861; FKH 58. 1912; FHN 2: 456, fig. 520. 1965; FRPS 24: 43, pl. 10: 3–7. 1988; FOC 5: 203. 2003.

*Schoepfiopsis chinensis* (Gardner & Champ.) Miers, J. Linn. Soc., Bot. 17(98): 77. 1878.

Shrub or tree, 1–6 m tall, glabrous. Older stems greyish brown, slightly striate; branchlets often deciduous, bark purplish brown, white lenticellate, with rounded deciduous bud scales at base. Petioles 3–6 mm; leaf blade papery to ± leathery, oblong-lanceolate to elliptic, 5–10 × 1.5–4 cm, base cuneate and unequal, apex acuminate; lateral veins 3–5 on each side of midvein. Inflorescences 0.5–1.5 cm, 2–4-flowered. Pedicel absent; bracteole 1, at base of flowers. Calyx obcampanulate. Corolla pink, urceolate; tube 0.6–1 cm, throat narrower; lobes ovate, 2–4 mm. Stamens (4–)5; filaments coherent to corolla tube; anthers free, slightly exserted from corolla throat. Disk pulvinate. Style 5–9 mm. Drupe ellipsoidal, 1–1.5 × 0.5–0.6 cm, red to purple, blackish when mature.

Locality: Victoria Peak, Tai Mo Shan, Sunset Peak, Pok To Yan. *Y. W. Lam* 24, 1384; *HK sheet* 40031.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian, Taiwan.

Ecology: Ravines, along streams. Flowering: Feb.–Mar.; fruiting: Apr.–Jul.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1849. The species was also reported as *Schoepfia jasminodora* Gardner & Champ. previously (Check List HK Plants 50. 1993).

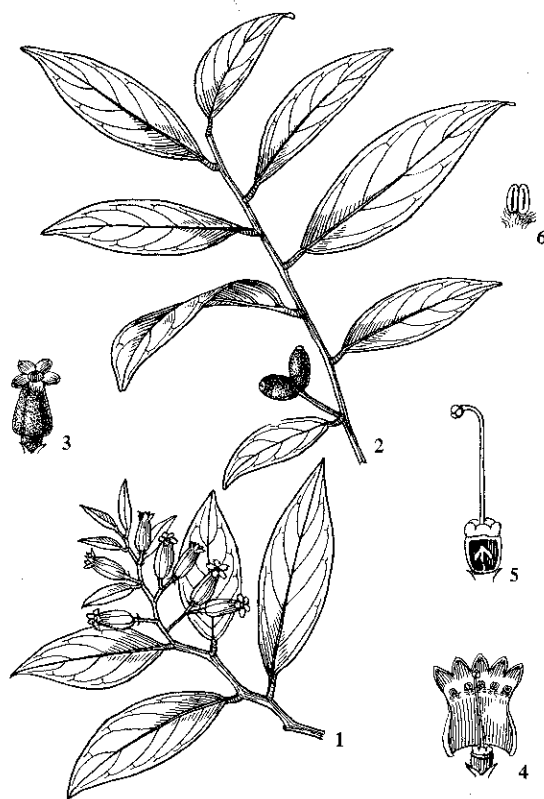


Figure 135. *Schoepfia chinensis* Gardner & Champ.

1. flowering branch; 2. fruiting branch; 3. flower; 4. corolla opened; 5. vertical section of ovary; 6. stamen. (drawn by H. P. Yu)

## 212. OPILIACEAE 山柑子科

XIA Nian-he 夏念和

Evergreen root-parasitic trees, shrubs or woody vines. Leaves alternate, simple, margin entire, pinnately-veined, exstipulate. Inflorescences axillary or cauliflorous, spicate, racemose, or paniculate or umbellate. Flowers small, actinomorphic, (4–)5-merous, bisexual or unisexual (plants dioecious). Perianth with distinct calyx and corolla, or sepaline; tepals 4–5 (female flowers), or 8, or 10, 1 whorled (female flowers), or 2 whorled, free or partly united, valvate. Stamens as many as and opposite to tepals, free or filaments inserted on tepals; anthers 2-celled, introrse, dehiscing longitudinally. Disk intrastaminal, lobed, annular, or cupular. Ovary superior or semi-inferior, 1-locular; ovule 1, pendulous; style short or absent; stigma entire or shallowly lobed. Fruit a drupe. Seed coat thin; endosperm oily; embryo terete, small, with 3 or 4 linear cotyledons.

Ten genera and 33 species widely distributed in tropical and subtropical regions of the world; five genera and five species in China; one genus and one species in Hong Kong.

1. *Cansjera* Juss. 山柑藤屬

Erect or scandent shrubs, sometimes armed. Leaves alternate, shortly petiolate. Inflorescence spicate, axillary; bracts small, persistent. Flowers bisexual, monochlamydeous. Perianth urceolate or campanulate, 4(–5)-lobed, pilose; lobes valvate. Stamens 4–5, opposite to perianth-lobes; filaments filiform, free or connate to disk scales at base; anthers ellipsoidal, dehiscing longitudinally. Disk scales alternate with stamens. Ovary superior, ovoid or cylindrical, 1-locular. Style short, hardly exceeding the perianth tube. Drupe ellipsoidal; mesocarp fleshy; endocarp thin. Seed 1; embryo small, with 3 or 4 cotyledons.

Three species distributed in S and SE Asia, Australia, Pacific Islands; one species in China, also in Hong Kong.

1. *Cansjera rheedii* J. F. Gmel.

山柑藤(山柑)

(Fig. 136; Photo 265)

Syst. Nat. 2: 280. 1791; FHN 2: 458, fig. 522. 1965; FGD 4: 249, fig. 149. 2000; FRPS 24: 47, pl. 12: 1–5. 1988; FOC 5: 205. 2003.

Scandent shrub, 2–6 m. Branchlets sometimes armed; branchlets and inflorescences yellowish tomentose. Petioles 2–4 mm, tomentulose; leaf blade thinly leathery, ovate to elliptic, 4–13 × 2.5–6 cm, base broadly cuneate to rounded, sometimes asymmetrical, apex acuminate, margin entire, glabrescent; lateral veins 4–6 on each side of midvein. Inflorescences fasciculate, 1–3 cm; bracts triangular, ca. 1 mm. Perianth urceolate, yellow, ca. 3 mm in diam., tomentulose abaxially; lobes 4, ovate-triangular, ca. 0.5 mm, recurved. Filaments ca. 2 mm; anthers broadly ovoid. Disk scales 4, ovate, apex acute. Ovary cylindrical; style ca. 1 mm, persistent; stigma capitate, 4-lobed. Drupe ellipsoidal, 1.2–1.5 × 0.7–1 cm, orange-red when mature, glabrous, apex mucronate.

Locality: Aberdeen, Deep Water Bay, New Territories, Lantau Island. *Y. S. Lau* 2453, 3062; *HK sheet* 38774.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; S & SE Asia, Australia, Pacific Islands.

Ecology: Thin forests or thickets. Flowering: Oct.–Dec.; fruiting: Jan.–Apr.



Figure 136. *Cansjera rheedii* J. F. Gmel.

1. flowering branch; 2. fruiting branch; 3. flower and bract; 4. perianth opened up showing stamens and glands; 5. gynoecium. (drawn by H. P. Yu)

## 213. SANTALACEAE 檀香科

XIA Nian-he 夏念和

Herbs or shrubs, rarely trees, often parasitic or hemiparasitic. Leaves simple, usually alternate or opposite, sometimes scale-like, rarely absent, entire, usually pinnately-veined, sometimes palmately 3–9-veined, exstipulate. Inflorescences mostly axillary, occasionally terminal, cymose, umbellate, paniculate, racemose, spicate, or clustered, sometimes flowers solitary; bracts scale-like, small, sometimes forming involucre, ± adnate to pedicel; bracteoles sometimes present, paired. Flowers bisexual or unisexual (plants usually dioecious, rarely monoecious), actinomorphic, 3–6(–8)-merous, very small; perianth lobes 3–6(–8), slightly fleshy. Male flowers: perianth lobes valvate or slightly imbricate, sparsely hairy or with tongue-shaped appendage at the insertion of the stamens. Disk epigynous or perigynous,

sometimes absent, margin sinuate or lobed, sometimes distinct, glandular or scaly. Stamens as many as and opposite to perianth lobes; anthers 2-celled, parallel or divaricate, usually dehiscing longitudinally. Female and bisexual flowers: perianth tube usually longer than that of male flower. Ovary inferior or half-inferior, 1- or 5–12-locular; ovules 1–3(–5); style 1; stigma capitate, small, truncate or lobed. Fruit a drupe or a nut, exocarp usually fleshy, endocarp crustaceous or bony. Seed 1, without a differentiated testa; endosperm copious, usually white and partitioned, fleshy; embryo straight, small, smooth, rugose, or many ridged.

About 36 genera and 500 species widely distributed in tropical and temperate regions of the world; seven genera and 33 species in China; one genus and one species in Hong Kong.

### 1. *Dendrotrophe* Miq. 寄生藤屬

Evergreen hemiparasitic woody vines, often on branches of other trees. Stems terete, ridged when young. Leaves alternate, petiolate or sessile, leathery, palmately 3–9(–11)-veined. Flowers bisexual or unisexual (plants monoecious or dioecious), axillary, solitary, fasciculate, or in cymose or umbellate inflorescences; bracteoles 3–8 subtending each flower. Perianth lobes 5 or 6, triangular, interior with a tuft of hairs or tongue-shaped appendage behind each stamen. Male flowers: stamens as many as and opposite to perianth lobes; filaments short; anthers introrse, cells divaricate, dehiscing obliquely. Disk superior. Female flowers: solitary or in fascicles, usually sessile, perianth tube adnate to ovary, lobes as in males, staminodes present or absent. Ovary inferior; ovules 3; style almost absent; stigmas lobed or capitate. Fruit a drupe, with persistent perianth lobes at apex; endocarp bony, papillate and ridged. Seeds longitudinally furrowed, 8–10 aristate rays on transverse section; embryo straight, short; cotyledons minute.

About ten species distributed from Himalayas and SE Asia to S Australia; six species in China; one species in Hong Kong.

#### 1. *Dendrotrophe varians* (Blume) Miq. 寄生藤

Fl. Ned. Ind. 1(1): 280. 1856; FOC 5: 217. 2003.

*Henslowia varians* Blume, Mus. Bot. 1: 244. 1851.

*Dendrotrophe frutescens* (Champ. ex Benth.) Danser, Nova Guinea, Bot. 4: 148. 1940; FRPS 24: 73, pl. 18: 1–4. 1988; FGD 3: 259, fig. 175. 1995.

*Henslowia frutescens* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 5: 194. 1853; FHK 299. 1861; FKH 230. 1912; FHN 2: 467, fig. 524. 1965.

Woody vine, usually shrubby, 1–8 m tall. Stems darkish black, yellowish green when young, 3-ribbed, twisted. Petioles flat, 5–10 mm; leaf blade ± leathery, obovate to broadly elliptic, 3–7 × (1.4–)2–4.5 cm, base narrowed and decurrent, rarely rounded, apex obtuse, glabrous on both surfaces; basal veins 3–5, prominent when dry. Male inflorescences umbellate or cymose, 5–6-flowered; peduncle to 20 mm. Flowers usually unisexual (plants usually dioecious). Male flowers globose, ca. 2 mm; pedicels ca. 1.5 mm; bracteoles triangular-ovate, ca. 1 mm; perianth lobes triangular, ca. 1.5 mm; filaments ca. 0.5 mm, with a tuft of hairs behind it; anther-cells rounded. Female flowers solitary; bracteoles 3–5; perianth short terete, 2–3 mm, lobes 5, ovate-triangular, ca. 1 × 1 mm; staminodes present. Style short, stigma not lobed, needle-like. Bisexual flowers ovoid. Drupe ovoid, 10–13 mm, reddish, brownish yellow to reddish brown when mature, inconspicuously 5-ribbed; persistent perianth lobes incurved.

Locality: Aberdeen, Findlay Rd., Mount Collinson Rd., Pok Fu Lam Reservoir, Stanley, Tai Mo Shan, Sha Tau Kok, Lantau Island. *H. C. Tang 2316; K. L. Yip 4226; HK sheet 40034.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam.

Ecology: Thickets. Flowering: Dec.–Feb. of the following year, fruiting: Mar.–May.

Uses: Medicinal (folklore).

Notes: The species was reported as *Dendrotrophe frutescens* (Benth.) Danser previously (Check List HK Plants 169. 2002; 62. 2004).

(Fig. 137; Photo 266)



Figure 137. *Dendrotrophe varians* (Blume) Miq.

1. fruiting branch; 2. male flower; 3. stamen; 4. young fruit; 5. fruit. (drawn by H. P. Yu)



## 215. LORANTHACEAE 桑寄生科

XIA Nian-he 夏念和

Evergreen hemiparasitic shrubs. Leaves simple, opposite or alternate, usually pinnately-veined, margin entire, stipules absent. Inflorescences terminal or axillary, racemose, spicate, or umbellate; bracts usually inconspicuous. Flowers usually bisexual, rarely unisexual (plants dioecious), 4–6-merous, actinomorphic or zygomorphic, often conspicuous. Calyx adnate to the ovary, entire or shortly toothed, persistent. Petals free or connate, valvate. Disk usually inconspicuous to ± obsolete. Stamens as many as and opposite to petals; filaments slender or absent; anthers 2–4-celled, longitudinally dehiscent. Ovary inferior, 1- or 3–4-locular, without true ovules, embryo sacs originating from a central column or at the ovary base, integument absent. Style simple; stigma small. Fruit a berry, rarely a drupe or capsule, with a viscin layer (sticky mucilaginous tissue) outside the vascular bundles. Seed 1; testa absent; endosperm copious; embryo large.

About 65 genera and 950 species mainly in tropical and subtropical regions of the world; eight genera and 51 species in China; five genera and five species in Hong Kong.

- 1a. Each flower subtended by 1 bract and 2 bracteoles; ovary incompletely 3-locular ..... 1. *Macrosolen*  
 1b. Each flower subtended by 1 bract; ovary 1-locular.  
 2a. Petals free ..... 2. *Helixanthera*  
 2b. Corolla tubular, sympetalous; lobes reflexed.  
 3a. Flowers 5-merous; corolla actinomorphic ..... 3. *Dendrophthoe*  
 3b. Flowers 4-merous; corolla zygomorphic.  
 4a. Calyx pyriform or turbinate, base attenuate; fruit base narrow or long attenuate ..... 4. *Scurrula*  
 4b. Calyx ellipsoidal or ovoid, rarely subglobose, base not attenuate; fruit base rounded ..... 5. *Taxillus*

1. *Macrosolen* (Blume) Reichb. 鞘花屬

Shrubs, all parts glabrous. Leaves opposite. Inflorescences axillary, racemose or spicate, rarely umbellate; each flower with 1 bract and 2 bracteoles at base; bract small, shorter than the calyx; bracteoles often connate, rarely free. Flowers bisexual, 6-merous, actinomorphic or sometimes zygomorphic. Calyx ovoid to ellipsoidal, limb annular or cupular, persistent. Corolla sympetalous, tube dilated at lower part, usually 6-keeled in middle portion, then constricted abruptly to a neck and expanded to a clavate tip; lobes 6, reflexed. Filaments short; anthers 4-celled, sometimes multilocellate. Ovary at first 3-loculed, then 1-loculed; placentation free, central. Style filiform, base usually articulated. Stigma capitate. Berry ovoid or ellipsoidal.

About 40 species distributed in tropical S and SE Asia; five species in China; one species in Hong Kong.

1. *Macrosolen cochinchinensis* (Lour.) Tiegh.

鞘花 (苞花寄生) (Fig. 138; Photo 267)

Bull. Soc. Bot. France. 41: 122. 1894; FYN 3: 350, pl. 101: 1–2. 1983; FGD 1: 216, fig. 247. 1987; FRPS 24: 89. 1988; FOC 5: 221. 2003.

*Elytranthe cochinchinensis* (Lour.) G. Don, Gen. Hist. 3: 426. 1834; Merr., Lingnan Sci. J. 5: 69. 1927; FHN 2: 463. 1965.

*Loranthus ampullaceus* Roxb., Fl. Brit. Ind. 5: 220. 1824; FKH 229. 1912.

*Loranthus fordii* Hance, J. Bot. 23: 38. 1885; FKH 229. 1912.

*Loranthus cochinchinensis* Lour., Fl. Cochinch. 195. 1790.

Shrub 0.5–1.3 m tall. Branches greyish white, scattered lenticellate. Petiole 0.5–1 cm; leaf blade leathery, broadly elliptic to lanceolate, 4–12 × 2–7 cm, base cuneate to rounded, apex acuminate, lateral veins 4–5 pairs, reticulate veinlets obscure on both surfaces. Inflorescences racemose, solitary or 2–3-fasciculate, axillary, (2–)4–8-flowered; peduncle ca. 2 cm; bracts suborbicular, 1–2 mm; bracteoles triangular, connate at base, 1–1.5 mm, slightly shorter than bracts. Pedicels 4–6 mm. Calyx ellipsoidal, 2–2.5 mm, limb annular, ca. 0.5 mm. Corolla orange, straight, 1.2–1.5 cm, inflated at lower part, 6-angled, lobes lanceolate, ca. 6–7 mm, reflexed. Filaments ca. 2 mm; anthers ca. 1 mm. Fruit yellowish red, subglobose, ca. 8 mm.

Locality: Tai Po Kau, Ting Kok Rd., Sha Tau Kok. *W. J. Tutcher* 9241; *Y. S. Lau* 2484; *Y. W. Lam* 28.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan,

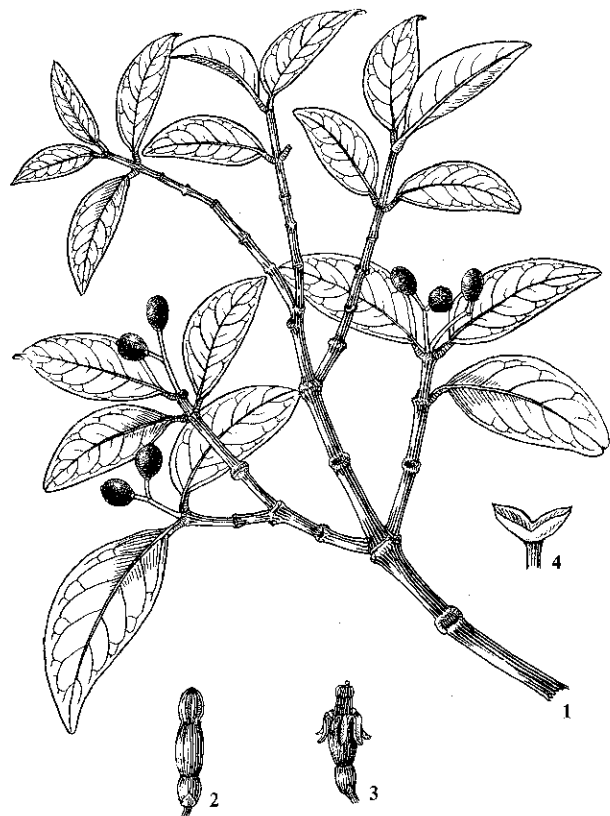


Figure 138. *Macrosolen cochinchinensis* (Lour.) Van Tiegh.  
 1. fruiting branch; 2. flower bud; 3. flower;  
 4. bracteole. (drawn by H. P. Yu)

Xizang, Sichuan, Hunan, Fujian; Bhutan, Cambodia, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Thailand, Vietnam.

Ecology: Often growing on trees of *Schima superba* and *Cunninghamia lanceolata*. Flowering: Feb.–Jun.; fruiting: May–Aug.  
Uses: Medicinal (folklore).

## 2. *Helixanthera* Lour. 離瓣寄生屬

Shrubs. Leaves opposite or alternate, pinnately-veined. Inflorescences axillary, rarely terminal, racemose or spicate. Flowers bisexual, 4–6-merous, actinomorphic, each flower subtended by 1 bract. Calyx ovoid or urceolate, limb 4–6-denticulate, persistent. Mature flower bud straight, lower portion usually slightly inflated and angled, upper portion subclavate. Petals free, straight, spreading. Stamens usually inserted at petals. Filaments short; anthers 2–4-celled, sometimes multilocellate, ellipsoidal. Ovary 1-loculed. Style subcylindrical; stigma capitate or truncate. Fruit a berry, ovoid or ellipsoidal, exocarp leathery, smooth or pubescent.

About 50 species distributed tropical and subtropical Africa and Asia; seven species in China; one species in Hong Kong.

### 1. *Helixanthera parasitica* Lour.

離瓣寄生(五瓣寄生) (Fig. 139; Photo 268)

Fl. Cochinch. 1: 142. 1790; FYN 3: 355, pl. 103: 1–2. 1983; FGD 1: 218. 1987; FRPS 24: 96. 1988; FOC 5: 225. 2003.

*Loranthus pentapetalus* Roxb., Fl. Ind. 2: 211. 1824; FKH 229. 1912; FHN 2: 462. 1965.

Shrub to 1.5 m tall. Branches and leaves glabrous. Leaves opposite; petiole 0.5–1.5 cm; leaf blade papery, ovate to ovate-lanceolate, 5–12 × 3–4.5 cm, base broadly cuneate to rounded, apex acute to acuminate, lateral veins conspicuous on both surfaces. Racemes solitary or paired, axillary, 40–60-flowered, 5–10(–30) cm; bracts subovate or ovate-triangular, 1–1.5 mm. Flowers 5-merous. Pedicel 1–2 mm. Calyx ellipsoidal, 1.5–2 mm, limb annular, ca. 0.5 mm, entire or 5-denticulate. Corolla red, pink, or yellowish; petals (4–)6–8 mm, reflexed from above basal keels, dark brown or greyish white papillose, basal 1/3–1/2 abruptly expanded into 5 prominent semicircular keels at buds. Filaments 1–2.5 mm; anthers 4-celled, 1–1.5 mm. Style cylindrical, 5-angled, constricted in middle, 3–6 mm; stigma capitate. Fruit red, ellipsoidal, ca. 6 × 4 mm, papillose.

Locality: Fanling, Pat Sin Leng, Wu Kau Tang, Nam Chung. P. S. Choi 385; Y. W. Lam 29; HK sheet 39457.

Distribution: Fujian, Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang; SE Asia.

Ecology: Forests, on trees of *Fagaceae*, *Cinnamomum camphora* and *Schima superba*. Flowering: Jan.–Jul.; fruiting: May–Aug.

Uses: Medicinal (folklore).



Figure 139. *Helixanthera parasitica* Lour.

1. flowering branch; 2. flower bud; 3. flower; 4. flower with petals removed; 5. petal and stamen; 6. bract; 7. fruit. (drawn by H. P. Yu)

## 3. *Dendrophthoe* Mart. 五蕊寄生屬

Parasitic shrubs. Leaves alternate or subopposite on spurs, pinnately-veined. Inflorescences racemose or spicate. Flowers bisexual, 5-merous, actinomorphic or slightly zygomorphic, each flower subtended by a bract. Calyx ovoid or urceolate, limb annular or cupular, persistent. Mature flower bud tubular. Corolla sympetalous, tube inflated, tip clavate, lobes reflexed or twisted with age. Stamens inserted at base of corolla lobes; filaments short, flattened; anthers 4-celled. Ovary 1-locular; placentation basal. Style filiform, 5-angled; stigma capitate. Fruit a berry, exocarp leathery.

About 30 species distributed in Asia, Australia and tropical Africa; one species in China; also in Hong Kong.

### 1. *Dendrophthoe pentandra* (L.) Miq. 五蕊寄生

(Photo 269)

Fl. Ned. Ind. 1: 818. 1856; FGD 1: 219. 1978; FRPS 24: 108. 1988; FOC 5: 227. 2003.

*Loranthus pentandrus* L., Syst. Nat., ed. 12, 2: 252. 1767.

Shrub to 2 m tall; branchlets covered with grey stellate hairs when young, later glabrescent. Leaves alternate or subopposite, glabrous; petioles 5–10 mm; leaf blade leathery, varying from lanceolate to suborbicular, usually oblong or elliptic, 5–13 × 2.5–8.5 cm, base obtuse or attenuate, apex acute to rounded, lateral veins 2–3 on each side of midvein. Racemes 1–several in axils of leaves, 3–7(–10)-flowered, densely greyish stellate-tomentose; pedicels ca. 2 mm; bracts broadly triangular, ca. 1 mm. Calyx 2–2.5 mm, limb 0.5–1.5 mm, 5-denticulate. Mature bud 1.5–2 cm. Corolla orange, basal half slightly inflated, lobes lanceolate, ca. 12 mm, reflexed.

Filaments 3–4 mm; anthers 3–5 mm. Berry ovoid, ca. 6 mm in diam., red when mature.

Locality: Loi Tung, Plover Clove, Tai Po Kau. *Y. W. Lam 2043; HK sheet 38942, 40254.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; SE Asia.

Ecology: Often living on trees of *Canarium tramdenum*, *Vernicia montana* and *Mangifera indica*. Flowering & fruiting: Oct.–Apr.

Uses: Medicinal (folklore).

#### 4. *Scurrula* L. 梨果寄生屬

Parasitic shrubs; young branches and leaves hairy. Leaves opposite or subopposite, pinnately-veined. Inflorescences axillary or borne on leafless nodes, racemose or sometimes umbellate. Flowers bisexual, 4-merous, zygomorphic, each flower subtended by 1 scale-like bract. Calyx pyriform or turbinate, base attenuate, limb annular, persistent. Mature flower bud tubular. Corolla sympetalous, curved, basal portion  $\pm$  inflated, split along 1 side at anthesis, tip ellipsoidal or ovoid, lobes all reflexed toward the side away from the split. Stamens inserted at base of corolla lobes; filaments short; anthers 4-celled, sometimes with septum. Ovary 1-locular; placentation basal. Style filiform, 4-angled; stigma only slightly enlarged and capitate. Fruit a berry, turbinate, clavate, or pyriform, 1-seeded, base narrow or often attenuate into a stipe, exocarp leathery, pubescent or glabrous.

About 50 species distributed in S and SE Asia; ten species (two endemic) in China; one species in Hong Kong.

**1. *Scurrula parasitica* L. 紅花寄生 (Fig. 140; Photo 270)**  
Sp. Pl. 1: 110. 1753; FYN 3: 362. 1983; FGD 1: 220. 1987, *p.p.*;  
FRPS 24: 114. 1988; FOC 5: 229. 2003.

*Loranthus chinensis* auct. non DC: Benth., FHK 141. 1861;  
FKH 229. 1912.

*Loranthus gracilifolius* auct. non Schult.: FHN 2: 459, fig. 523.  
1965.

*Loranthus parasiticus* (L.) Merr., Philipp. J. Sci. 15(3): 232.  
1919.

*Taxillus parasiticus* (L.) S. T. Chiu, Taiwania 41(2): 159.  
1996.

Shrub 0.5–1 m tall; branchlets and leaves densely covered with stellate hairs when young, later glabrescent, greyish brown, lenticellate. Petiole 5–6 mm; leaf blade papery, ovate, 5–8  $\times$  2–4 cm, base broadly cuneate, apex obtuse, lateral veins 5–6 on each side of midvein, conspicuous. Racemes solitary or 2–3-fasciculate, axillary, sometimes borne on leafless nodes, 3–6-flowered, brownish hairy; peduncle 2–3 mm; bracts ovate to triangular, ca. 1 mm. Calyx turbinate, 2–2.5 mm, limb annular. Mature bud tubular, tip ellipsoidal, apex acute. Corolla red, slightly curved, 2–2.5 cm, apical portion inflated, lobes lanceolate, 3–8 mm, reflexed. Filaments 2–3 mm; anthers 1.5–2 mm. Stigma subcapitate. Fruit reddish yellow, pyriform, 10  $\times$  3 mm, base tapering into a stipe, smooth.

Locality: Deep Water Bay, King's Park, Tai Po Kau, Ng Tung Chai, Wu Kau Tang, A Ma Wat. *Y. S. Lau 2025, 3245; P. S. Choi 324.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Fujian, Taiwan; SE Asia.

Ecology: Often growing on trees of *Citrus maxima*, *Clausena lansium* and *Camellia oleifera*. Flowering & fruiting: Oct.–Apr.

Uses: Medicinal (folklore).

#### 5. *Taxillus* Tiegh. 鈍果寄生屬

Parasitic shrubs; young branchlets and leaves usually tomentose. Leaves opposite or alternate, pinnately-veined. Inflorescences axillary, umbellate or rarely racemose, 2–5-flowered; each flower usually subtended by one scale-like bract. Flowers bisexual, 4–5-merous, zygomorphic. Calyx ellipsoidal or ovoid, rarely subglobose, base rounded, limb annular, entire or denticulate, persistent. Mature flower bud tubular, tip ellipsoidal or ovoid. Corolla sympetalous, slightly curved, basal portion  $\pm$  inflated, split along one side at anthesis, lobes all reflexed toward the side away from the split. Stamens inserted at base of corolla lobes; filaments short; anthers 4-celled, sometimes with septum. Ovary 1-locular; placentation basal. Style filiform, 4–5-angled; stigma usually capitate. Fruit a berry, ellipsoidal or ovoid, rarely globose, exocarp leathery, verrucose or granular, rarely smooth, pubescent or glabrous, base rounded. Seed 1.

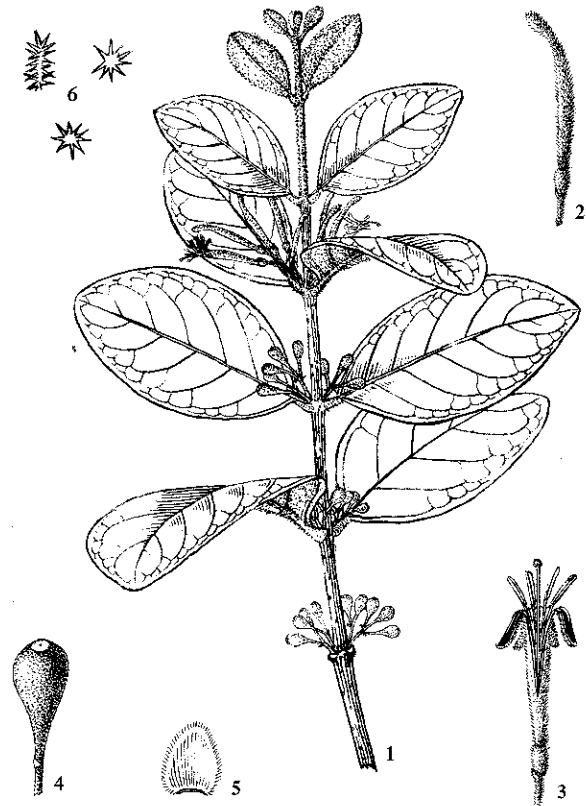


Figure 140. *Scurrula parasitica* L.

1. flowering branch; 2. flower bud; 3. flower; 4. fruit; 5. bract;  
6. indumentum on young leaf. (drawn by H. P. Yu)

About 25 species distributed in S and SE Asia; 18 species in China; one species in Hong Kong.

**1. *Taxillus chinensis* (DC.) Danser**

廣寄生

(Fig. 141; Photo 271)

Bull. Jard. Bot. Buitenzorg, sér. 3. 16: 40. 1938; FGD 1: 223, fig. 251. 1987; FRPS 24: 131, pl. 29: 1–6. 1988; FOC 5: 237. 2003.

*Loranthus chinensis* DC., Coll. Mem. 6: 28, pl. 7. 1830.

*Loranthus parasiticus* auct. non Merr.: FGZ 411, fig. 215. 1956; FHN 2: 461. 1965.

Shrub 0.5–1 m tall; young branchlets and leaves rusty stellate-tomentose, later glabrescent, greyish brown, lenticellate. Leaves opposite or subopposite; petiole 8–10 mm; leaf blade papery, ovate, 3–6 × 2.5–4 cm, base cuneate, apex obtuse; lateral veins 3–4 on each side of midvein, slightly conspicuous. Umbels 1–2 together, 1–4-flowered; peduncle 2–4 mm, stellate hairy; bracts triangular, ca. 0.5 mm. Pedicel 6–7 mm. Calyx ellipsoidal or ovoid, ca. 2 mm, limb annular. Corolla tubular, 2.5–2.7 cm, tip enlarged, ovoid, brownish, slightly curved, covered with stellate hairs, basal part inflated, lobes spatulate, ca. 6 mm, reflexed. Filaments ca. 1 mm; anthers ca. 3 mm, multilocellate. Style red; stigma capitate. Fruit yellowish, ellipsoidal or subglobose, 8–10 × 5–6 mm, densely verrucose when young, becoming smooth when mature.

Locality: Common in Hong Kong. *Y. S. Lau 1365; HK sheet 35360, 35361.*

Distribution: Hainan, Guangdong, Guangxi, Fujian; SE Asia.

Ecology: Often growing on trees of *Camellia oleifera*, *Vernicia* spp., *Dimocarpus longan*. Flowering & fruiting: Nearly all year round.

Uses: Medicinal (folklore).

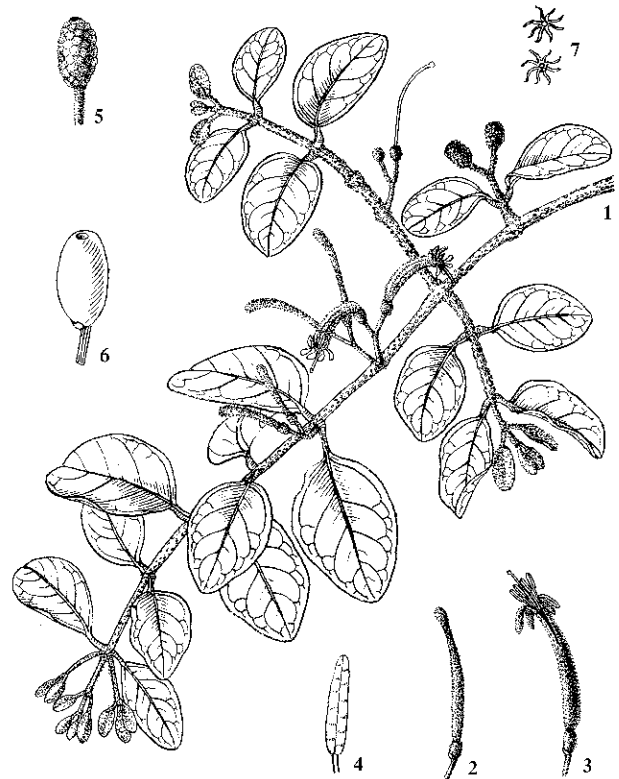


Figure 141. *Taxillus chinensis* (DC.) Danser

1. flowering branch; 2. flower bud; 3. flower; 4. stamen; 5. young fruit; 6. fruit; 7. stellate hairs. (drawn by H. P. Yu)

## 216. VISCACEAE 槲寄生科

XIA Nian-he 夏念利

Hemiparasitic shrubs, rarely herbs; nodes articulated, often enlarged. Leaves opposite, often reduced to scales; stipules absent; petiole often indistinct; leaf blade, when present, simple, mostly palmately 3–5-veined, margin entire. Inflorescences terminal or axillary, spicate or cymose, sometimes a solitary flower; bracts inconspicuous. Flowers unisexual (plants dioecious or monoecious), (2–)3–4-merous, actinomorphic, minute. Perianth lobes free, valvate. Disk absent. Stamens opposite to perianth lobes, adnate or free; anthers 1–many-celled, sometimes connate into synandria, dehiscent longitudinally or by several pores. Ovary inferior, 1-locular, without true ovules. Style simple or absent; stigma small. Fruit a berry. Seed 1; testa absent; endosperm starchy; embryo rather large.

About seven genera and 350 species distributed mainly in tropical and subtropical regions; three genera and 18 species in China; two genera and three species in Hong Kong.

- 1a. Leaves scale-like, in 2 ranks, usually fused into a ring; anthers 2-celled, dehiscent longitudinally, connate into synandria..... 1. *Korthalsella*  
 1b. Leaves well developed or scale-like; anthers many-celled, dehiscent by numerous pores..... 2. *Viscum*

### 1. *Korthalsella* Tiegh. 槲寄生屬

Parasitic shrubs or subshrubs, monoecious. Branches opposite or dichotomous; stem usually flattened, successive internodes in the same plane. Leaves scale-like, in 2 ranks, usually fused into a ring. Inflorescence axillary, cymose, 1-flowered at first, later the flowers in each group developing successively to form a dense cluster; peduncle and pedicel nearly absent; bracts absent, but flowers subtended by hairs. Male flower globose in mature bud; perianth lobes 3; anthers sessile, 2-celled, introrse, connate into a synandrium, dehiscent longitudinally. Female flower ovoid in mature bud; placentation free, central; style absent; stigma nipple-shaped. Fruit a berry, ellipsoidal or pyriform, crowned by persistent perianth.

About 25 species distributed in tropical and temperate regions of the Old World (except Europe); one species in China; it also occurs in Hong Kong.

1. *Korthalsella japonica* (Thunb.) Engl.

槲寄生

(Fig. 142; Photo 272)

Nat. Pflanzenfam. 1: 138. 1897; FYN 3: 372, pl. 109: 5-6. 1983; FGD 1: 225, fig. 253. 1987; FRPS 24: 140. 1988; FOC 5: 240. 2003.

*Bifaria japonica* (Thunb.) Tiegh., Bull. Soc. Bot. France 43: 173. 1896.

*Bifaria opuntia* (Thunb.) Merr., Enum. Philipp. Fl. Pl. 2: 113. 1923, *nom. illeg. superfl.*; FTW 2: 240, pl. 282. 1976.

*Korthalsella opuntia* (Thunb.) Merr., Bot. Mag. (Tokyo) 30: 68. 1916, *nom. illeg. superfl.*; FHN 2: 464. 1965.

*Pseudixus japonicus* (Thunb.) Hayata, Icon. Pl. Formosan. 5: 188. 1915.

*Viscum japonicum* Thunb., Trans. Linn. Soc. London 2: 329. 1794.

*Viscum opuntia* Thunb., Fl. Jap. 64. 1784, *nom. illeg. superfl.*

Subshrub, 5-15 cm tall. Branches flat, usually opposite, green; stem internodes narrowly obovate or obovate-lanceolate, 7-17 x 3-6 mm, longitudinally 1-ribbed when dried. Leaves scale-like, fused into a ring. Inflorescence lateral at nodes. Male flower greenish, subglobose in bud, ca. 0.5 mm; perianth lobes triangular; synandrium compressed spherical; pedicels short. Female flower ellipsoidal in bud, 5-7 mm; perianth lobes broadly triangular, minute; stigma papillate. Berry yellowish, ellipsoidal or pyriform, ca. 2 x 1.5 mm.

Locality: Ma On Shan. *Y. W. Lam* 225, 226; *K. Y. Tam* 106.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, S Gansu, Shaanxi, Hubei, Zhejiang, Fujian, Taiwan; SE Asia, Australia, E Africa and Madagascar.

Ecology: Often growing on trees of *Fagaceae* and *Theaceae*. Flowering & fruiting: Almost all year round.

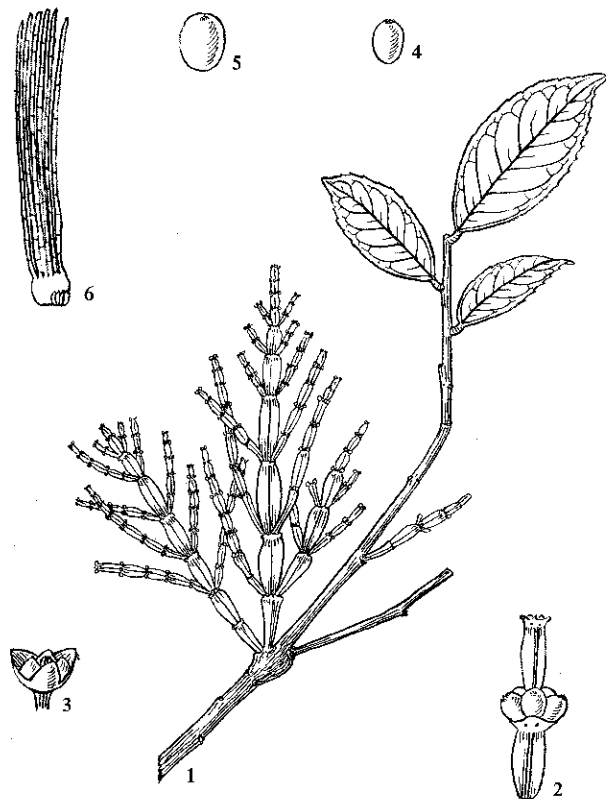


Figure 142. *Korthalsella japonica* (Thunb.) Engl.

1. plant on host; 2. portion of fruiting branch; 3. male flower; 4. female flower; 5. fruit; 6. articulate hair (enlarged). (drawn by H. P. Yu)

2. *Viscum* L. 槲寄生屬

Parasitic shrubs or subshrubs, monoecious or dioecious. Stems and branches opposite, dichotomous, or verticillate; internodes terete or flattened, successive internodes at right angles to each other. Leaves well developed or scale-like. Inflorescences axillary or terminal, cymose, 1-7-flowered; peduncle short to nearly absent; involucre navicular, composed of 2 bracts. Pedicel absent; bracts 0-2. Male flower ovoid or ellipsoidal in mature bud; perianth lobes usually 4; filaments absent; anthers adnate to perianth lobes, rarely connate into synandrium, ovoid or ellipsoidal, multicelled, dehiscing by numerous pores. Female flower ovoid to ellipsoidal in mature bud; perianth lobes (3-4), usually deciduous; placentation basal. Style short or absent; stigma nipple-shaped or cushion-shaped. Berry subglobose, ovoid, or ellipsoidal, often with persistent style; exocarp smooth or verrucose. Seed 1, endosperm fleshy, embryos 1-3.

About 70 species distributed in temperate and tropical regions of the Old World; 12 species in China; two species in Hong Kong.

- 1a. Leaves scale-like ..... 1. *V. articulatum*
- 1b. Leaves well developed, 3-veined ..... 2. *V. ovalifolium*

1. *Viscum articulatum* Burm. f.

扁枝槲寄生

(Fig. 143; Photo 273)

Fl. Indica. 311. 1768; FHK 141. 1861; FHN 2: 465. 1965; FYN 3: 377, pl. 109: 3-4. 1983; FGD 1: 227. 1987; FRPS 24: 155. 1988; FOC 5: 245. 2003.

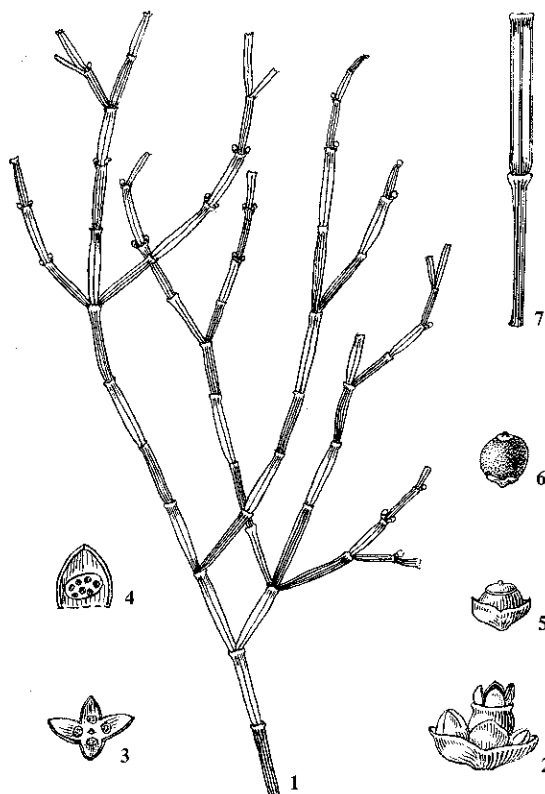


Figure 143. *Viscum articulatum* Burm. f.

1. fruiting branch; 2. inflorescence; 3. male flower; 4. tepal showing the inserting position of stamens; 5. young fruit; 6. fruit; 7. portion of branchlet. (drawn by H. P. Yu)

*Viscum japonicum* auct. non Thunb.: FKH 229. 1912.

Subshrub, monoecious, spreading or pendulous, green, to 0.5 m tall. Branches opposite and decussate or dichotomous; internodes flattened, 1.5–2.5 × 0.2–0.35 cm, longitudinally 3-ridged. Leaves scale-like. Inflorescences axillary, cymes 1–3 together; peduncle nearly absent; 3-flowered, central flower female, lateral ones male; involucre ca. 1.5 mm. Male flowers globose in bud, 0.5–1 mm; perianth-lobes 4. Female flower ellipsoidal in bud, 1–1.5 mm; perianth-lobes 4, triangular, ca. 0.5 mm. Stigma cushion-shaped. Berry globose, whitish or greenish white, 3–4 mm in diam., smooth.

Locality: King's Park, Tai Mo Shan, Tai Po Kau, Wu Kau Tang. *Y. S. Lau* 2838, 3245; *Y. W. Lam* 22.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; SE Asia, Australia.

Ecology: Often growing on plants of *Loranthaceae* and *Lauraceae*. Flowering & fruiting: Almost all year round.

## 2. *Viscum ovalifolium* DC. 瘤果槲寄生

(Photo 274)

Prodr. 4: 278. 1830; FYN 3: 379, pl. 110: 1–2. 1983; FGD 1: 225. 1987, "ovalium"; FRPS 24: 154, pl. 33: 4–9. 1988; FOC 5: 244. 2003.

*Viscum orientale* auct. non Willd.: FHK 141. 1861; Forbes & Hemsl., *J. Linn. Soc. Bot.* 26: 408. 1894; FKH 229. 1912; FHN 2: 466. 1965.

Shrub, monoecious, green, 0.3–0.5 m tall. Branches opposite and decussate or dichotomous, terete; internodes 2–3 cm, nodes ± swollen, finely striate. Leaves opposite; petioles short; leaf blade ovate, obovate to long-elliptic, slightly fleshy, 3–8.5 × 1–3 cm, base attenuate or narrowly cuneate, apex obtuse, 3–5-veined. Cymes axillary, solitary or sometimes fasciculate, 3-flowered, central flower female, lateral ones male; peduncle 1–1.5 mm; involucre navicular, ca. 2 mm; pedicel absent. Male flowers ovoid in bud, ca. 1.5 mm; perianth-lobes 4. Female flower ellipsoidal in bud, 2.5–3 mm; perianth-lobes 4, triangular, ca. 1 mm. Stigma nipple-shaped. Berry subglobose, yellowish, 4–6 mm in diam., tuberculate when young, smooth when mature, base constricted into a ca. 1 mm stalk.

Locality: Happy Valley, Tsiu Hang, Tai Po Kau, Yuen Tun Ha, Fanling, Bride's Pool, Pat Sin Leng. *Y. S. Lau* 2078; *HK sheet* 5153, 31585.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; SE Asia.

Ecology: Often growing on trees of *Diospyros kaki*, *Citrus maxima*. Flowering & fruiting: Almost all year round.

Uses: Medicinal (folklore).

Notes: This species was reported as *Viscum orientale* Willd. previously (Check List HK Plants 50. 1993).

## 218. BALANOPHORACEAE 蛇菰科

XIA Nian-he 夏念和

Annual or perennial succulent herbs, monoecious or dioecious, parasitic on roots or rhizomes of hosts, without chlorophyll. Rhizome tuberous, single or branched. Leaves alternate, opposite or whorled, scale-like. Inflorescences a spadix, unisexual or androgynous, terminal, often fungoid in appearance, often arising endogenously from the tuber. Flowers unisexual, pedicellate or sessile. Male flowers: larger than female flowers, interspersed among female ones or at the end of spadix, 3(or 4 or more)-merous. Perianth wanting or 3–8-lobed; lobes valvate; stamens 1 or 2 when perianth absent or usually as many as and opposite to perianth-lobes when perianth present; filaments free or connate into a synandrium; anthers 2–4-celled or more, dehiscing by slits or pores. Female flowers: sessile, minute, densely arranged on branches or basally on spadices and/or shoot axis; perianth absent or reduced, adnate to ovary; ovary inferior, 1–3-locular; ovule solitary in each locule, mostly pendulous, nude or with a single integument; styles 1–2; stigmas discoid. Fruit a 1-seeded achene. Seeds globose, endosperm copious, oily, embryo very small.

About 18 genera and 50 species mainly distributed in tropical and subtropical regions; two genera and 13 species in China; one genus and two species in Hong Kong.

### 1. *Balanophora* J. R. & G. Forst. 蛇菰屬

Perennial herbs, monoecious or dioecious. Rhizome branched or unbranched, smooth or rugose with small scaly warts and/or stellate lenticels. Leaves opposite, alternate and distichous or spiral, or whorled, sessile, fleshy or scale-like. Inflorescences spadix-like, cylindrical, ellipsoidal, ovoid-globose, or globose. Male flowers: pedicellate or sessile, subtended by short, truncate bracts; perianth 3–6-lobed, lobes isomorphic or heteromorphic, valvate, reflexed at anthesis; stamens without filaments, usually as many as perianth-lobes, forming a synandrium; anthers 2-celled, transversely or longitudinally dehiscent. Female flowers: congested on main axis or also on basal stipe of spadices, perianth wanting; ovary ellipsoidal to fusiform, 1-locular, attenuate toward both ends; ovule solitary, pendulous; style elongated, persistent. Fruit minute, indehiscent; exocarp crustaceous. Seeds globose.

About 19 species mainly distributed in tropical Africa and Australia, temperate to tropical Asia, and the Pacific Islands; 12 species in China; two species in Hong Kong.

- 1a. Male flowers pedicellate; anthers 3; female spadices oval-globose, 1–2.5 cm ..... 1. *B. harlandii*  
 1b. Male flowers sessile; anthers numerous; female spadices oval-cylindrical, 3–5 cm ..... 2. *B. hongkongensis*

**1. *Balanophora harlandii* Hook. f. 紅琴蛇菰**

(Photo 275)

Trans. Linn. Soc. London, Bot. 22: 426. 1859; FHK 140. 1861; Forbes & Hemsl., J. Linn. Soc., Bot. 26: 410. 1894; FKH 230. 1912; FTW 2: 255, pl. 288. 1976; FRPS 24: 265. 1988; FFFJ rev. ed. 1: 510, fig. 460. 1991; FOC 5: 276. 2003.

*Balanophora harlandii* var. *mutinoides* (Hayata) F. W. Xing, Bull. Bot. Res., Harbin 12(4): 381. 1992.

*Balanophora lancangensis* Y. Y. Qian, J. Trop. & Subtrop. Bot. 4(2): 12, fig. 1. 1996.

*Balanophora minor* Hemsl., J. Linn. Soc., Bot. 26(177): 410, pl. 9, fig. 1. 1894.

*Balanophora mutinoides* Hayata, Icon. Pl. Formosan. 3: 168, pl. 31. 1913; FRPS 24: 267, pl. 65: 6–8. 1988.

Herb, dioecious, 8–15 cm tall. Rhizome robust, yellowish to brownish, often branched, surface with scaly warts. Scapes dark red to yellow, 2–5.5 cm. Leaves 6–12, yellow to reddish, usually clustered on base of scape, decussate, subopposite, or spiral, scale-like, oblong-ovate, 1.5–4.5 × 1.5–2.5 cm. Male inflorescences subspheroidal, 1.8–2.5 × 1.5–2 cm. Male flowers: pedicellate, 3-merous, 1.5–3 mm in diam., perianth-lobes broadly triangular; synandria subdiscoid; anthers 3, transversely dehiscent. Female inflorescence ovoid to ellipsoidal. Female flowers: ovary ovoid to long-ovoid; style filiform. Fruit long-ovoid, pale yellow, lustrous.

Locality: Hong Kong Island, Tai Mo Shan, Ma On Shan, Lamma Island, Kat O, Tung Lung Chau. *H. C. Tang 1884; Y. S. Lau 1220; P. S. Choi 231.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; India, Indochina and Thailand.

Ecology: Secondary forests. Flowering & fruiting: Sep.–Nov.

Uses: Medicinal (folklore).

Notes: The syntype specimens were collected from Mount Gough by W. A. Harland in 1858.

**2. *Balanophora hongkongensis* K. M. Lau, N. H. Li & S. Y. Hu 香港蛇菰**

(Fig. 144; Photo 276)

Harvard Pap. Bot. 7(2): 437. 2003; FOC 5: 275. 2003, *pro syn.* sub *B. laxiflora* Hemsl.

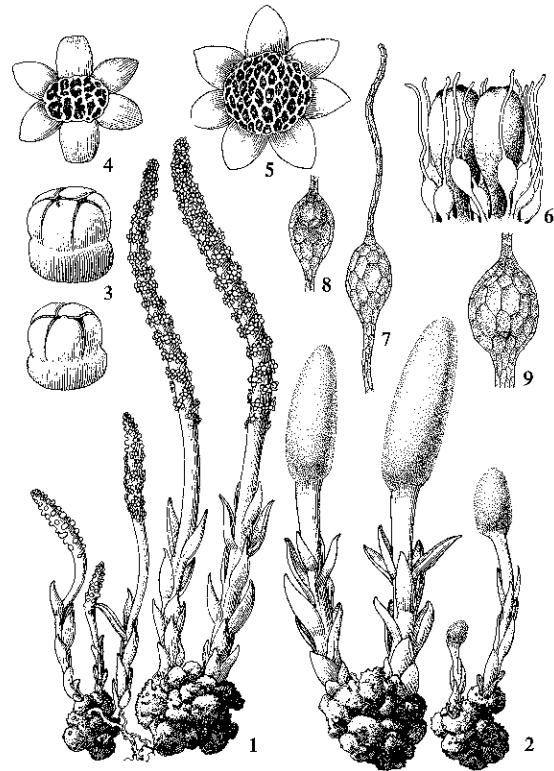
Herb, dioecious, 3–10 cm tall. Rhizomes branched; branches subspherical, 3–10 cm in diam., surface irregularly warty, yellowish brown. Scapes orange-red, 2–11 cm in diam. Leaves 8–14, alternate, ovate-lanceolate, 1.2–4 × 0.8–1 cm, apex acute. Male inflorescences cylindrical, 2–10 × 0.5–1.6 cm. Male flowers: subsessile; perianth-lobes 4–6, suborbicular to ovate, 2–3 mm, apex acute to obtuse; synandria sessile, discoid, 3–4 mm in diam.; anthers 10–30 or more, dehiscing by slits. Female inflorescences ovoid-spheroidal to oblong-ellipsoidal, 1.5–8 × 1–3 cm. Female flowers: ovaries stipitate, fusiform, 0.5 mm.

Locality: Castle Peak. *N. H. Li & K. M. Lau 310; HK sheet 38569, 38571.*

Distribution: Endemic to Hong Kong.

Ecology: Dense forests. Flowering & fruiting: Sep.–Nov.

Notes: The type specimen was collected from Castle Peak by N. H. Li and K. M. Lau on 9 Dec. 2000.



**Figure 144.** *Balanophora hongkongensis* K. M. Lau, N. H. Li & S. Y. Hu 1. male flowering plants; 2. female plants; 3. male flowers; 4–5. opened male flowers; 6. two mushroom toruloses with numerous female flowers; 7–9. ovaries. (Originally published in *Harvard Papers in Botany*, 7(2): 440, fig. 1. 2003; reproduced with permission from the President and Fellows of Harvard College).

**223. CELASTRACEAE 衛矛科**

WU De-lin 吳德鄰

Trees or shrubs, erect, scandent or procumbent. Stipules small, usually deciduous or absent. Leaves simple, opposite or alternate, rarely verticillate. Inflorescence a cyme or thyrse, axillary or terminal, or flower fasciculate to solitary. Bracts and bracteoles small. Flowers small, bisexual, unisexual or polygamous (plant monoecious or dioecious), sepals 4–5; petals 4–5, free, rarely medially connate; dark fleshy or membranous, intrastaminal or extrastaminal. Stamens (2–)3–5, rarely numerous, inserted on disk or under disk, staminodes present or absent in female flowers. Anthers (1–)2-celled, basifixed to dorsifixed, longitudinally dehiscing. Ovary superior to half-inferior, often partially immersed in disk, 1–5-locular, ovules 1–12(–numerous) per locule; styles terminal, short to 0, stigma simple or lobed. Fruit a capsule, drupe, berry or samara. Seeds usually arillate, rarely exarillate, with or without endosperm.

About 98 genera, 1211 species distributed in tropical and subtropical regions, fewer in temperate regions; 15 genera, 214 species in China; four genera and 14 species in Hong Kong.

- 1a. Leaves alternate..... 1. *Celastrus*
- 1b. Leaves opposite or verticillate.

- 2a. Stamens 3 ..... 2. *Loeseneriella*  
 2b. Stamens 4–5.  
 3a. Seeds with arils; cymes usually loosely branched ..... 3. *Euonymus*  
 3b. Seeds without arils; cymes usually glomerate ..... 4. *Microtropis*

### 1. *Celastrus* L. 南蛇藤屬

Shrubs climbing, glabrous, rarely pubescent. Leaves alternate, subentire or serrate. Inflorescences axillary or terminal, thyrsoid, cymose, or flowers solitary. Flowers unisexual, rarely bisexual; sepals 5. Petals 5; disk membranous or fleshy, annular to cupulate or 5-lobed, intrastaminal. Stamens 5, inserted on disk margin or under disk; anthers longitudinally dehiscent, introrse. Ovary 3-locular, rarely 1-locular; ovules erect, 1–2 per locule; stigma 3-lobed. Capsules subspheroidal, rarely oblong, leathery, remaining axils after fruit, loculicidally dehiscent. Seeds 1–6, ellipsoidal, albuminous, enveloped by fleshy red arils.

About 31 species distributed in tropical to subtropical regions; 24 species in China; four species in Hong Kong.

- 1a. Leaves deciduous; fruit 3-celled, 3–6-seeded.  
 2a. Cymes 3-flowered; peduncle 2–5 mm; pedicels articulate just below calyx ..... 1. *C. aculeatus*  
 2b. Cymes 3–7-flowered; peduncle 7–20 mm; pedicels articulate at middle ..... 2. *C. stylosus*  
 1b. Leaves evergreen; fruit 1-celled and 1-seeded.  
 3a. Pedicels articulated slightly above middle; fruit subglobose, 7–9 × 6.5–8.5 mm; arils orange ..... 3. *C. hindsii*  
 3b. Pedicels articulated at base; fruit broadly ellipsoidal, 10–18 × 9–14 mm; arils purple-brown ..... 4. *C. monospermus*

#### 1. *Celastrus aculeatus* Merr. 過山楓

Lingnan Sci. J. 13(1): 37. 1934; FRPS 45(3): 123. 1999.

Deciduous climbing shrub. Branches glabrous, densely lenticellate; young shoots initially tawny pubescent. Petioles 8–18 mm; leaf blade elliptic to oblong-elliptic or broadly elliptic, 5–10 × 2.4–5 cm, base broadly cuneate or subrounded, apex shortly acuminate to subrounded with a short, abrupt point, margin sparsely serrate, glabrous; lateral veins 4–5 on each side of midvein, veinlets obscure. Cymes 3-flowered, axillary and lateral; peduncles 2–5 mm; pedicels 2–3 mm, articulate just below calyx, together with peduncle tawny pubescent when young. Male flowers: sepals triangular, ca. 2.5 mm; petals oblong-lanceolate, ca. 4 mm; disk entire, ± fleshy; stamens 3–4 mm; filaments papillose. Capsules subglobose, 7–8 mm in diam. Seeds black crescent-shaped.

Locality: Wan Chai Gap, Sai Kung, Tai Mo Shan, Tai Lam Chung. *Y. S. Lam 106*; *H. C. Tang 2087*; *Y. S. Lau 1010*.

Distribution: Guangdong, Guangxi, SE Yunnan, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Margins of forests. Flowering: Feb.–Apr.; fruiting:

Jul.–Sep.

Notes: The species was reported as *Celastrus orbiculatus* Thunb. (Check List HK Plants 50. 1993) and *C. kusanoi* Hayata (Check List HK Plants 171. 2002; 62. 2004) previously.

#### 2. *Celastrus stylosus* Wall. 顯柱南蛇藤

Fl. Ind., ed. 1820, 2: 401–402. 1824; FRPS 45(3): 119. 1999.

Deciduous climbing shrub; branchlets usually glabrous, lenticellate. Petioles 1.3–2.5 cm; leaf blade elliptic to oblong-elliptic, rarely oblong-obovate, 6.5–12.5 × 3–7 cm, base broadly cuneate, apex shortly to abruptly acuminate, margin sparsely serrate, glabrous; lateral veins 5–7 pairs, veinlets distinct. Cymes 3–7-flowered, axillary and lateral; peduncles 8–20 mm; pedicels 5–7 mm, articulate below middle. Male flowers: sepals ovate to elliptic, 1–2 mm; petals oblong-obovate, 3.5–4 mm, margin slightly erose; disk thin, slightly lobed; stamens slightly longer than petals, smooth or papillose. Capsules, subglobose, 6.5–8 mm in diam. Seeds slightly curved.

Locality: Kam Shan, Tai Mo Shan, Ng Tung Chai. *W. J. Tutcher 9151*; *P. S. Choi 392*; *N. H. Li 57*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hubei, Hunan, Jiangxi, Anhui.

Ecology: Margins of forests. Flowering: Feb.–Apr.; fruiting: Oct.–Sep.

#### 3. *Celastrus hindsii* Benth. 青江藤 (Fig. 145; Photo 277)

Hooker's J. Bot. Kew Gard. Misc. 3: 334. 1851; FKH 62. 1912; FRPS 45(3): 125. 1999.

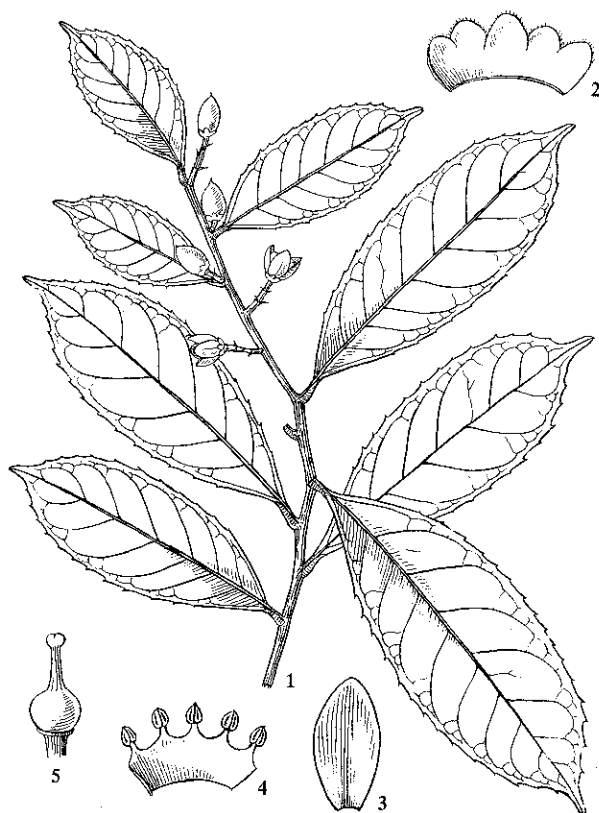


Figure 145. *Celastrus hindsii* Benth.

1. fruiting branch; 2. calyx; 3. petal; 4. stamens on the margin of disk; 5. pistil. (drawn by H. P. Yu)



*Celastrus monospermus* auct. non Roxb.: FHK 63. 1861.

Evergreen shrub, trailing or climbing, glabrous; branchlets purplish. Petioles 6–7 mm; leaf blade oblong to elliptic-oblongate, 7–14 × 3–6 cm, base cuneate or rounded, apex acuminate or acute, margin sparsely serrate, lateral veins 5–7 on each side of midvein, veinlets closely spaced and parallel, conspicuous. Cymose-panicles terminal or axillary, 5–14 cm. Pedicels 4–5 mm, articulate just above middle. Male flowers: calyx lobes nearly semi-orbicular, 1 mm; petals oblong, 2.5 mm, greenish, ciliate; disk cupular, shallowly lobed; stamens seated on margin of disk. Female flowers: ovary subglobose; staminodes ca. 1 mm. Capsules subglobose, 7–9 × 6.5–8.5 mm, opening in 3 valves. Seeds subglobose, 5–8 mm, enclosed in orange pulpy aril.

Locality: Common in Hong Kong. *S. P. Lau 131*; *N. H. Li 58*; *F. W. Xing 6780*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hubei, Hunan, Jiangxi, Fujian; S to SE Asia.

Ecology: Forests. Flowering: May–Jul.; fruiting: Jul.–Oct.

Notes: The type specimen (*R. B. Hinds s. n.*, K) was collected from Hong Kong Island in 1841.

#### 4. *Celastrus monospermus* Roxb. 獨子藤(單子南蛇藤)

(Photo 278)

Fl. Ind., ed. 1820, 2: 394. 1824; FRPS 45(3): 126. 1999.

*Celastrus benthamii* Rehd. & Wild., Pl. Wilson., 2: 358. 1915.

*Celastrus championii* Benth., Hooker's J. Bot. Kew Gard. Misc., 3: 334. 1851; FHK 64. 1861; FKH 61. 1912.

Evergreen climbing shrub, glabrous; branchlets minutely striate. Petioles ca. 15 mm; leaf blade subleathery, oblong to narrowly elliptic, 5–17 × 3–7 cm, base cuneate, apex acuminate or acute, margin serrulate, lateral veins 5–7 on each side of midvein. Cymose-panicles, dichotomous, 5–14 cm; peduncles 1–2.5 cm; pedicels 1–4 mm, articulate at the base. Male flowers: calyx-lobes deltoid-semiorbicular, ca. 1 mm; petals oblong, ca. 2.5 mm, reflexed; disk fleshy, shallowly 5-lobed; stamens 5, inserted under disk, 2.5–3 mm. Female flowers: pistils bottle-shaped, stigma 3-lobed; staminodes 1 mm. Capsules broadly ellipsoidal, rarely globose, 10–18 × 9–14 mm, opening in 3 valves, 1-seeded. Seeds elliptic, 10–15 × 6–9 mm, glabrous, arils purple-brown.

Locality: Common in Hong Kong. *P. S. Choi 408*; *N. H. Li 57*; *Y. W. Lam 579*.

Distribution: Hainan, Guangdong, Guizhou, Yunnan, Fujian; India, Vietnam, Myanmar, Pakistan.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Sep.

Notes: The type specimen of *Celastrus championii* Benth. (*J. G. Champion s.n.*, K) was collected from Victoria Peak, Hong Kong Island.

## 2. *Loeseneriella* A. C. Sm. 翅子藤屬

Woody climbers, rarely erect shrubs, puberulent or glabrescent. Leaves petiolate, opposite, entire or crenulate. Inflorescences axillary or terminal, cymose. Flowers bisexual; sepals and petals 5, disk fleshy, pulvinate or cupular, extrastaminal. Stamens 3; anthers 1-celled, basifixed, extrorse, transversely dehiscent. Ovary partially immersed in disk, 3-locular; ovules 4–15(–22) per locule; styles terete. Capsules transversely flattened, lobed to base, leathery, loculicidally dehiscent. Seeds numerous, with membranous basal wing, exalbuminous.

About 20 species distributed in tropical regions of Africa, Asia and Australia; five species in China; one species in Hong Kong.

This genus was put in *Hippocrateaceae* by Cronquist (1988), but recently authors recognized that to combine it with *Celastraceae* is more reasonable.

### 1. *Loeseneriella concinna* A. C. Sm.

程香仔樹(希藤)

(Fig. 146; Photo 279)

J. Arnold Arbor. 26(2): 170. 1945; FRPS 46: 9. 1981.

*Hippocratea obtusifolia* auct. non Roxb.: FHK 62. 1861; FKH 62. 1912.

Woody climber, glabrous throughout. Branchlets slender, with rough lenticels. Petioles 2–4 mm; leaf blade papery, ovate-oblong or elliptical, 4–7 × 1.5–3.5 cm, base rounded, apex obtuse or shortly and obtusely acuminate, margin sparsely crenate, lateral veins 4–6 on each side of midvein, reticulation of veins conspicuous. Cymes axillary or terminal, 2–3.5 cm; peduncles 1.5–1.8 cm, bracteate and bracteolate. Sepals deltoid, 0.7 mm, ciliate. Petals yellowish green, thinly fleshy, oblong-lanceolate, 4–5 × 1.5–2 mm, ciliate, dorsal appendiculate; disk cupular. Stamens 3, filaments 1.3 mm. Ovary deltoid, most part immersed in disk, 3-locular; ovules 4 per locule. Capsules obovate-ellipsoidal, 3–5 mm, 4-seeded. Seeds 3 cm, with membranous wing at base.

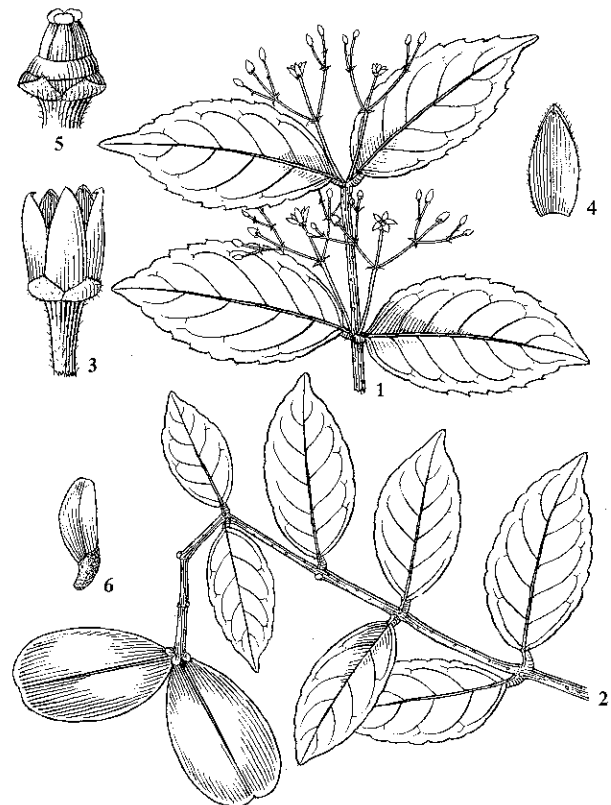


Figure 146. *Loeseneriella concinna* A. C. Smith

1. flowering branch; 2. fruiting branch; 3. flower; 4. petal; 5. stamens and disk; 6. seed. (drawn by H. P. Yu)

Locality: Hong Kong Island, Lion Rock, Lantau Island. *Y. S. Lau 1613, 2979; K. L. Yip 4177.*

Distribution: Guangdong, Guangxi, Fujian.

Ecology: Forests of valleys. Flowering: Jul.; fruiting: Sep.

Notes: The holotype specimen (*Y. W. Taam 2105, A*) was collected from "Shantau" (San Tau), Tung Chung on 4 Jun. 1941.

### 3. *Euonymus* L. 衛矛屬

Trees or shrubs, rarely scandent, glabrous, rarely pubescent. Leaves opposite, rarely alternate or whorled, entire, serrulate, or spinose-denticulate. Cymes axillary, dichotomous or trichotomous. Flowers bisexual, rarely unisexual and dioecious or gynodioecious, 4–5-merous. Calyx green. Corolla white or yellow-green, rarely purple. Stamens attached on disk; stamens 4–5, introrse or latrorse, longitudinally or obliquely dehiscent. Ovary 4–5-locular, ovules 2(–12) per locule; styles single, short and thick, stigma entire or lobed. Capsules subspheroidal or obovoid, smooth or echinate, angular, deeply lobed, or laterally winged, loculicidally dehiscent. Seeds 1–several, nearly enclosed in scarlet or yellow arils.

About 200 species in N temperate regions, especially in Asia and Australia; 111 species in China; six species in Hong Kong. *E. glaber* Roxb., *E. japonicus* var. *albomarginatus* T. Moort are occasionally cultivated in Hong Kong but not described here.

- 1a. Sepals and petals 4.  
 2a. Capsules spiny..... 1. *E. actinocarpa*  
 2b. Capsules not spiny.  
 3a. Erect shrubs or small trees; flowers 5–8 mm in diam.; arils orange..... 2. *E. nitidus*  
 3b. Climbing shrubs; flowers 8–10 mm in diam.; arils scarlet..... 3. *E. hederaceus*
- 1b. Sepals and petals 5, rarely 4 (*E. gibber*).  
 4a. Petals apex fimbriate ..... 4. *E. gibber*  
 4b. Petals apex not fimbriate.  
 5a. Petioles 3–5 mm; leaves 2–6 cm broad ..... 5. *E. laxiflorus*  
 5b. Petioles 5–8 mm; leaves 1.5–3 cm broad ..... 6. *E. tsoi*

#### 1. *Euonymus actinocarpa* Loes. 紫刺衛矛

(Fig. 147; Photo 280)

Bot. Jahrb. Syst. 30: 459. 1902; J. S. Ma, *Thaiszia* 11: 48. 2001.

*Euonymus angustatus* Sprague, Bull. Misc. Inform. Kew 1908: 35. 1908; FKH 60. 1912; FRPS 45(3): 25. 1999.

Large climbing shrub. Branchlets 4-angular or sometimes weakly winged. Petioles 6–9 mm; leaf blade subleathery, oblong-ovate, 7–10 × 2–5 cm, base subrounded or broad-cuneate, apex acuminate, margin serrate on distal part. Inflorescence terminal or lateral, with a spread of 7–8 cm at base, 4–5-branched. Peduncle and branches narrowly winged. Flowers 7–10 mm in diam. Sepals 4, flat orbiculate. Petals 4, white-greenish, suborbiculate, 4–5 mm; disk annular, shallowly 4-lobed. Stamens 4, nearly inserted on disk margin. Ovary deltoid-ovoid. Capsules purple-red, subglobular, 1.5–2.5 cm in diam. including spines; spines flat and broad, 6–9 mm. Seeds purple-brown, 1 or 2 in each cell, oblong, 7–8 × 3–4 mm, arils yellowish.

Locality: Cape D'Aguilar, Kowloon Reservoir, Tai Mo Shan, Sai Kung, Mau Ping, Ng Tung Chai, Lantau Island. *L. T. Lo 598; P. S. Choi 352, 402.*

Distribution: Guangdong, Guangxi, Hunan.

Ecology: Ravines in woods. Flowering: Feb.–Apr.; fruiting: Jul.–Nov.

Notes: The type specimen of *Euonymus angustatus* (*Herb. Hongk. no. 639, K, IBSC*) was collected from Tai Mo Shan by U. On in 1898.

#### 2. *Euonymus nitidus* Benth. 中華衛矛

(Photo 281)

London J. Bot. 1: 483. 1842; FKH 62. 1861; FRPS 45(3): 56. 1999.

*Euonymus chinensis* Lindl., Trans. Hort. Soc. London 6: 74. 1826; FKH 61. 1912, non Lour. (1790).

Erect shrub or small tree 1–5 m tall. Petioles 6–10 mm; leaf blade leathery, shining, obovate-lanceolate, 4–13 × 2–5.5 cm, apex acuminate, margin entire. Cymes shorter than leaves, once to thrice



Figure 147. *Euonymus actinocarpa* Loes.

1. fruiting branch; 2. portion of branchlet (4-angular and winged); 3. flower. (drawn by H. P. Yu)

branched, 1–15-flowered. Flowers 5–8 mm in diam. Sepals 4. Petals 4, white or yellow-green, base shortly clawed; disk small, shallowly 4-lobed. Stamens 4, filament inconspicuous. Capsules reddish, deltoid-ovoid, 8–14 cm, 4-locular, lobes scarcely prominent, rounded at top. Seeds brown-red, broadly elliptic, 6–8 mm, enveloped in an orange aril.

Locality: Common in Hong Kong. *P. S. Choi 358*; *Y. W. Lam 1435*; *S. C. Ng 2023*.

Distribution: Guangdong, Guangxi, Jiangxi, Fujian.

Ecology: Ravines. Flowering: Mar.–May; fruiting: Jun.–Oct.

Notes: The holotype specimen (*R. B. Hinds s.n.*, K) was collected from Happy Valley, Hong Kong Island in 1841.

### 3. *Euonymus hederaceus* Champ. ex Benth. 常春衛矛

(Photo 282)

Hooker's *J. Bot. Kew Gard. Misc.* 3: 333. 1851; FHK 63. 1861; FKH 60. 1912; FRPS 45(3): 10. 1999.

Climbing shrub, 1–2 m tall; rooting readily. Young branches angular. Petioles 6–12 mm; leaf leathery or thinly leathery, ovate or elliptic, 3–7 × 2–4.5 cm, base subrounded or broad cuneate, apex obtuse or acuminate, lateral veins 4–5 on each side of midvein, thin and conspicuous. Cymes much shorter than leaves, few-flowered, once or twice branched. Peduncles 1–2 cm. Flowers white-greenish, 8–10 mm in diam. Sepals and petals 4. Disk subsquare. Stamens 4, attached on disk margin, filaments ca. 2 mm. Ovary slightly compressed. Capsules purple-red, globular, 8–10 cm in diam., 4-locular, slightly 4-furrowed, but otherwise entire. Seeds enveloped in a scarlet aril.

Locality: Victoria Peak, Tai Mo Shan, Ma On Shan, Lantau Island. *Y. W. Lam 1287*; *K. Y. Tam s.n. (HK sheet 39671, 40808)*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Fujian, Taiwan.

Ecology: Thin forests. Flowering: Jun.; fruiting: Aug.

Notes: The lectotype specimen (*J. G. Champion s.n.*, K) designated by Cao & Ma (*Taxon* 55: 227. 2006) was collected from Victoria Peak, Hong Kong Island between 1847 and 1850.

### 4. *Euonymus gibber* Hance 流蘇衛矛

*J. Bot.* 20(231): 77. 1882; FKH 61. 1912; FRPS 45(3): 51. 1999.

Erect shrub. Petioles 5–7 mm; leaf blade leathery to thick-leathery, opposite or in whorled of three, narrowly elliptic or long obovate, 5–10 × 2–5 cm, base cuneate, apex obtuse-acute, margin nearly entire, often revolute, lateral veins 6–8 on each side of midvein, obscure. Cymes large, open, twice to thrice branched. Peduncles 3–5 cm. Flowers (4–)5-merous. Sepals margin erose. Petals suborbicular, base shortly clawed, apex fimbriate. Disk slightly 5-lobed. Stamens attached on protuberance of disk; filaments complanate. Ovary most part connate with disk; styles short. Capsules obovate, upper 5-lobed. Seeds with shallowly cupular arils.

Locality: Cultivated. *W. J. Tutchter 11281*; *HK sheet 917, 5163*.

Distribution: Hainan, Taiwan.

Ecology: Flowering: Jun.; fruiting: Nov.

Notes: The type specimen (*Hance Herb. no. 21780*) was collected before 1882 by C. Ford from individuals cultivated in Hong Kong Botanical Gardens, which were originated from hills of Hong Kong Island.

### 5. *Euonymus laxiflorus* Champ. ex Benth.

疏花衛矛

(Fig. 148; Photo 283)

Hooker's *J. Bot. Kew Gard. Misc.* 3: 333. 1851; FHK 63. 1861; FKH 61. 1912; FRPS 45(3): 60. 1999.

Erect shrub. Branches terete. Petioles 3–5 mm; leaf blade papery or subleathery, ovate-elliptic, oblong or elliptic, 5–12 × 2–6 cm, base broad-cuneate or subrounded, apex obtusely acuminate, margin entire or obscurely crenate, lateral veins obscure. Cymes loose, 5–9-flowered, rather shorter than leaves. Peduncles ca. 1 cm. Flowers ca. 8 mm in diam. Sepals 5, margin shortly purple-ciliate. Petals 5, purplish, margin crenate and wavy, base attenuate; disk shallowly 5-lobed. Stamens 5, sessile. Ovary without style. Capsules purple, obconic, 7–9 × 9 mm, top flat. Seeds oblong, 5–9 × 3–5 mm, enveloped in shallowly cupular, orange arils.

Locality: Common in Hong Kong. *Y. S. Lau 2701, 3051*; *K. L. Yip 4244*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Taiwan.

Ecology: Forests. Flowering: Mar.–Jun.; fruiting: Jul.–Nov.

Uses: Medicinal (folklore).

Notes: The type specimen (*J. G. Champion s.n.*, K) was collected from Happy Valley Woods by J. G. Champion between 1847 and 1850.

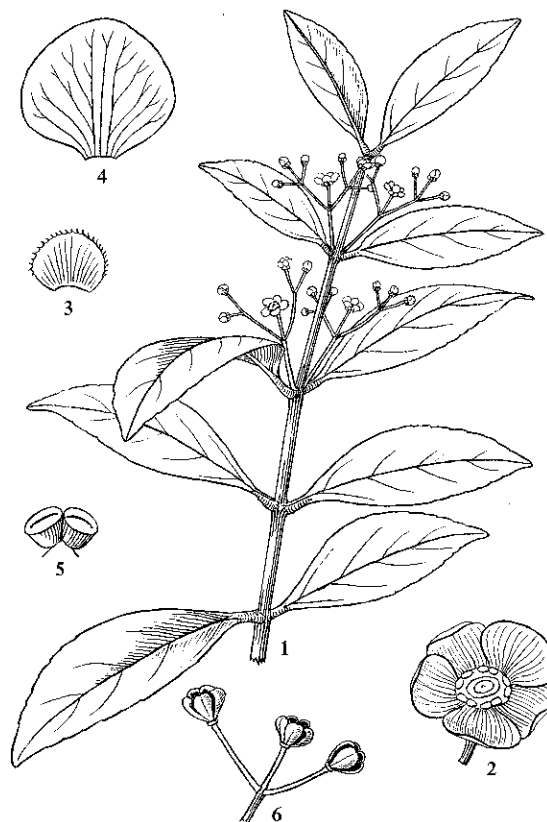


Figure 148. *Euonymus laxiflorus* Champ. ex Benth.

1. flowering branch; 2. flower; 3. sepal; 4. petal; 5. stamen; 6. infructescence. (drawn by H. P. Yu).

**6. *Euonymus tsoi* Merr. 長葉衛矛**

(Photo 284)

Sunyatsenia 1(4): 198. 1934; J. S. Ma, Thaiszia 11: 220. 2001.

*Euonymus longifolius* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 332. 1851, non Medic. (1782); FHK 62. 1861; FKH 61. 1912.*Euonymus kwangtungensis* C. Y. Cheng, Icon. Corm. Sin. Suppl. 2: 226. 1983; FRPS 45(3): 60. 1999.

Erect small shrub. Petioles 5–8 mm; leaf blade oblong-lanceolate, 8–14 × 1.5–3 cm, apex acuminate, smooth and shining, margin entire or sparsely serrate, lateral veins 5–7 on each side of midvein, obscure. Cymes 1–2, axillary, slightly longer than petioles, 3–few-flowered. Peduncles 2–12 mm. Flowers ca. 7 mm in diam. Sepals 5. Petals 5, suborbicular, ca. 3 mm, slightly crenate or wavy on edge; disk shallowly 5-lobed. Stamens 5, sessile. Ovary without style; stigma slightly 5-lobed. Capsules reddish, obdeltoid, flat at top, shallowly 5-lobed.

Locality: Happy Valley, Morrison Hill, Ma On Shan, Mui Tsz Lam, Sai Kung. *Y. W. Lam 514; HK sheet 38549, 40188.*

Distribution: Guangdong.

Ecology: Forests. Flowering: Feb.–Jun.; fruiting: Jan. of the following year.

Notes: The type specimen of *E. longifolius* was collected from Happy Valley woods by J. G. Champion between 1847 and 1850. Listed in *Rare and Precious Plants of Hong Kong*.**4. *Microtropis* Wall. ex Meisn. 假衛矛屬**

Shrubs or small trees, evergreen or deciduous. Branchlet more or less 4-angulate, glabrous, estipulate. Leaves opposite, entire. Inflorescence axillary, fasciculate or cymose. Flowers bisexual, rarely unisexual dioecious, (4–)5-merous; sepals connate at base, imbricate, margin irregularly serrulate or ciliate, persistent. Corolla white or yellow-white; lobes imbricate; disk annular or absent, (4–)5-angled, intrastaminal. Anthers longitudinally dehiscent, introrse, rarely extrorse. Ovary 2–3-locular; ovules erect, 2 per locule; styles short; stigma shallowly 2–4-lobed or entire. Capsules ellipsoidal or oblong, leathery, 1-locular, laterally split along one side. Seeds 1, ovoid, sarcotestal, without aril.

About 66 species distributed in SE Asia, Macronesia; 24 species in China; three species in Hong Kong.

- 1a. Leaves ± fleshy, narrowly oblong or broadly oblanceolate, lateral veins concealed ..... 1. *M. obscurinervia*  
 1b. Leaves leathery or papery, elliptic or rhombic-elliptic; lateral veins distinct.  
 2a. Leaves leathery, apex acute, tip blunt; cymes many-flowered ..... 2. *M. reticulata*  
 2b. Leaves papery, apex acuminate; cymes usually 2-flowered ..... 3. *M. biflora*

**1. *Microtropis obscurinervia* Merr. & F. L. Freeman**

廣州假衛矛 (Fig. 149)

Proc. Amer. Acad. Arts, 73: 283. 1940; FRPS 45(3): 172. 1999.

*Microtropis latifolia* auct. non Wight ex Laws; FKH 61. 1912.

Evergreen shrub, 1–2 m tall. Branchlets purple-brown, black or black-purple. Petioles 8–15 mm; leaf blade thickly leathery, slightly fleshy, with small tubercular points when dry, narrowly oblong or broadly oblanceolate. 8–18 × 2.5–7 cm, lateral veins 7–11 on each side of midvein. Inflorescences glomerulate, ca. 10-flowered. Peduncles nearly absent. Flowers 5-merous. Sepals thick-leathery, nearly orbicular-reniform, 1.2–1.4 mm. Petals oblong, 2.5–3 mm, shortly clawed; disk annular, entire. Ovary ovoid, stigma obscurely 2-fid. Capsules ellipsoidal, 1.5–2 cm. Seeds ovate-elliptic, ca. 1.5 cm.

Locality: Victoria Peak, Mount Gough, Pok Fu Lam, Mount Kellet. *W. J. Tutchter 4625, 11204; HK sheet 36088.*

Distribution: Hainan.

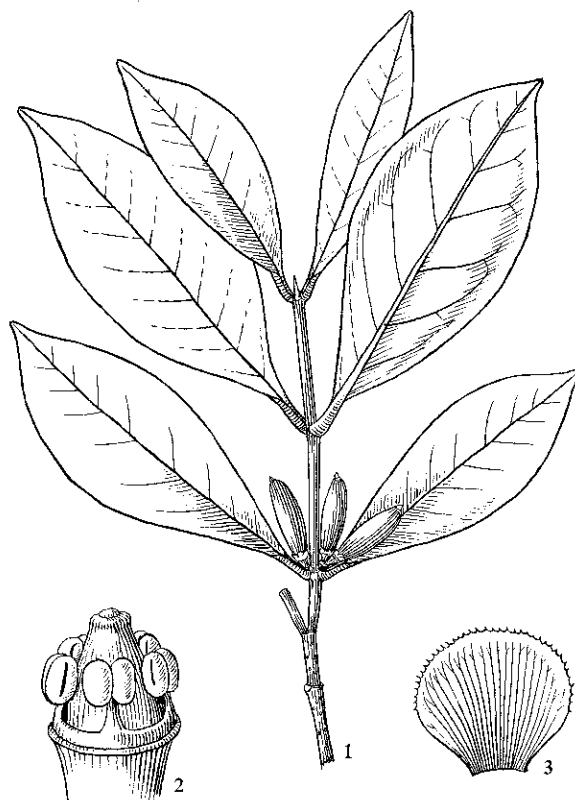
Ecology: Fruiting: Sep.–Dec.

**2. *Microtropis reticulata* Dunn 細脈假衛矛 (Photo 285)**

J. Bot. 47: 375. 1909; FKH 61. 1912; FRPS 45(3): 169. 1999.

*Microtropis paucinervis* Merr. & Chun ex Merr. & F. L. Freeman, Proc. Amer. Acad. Arts, 73: 285. 1940; FRPS 45(3): 167. 1999, *syn. nov.*

Small shrub. Petioles 3–6 mm; leaf blade thickly papery, oblong, narrowly elliptic or narrowly ovate-elliptic, 5–10 × 1–4 cm, base cuneate or broadly cuneate, apex acute, rarely shortly

Figure 149. *Microtropis obscurinervia* Merr. & F. L. Freeman

1. fruiting branch; 2. flower with calyx and corolla removed; 3. petal. (drawn by H. P. Yu)

acuminate, tip blunt, margin revolute, lateral veins 5–7 on each side of midvein, slender, obviously raised abaxially. Cymes head-like, axillary or terminal, densely flowered. Peduncles ca. 2 mm. Flowers subsessile, 5-merous. Sepals suborbicular. Petals oblong ca. 2 mm; disk annular. Stamens short; filaments slightly conic. Ovary ovoid. Capsules ellipsoidal, ca. 2 cm.

Locality: Hong Kong Island, Tai Mo Shan, Sai Kung, Lantau Island, Tung Lung Chau, Ninepin Group. *F. W. Xing 10016*; *Y. W. Lam 476*; *S. C. Ng 3211*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang, Fujian, Taiwan; India, Myanmar, Malaysia, Vietnam, Cambodia, Laos, Thailand, Indonesia, Philippines.

Ecology: Exposed rocky slopes. Flowering: Mar.

Notes: The type specimen (*Herb. Hongk. no. 6346*) was collected from Lantau Island by S. T. Dunn in March 1909. The type specimen of *Microtropis paucinervis* (*N. K. Chun 40294*, IBSC) was also collected from Hong Kong.

### 3. *Microtropis biflora* Merr. & Chun ex Merr. & F. L. Freeman 雙花假衛矛

Proc. Amer. Acad. Arts 73: 288. 1940; FRPS 45(3): 170. 1999.

Shrub to 2 m tall. Branchlets terete, greyish white; internodes slender, usually 4–8.5 cm. Leaves papery, greyish when dry; petioles 3–5 mm; leaf blade ovate-oblong to oblong-elliptic 6–10.5 × 1.8–4.5 cm, base broadly cuneate, apex acuminate to narrowly acuminate; lateral veins slender, 8–11 pairs, slender, obliquely ascending. Cymes axillary or lateral, usually 2-flowered. Peduncles 0–1.5 mm. Flowers sessile, 5-merous. Sepals rounded at apex. Petals oblong, ca. 3 mm; disk shallowly plateform. Ovary ovoid. Capsules broadly ellipsoidal, 1.3–1.5 × 0.8–0.9 cm.

Locality: Tai Mo Shan, Ma On Shan, Lantau Island. *F. W. Xing 8725, 8464*; *Y. W. Lam 2264*.

Distribution: Guangdong.

Ecology: Forests. Flowering: Dec.–Feb.

## 228. AQUIFOLIACEAE 冬青科

HU Shiu-ying 胡秀英

Trees or shrubs, evergreen, rarely deciduous. Leaves simple, alternate, minutely stipulate or estipulate. Flowers small, regular, unisexual, rarely bisexual or polygamous, dioecious, in cymes, umbels, racemes, panicles or fascicles, rarely solitary. Calyx 4–6-lobed; lobes imbricate. Petals 4–8, free or connate at base. Stamens as many as and alternate with petals; anthers 2-celled, opening by longitudinal slits. Ovary superior, usually 4–8-locular. Fruit a berry or drupe, enclosing 2 or more 1-seeded kernels.

About 450 species in four genera, with worldwide distribution; only the genus *Ilex* in China and Hong Kong.

### 1. *Ilex* L. 冬青屬

Trees or shrubs, deciduous or evergreen. Leaves alternate, rarely opposite, margin entire, crenate, serrate or spinose; stipules minute, callose, usually persistent. Inflorescences cymose, (simple or much branched), umbels or solitary and axillary on the current year's growth, or fasciculate and axillary on the second year's or older growth. Flowers small, white, pink, or red; regular, unisexual (plant dioecious). Male flowers: calyx patelliform, 4–6-lobed; corolla rotate, petals 4–8, slightly connate at base; stamens epipetalous; anthers oblong-ovate, with rounded base; rudimentary ovary subglobose. Female flowers: 4–8-merous; calyx persistent; petals connate and spreading; staminodes with sagittate sterile anthers; ovary ovoid, 4–7-loculate, style rarely developed, stigma discoid, capitate or columnar. Fruit a bacco-drupe, globose, mature red or black, with a membranous or chartaceous exocarp, a fleshy mesocarp, and distinct coriaceous, woody or stony endocarps. Pyrenes 4–7, smooth, striate, striate-sulcate or rugose and pitted, 1-seeded.

Over 400 species distributed in the tropical, subtropical, and warm temperate zones of both hemispheres; about 200 species in China; 17 species and one variety in Hong Kong.

- 1a. Deciduous trees or shrubs; flowers solitary, axillary to leaves or scales; mature fruits black.
  - 2a. Leaves small, 4–5 cm long; fruits 5–6 mm in diam.; fruiting pedicels 5–6 times long of the diam. of fruits ..... 1. *I. asprella*
  - 2b. Leaves large, 7–10 cm long; fruits 12–14 mm in diam.; fruiting pedicels 3 times long of the diam. of fruits ..... 2. *I. chapaensis*
- 1b. Evergreen trees or shrubs; flowers cymose or fasciculate; mature fruits red, or black, with leaves punctate or glandular beneath.
  - 3a. Flowers on current year's growth; inflorescences cymose
    - 4a. Plant pubescent; pyrenes unicanaliculate on the back; leaves large, 7–15 cm long ..... 3. *I. kwangtungensis*
    - 4b. Plant glabrous; pyrenes 5-striate on the back; leaves medium-sized, 4–10 cm long ..... 4. *I. rotunda*
  - 3b. Flowers on two-year-old or older branches; inflorescences fasciculate.
    - 5a. Leaves glandular punctate abaxially; fruits black; pyrenes striate, coriaceous.
      - 6a. Shrubs 1–3 m high; leaves 1–6 × 0.5–3.5 cm; fruit solitary, in axil of a leaf or a scale at base of a branch; staminate inflorescences 1–7-flowered, solitary, axillary to scale or leaf.
        - 7a. Calyx 2–5 mm across, lobes rounded and entire; pyrenes subrugose, the back ridged ..... 5. *I. viridis*
        - 7b. Calyx 2–3 mm across, lobes cross; pyrenes smooth, the striae on the back impressed ..... 6. *I. crenata*

- 6b. Trees 10–15 m high; leaves 4–8 × 2–4 cm; fruits fasciculate; staminate inflorescences 6–9-flowered, fasciculate in leaf axil ..... 7. *I. triflora*
- 5b. Leaves not punctate with glands abaxially; fruits red; pyrenes lignified, rough.
- 8a. Pyrenes 4, the endocarp woody or stony; fruiting pedicels longer than the diam. of mature fruit.
- 9a. Leaves entire or sharply spinose, sizes variable, 6–8 × 2.5–3 cm wide; fruiting pedicels 8–9 mm long ..... 8. *I. cornuta*
- 9b. Leaves serrate or dentate; fruiting pedicels less than 8 mm long; pyrenes with stony endocarp.
- 10a. Fruits 7–10 mm in diam.; leaves 10–17 × 5–8 cm; cultivated in Hong Kong ..... 9. *I. latifolia*
- 10b. Fruits 5–7 mm in diam.; leaves 2–15 × 1.5–4 cm; endemic to Hong Kong.
- 11a. Petioles 2–3 mm long; lamina 10–15 cm long; pyrenes hairy ..... 10. *I. cinerea*
- 11b. Petioles 10–15 mm long; lamina 5–9 cm long; pyrenes sulcate, stony.
- 12a. Apices of leaves deltoid and acute, the acumens 0–1 mm long; pyrenes wrinkled and pitted ..... 11. *I. graciliflora*
- 12b. Apices of leaves acuminate, the acumens 5–15 mm long; pyrenes palmately striate and sulcate ..... 12. *I. ficoidea*
- 8b. Pyrenes 4–5, the endocarp leathery; fruiting pedicels equal or shorter than the diam. of fruits.
- 13a. Branchlets densely pubescent; stems ridged, the cross-section appearing quadrangular; pyrenes sublignified, endocarps 3-striate and 2-sulcate ..... 13. *I. pubescens*
- 13b. Branchlets glabrous or puberulent; stems not ridged, with circular cross-section; pyrenes leathery, smooth, striate, esulcate.
- 14a. Leaves thick leathery, 4–8 cm long, the lateral veins indistinct; fruits 5–8 mm in diam.; pyrenes 5 ..... 14. *I. memecylifolia*
- 14b. Leaves thin leathery or papery, 1–4 cm long, the lateral veins evident; fruits 2–3 mm in diam.; pyrenes 4.
- 15a. Leaf blade punctate abaxially ..... 15. *I. championii*
- 15b. Leaf blade not punctate.
- 16a. Branchlets hirsute; leaves rounded or emarginate at the apex; midvein elevated above ..... 16. *I. lohfauiensis*
- 16b. Branchlets puberulent; leaves acute or shortly acuminate at the apex; midvein plain or impressed above ..... 17. *I. hanceana*

1. *Ilex asprella* (Hook. & Arn.) Champ. ex Benth.

梅葉冬青 (秤星樹)

(Fig. 150; Photo 286)

Hooker's J. Bot. Kew Gard. Misc. 4: 329. 1852; FHK 65. 1861; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 477. 1901; FKH 60. 1912; S. Y. Hu, J. Arnold Arb. 30: 269. 1949; FTW ed. 2, 3: 622, pl. 319. 1993; FRPS 45(2): 258, pl. 51: 7–11. 1999.

*Prinos asprellus* Hook. & Arn., Bot. Beech. Voy. 176, pl. 36: 1–2. 1833.

Deciduous shrub up to 3 m high, with slender elongated and short abbreviated glabrous branchlets, the lenticels on older portions conspicuous and numerous; abbreviated shoots 3–15 mm long, rugose with persistent bud-scales and scars, the terminal buds very narrowly conic, acute. Leaves alternate; stipules callose, deltoid, acute, persistent; petioles 3–8 mm, sparsely puberulent above; leaf blade membranous, ovate or ovate-elliptic, 3–7 cm × 1.5–3 cm, base obtuse, apex acuminate, acumens 3–12 mm, margin serrate. Staminate flowers solitary, axillary to the leaves or scales; pedicels 5–6 mm; calyx patelliform, 2.5–3 mm across, glabrous, shallowly 4- or 5-lobed, erose and ciliate; corolla rotate, 6 mm across, petals 4 or 5, suborbicular, one-fifth connate at the base; stamens 4 or 5, anthers oblong, rudimentary ovary pulvinate. Pistillate flowers solitary, axillary to the leaves; pedicels 2–2.5 cm, after fruiting up to 3 cm; calyx 3 mm across, deeply 4–6-lobed, lobes ciliate; corolla rotate, petals suborbicular, one-fourth connate at the base; ovary subglobose-ovoid; style evident; stigma thickly discoid. Fruits globose, 5–6 mm in diam. Pyrenes 4–6, obovate-elliptic, 5 × 2 mm, 3-striate, ridged, canaliculate, the sides almost smooth, ventral keel sharp, the endocarp stony.

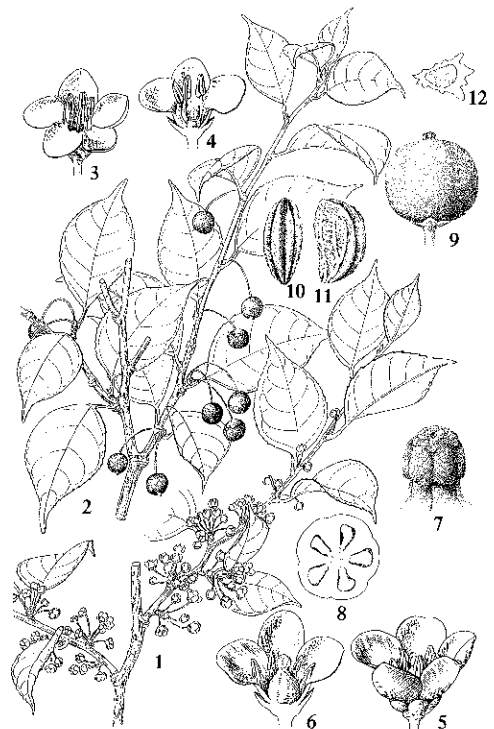


Figure 150. *Ilex asprella* (Hook. & Arn.) Champ. ex Benth.

1. flowering branch; 2. fruiting branch; 3. male flower; 4. vertical section of male flower showing 3 anthers and a rudimentary ovary at the center; 5. female flower; 6. female flower with calyx and 2 petals removed; 7. apical portion of the pistil; 8. cross section of ovary; 9. fruit; 10. pyrene (dorsal view); 11. pyrene (lateral view); 12. cross section of pyrene. (drawn by P. Ma)

Locality: Common in Hong Kong. *S. Y. Hu 11698* (CUHK); *S. Y. Hu & P. H. But 20578* (CUHK); *H. C. Tang 542, 2338*; *HK sheet 40087*.

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Philippines.

Ecology: Margins of woods. Flowering: Mar.–Apr.

Uses: Medicinal (folklore).

## 2. *Ilex chapaensis* Merr. 沙壩冬青

(Photo 287)

*J. Arnold Arb.* 21: 373. 1940; Tardieu-Blot in Lecomte, *Fl. Gen. Indo-chine Suppl.* 1: 773. 1948; *S. Y. Hu, J. Arnold Arb.* 30(3): 275. 1949; *FRPS* 45(2): 257, pl. 52: 7–9. 1999.

Deciduous tree up to 10 m high. Branchlets glabrescent; lenticels conspicuous; abbreviated shoots few. Leaves papery; petioles 1.2–3 cm; leaf blade ovate-elliptic or oblong-elliptic, 5–11 × 2.5–5 cm, base obtuse or rounded, apex acuminate, margin crenulate-serrulate, glabrous. Flowers 6–8-merous; staminate ones pseudofasciculate, individual units 1–5-flowered; calyx 4 mm across, shallowly lobed; corolla rotate, 1 cm across; stamens with ovate-oblong anthers; rudimentary ovary conic. Pistillate flowers solitary, fasciculate with leaves at the end of short shoot, rarely in leaf-axils on long shoot; calyx 4 mm across, ciliate; corolla suberect, 8 mm in diam.; staminodes with sagittate sterile anthers; ovary ovoid, style evident, puberulous. Fruit subglobose-pomiform, 1.4 cm in diam. Pyrenes 6 or 7, deeply canaliculate, 3-ridged; endocarp bony.

Locality: Ma On Shan, Sheung Wo Hang, Wu Kau Tang. *Y. S. Lau 1311*; *Y. W. Lam 1282*; *F. W. Xing 8541*.

Distribution: Hainan, Guangdong, Fujian, Guangxi, Yunnan; N Vietnam.

Ecology: Margins of forests. Flowering: Apr.; fruiting: Nov.

Notes: This species was recorded as *Ilex macrocarpa* Oliv. previously (Check List HK Plants 63. 2004.)

## 3. *Ilex kwangtungensis* Merr. 廣東冬青

(Photo 288)

*J. Arnold Arb.* 8: 8. 1927; *S. Y. Hu, J. Arnold Arb.* 30: 303. 1949; *FHN* 2: 429. 1965; *FRPS* 45(2): 35, pl. 7: 1–5. 1999.

Small evergreen tree, 4–9 m high. Branchlets puberulent terete, lenticels minute. Leaves exstipulate; petioles robust, 10–18 mm; leaf blade sub-leathery, villose on both surfaces, ovate-elliptic, oblong or lanceolate, 7–12 × 3–4 cm, base rounded or obtuse, apex acuminate, margin minutely serrate or subentire. Inflorescence a loose compound cyme, puberulent, solitary and axillary on current year's growth; staminate cymes 12–20-flowered, 3 or 4 times dichotomous; peduncles 9–12 mm; flowers 4- or 5-merous, red or pink, 7–8 mm across; pedicels 2 mm; calyx patelliform, 2.5–3 mm across, lobes orbicular-ovate, rounded, ciliate; corolla rotate, petals oblong, 3.5 mm, one-sixth connate at base; stamens shorter than the petals; anthers oblong; rudimentary ovary conical. Pistillate cymes 3–7-flowered, 2-times dichotomous, pubescent; bracts lanceolate; flowers 4-merous; pedicels 4–7 mm long, flavous-villose or glabrescent; calyx ciliate; corolla rotate; staminodes with ovoid sterile anthers; ovary ovoid, stigma mammiform, 4-lobed. Fruit red, ellipsoidal, 12 × 9 mm; stigma prominent, 4-lobed. Pyrenes 4, smooth, 6 mm, 3 mm wide on the back, dorsally unicanaliculate, the canal 2 mm deep; endocarp subglabrescent.

Locality: Tai Mo Shan, Ma On Shan, Sai Kung. *S. Y. Hu 10564, 13801* (CUHK); *Y. S. Lau 2926*; *Y. W. Lam 121*; *K. L. Yip 4496*.

Distribution: Hainan, Guangdong, Fujian, Jiangxi, Zhejiang, Guangxi, Guizhou, Yunnan.

Ecology: Forests and thickets. Flowering: May–Aug.; fruiting: Sep.–Dec.

## 4. *Ilex rotunda* Thunb. 鐵冬青

(Fig. 151)

*Fl. Jap.* 77. 1784; *Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 78: 106. 1901; *FKH* 59. 1912; *S. Y. Hu, J. Arnold Arb.* 30: 306. 1949; *FHN* 2: 427. 1965; *FRPS* 45(2): 45, pl. 1: 9–10. 1999.

Evergreen tree to 20 m tall, 1 m in d.b.h.; current year's growth usually glabrous. Leaves stipulate; petioles 8–20 mm; leaf blade thin-leathery or papery, ovate, obovate or elliptic, 4–9 × 1.8–4 cm, base cuneate or obtuse, apex shortly acuminate, the acumen deltoid, 5–8 mm long, margin entire, glabrous on both surfaces. Inflorescences cymose, 4–6-flowered, solitary, axillary, on current year's growth. Staminate peduncles 3–10 mm; pedicels 4–5 mm; flowers 4-merous; calyx 2 mm across, 4-lobed; corolla rotate, 6 mm across; petals oblong, 2.5 × 1.5 mm, connate at base; stamens longer than petals, anthers ellipsoidal; rudimentary ovary pulvinate.

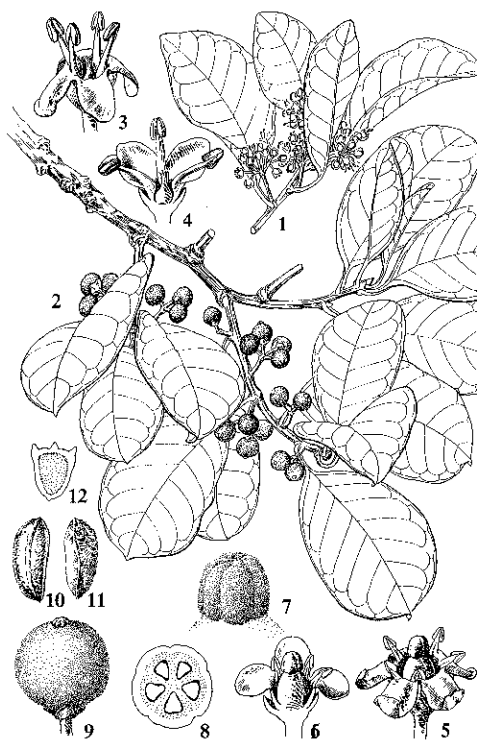


Figure 151. *Ilex rotunda* Thunb.

1. flowering branch; 2. fruiting branch; 3. male flower; 4. vertical section of male flower; 5. female flower; 6. vertical section of female flower; 7. stigma; 8. cross section of ovary; 9. fruit; 10. pyrene (dorsal view); 11. pyrene (ventral view); 12. cross section of pyrene. (drawn by P. Ma)

Pistillate peduncles 9–13 mm, 3–7-flowered; pedicels 4–8 mm; flowers white, 5–7-merous; calyx 2 mm in diam.; petals one-fifth connate, lobes obovate-oblong; staminodes with cordiform sterile anthers; ovary ovoid-conic, 2 mm, stigma subglobose. Fruits 6–8 mm in diam.; stigma discoid. Pyrenes 5–7, lanceolate in outline, trigonous in cross-section, ca.  $6 \times 1.25$  mm, 3-striate, 2-sulcate on the dorsal surfaces, the sides smooth; endocarp sublignified.

Locality: Cultivated. *S. Y. Hu 5207, 13164* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, N Vietnam.

Ecology: Evergreen forests. Flowering: Mar.–Apr.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).

**4a. *Ilex rotunda* var. *microcarpa*** (Lindl. ex Paxton) *S. Y. Hu* 小果鐵冬青(微果冬青、救必應)

(Photo 289)

*J. Arnold Arb.* 30: 310. 1949.

*Ilex microcarpa* Lindl. ex Paxton, *Fl. Gard.* 1: 43. 1850.

Evergreen tree. Leaves entire, oblong-elliptic, 5–9 × 2.5–4 cm. Inflorescences subumbelliform, 3–13-flowered; peduncles 5–12 mm; pedicels 2–6 mm, both minutely puberulous; flowers 6-merous, calyx erose, rarely ciliate. Fruit globose, solid, 5–7 mm in diam. Pyrenes 6–7, elliptic, 4–6 mm, 3-striate, 2-sulcate.

The variety differs from *Ilex rotunda* in having puberulous peduncles and pedicels. In general, its fruits are smaller and its pyrenes are shorter and less sulcate.

Locality: Hong Kong Island, Tai Mo Shan, Tai Po Kau. *Y. S. Lau 183, 1316; H. C. Tang 2493; C. Ford s.n.* (NY); *Y. Tsiang 2949* (NY).

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Secondary forest. Flowering: Spring; fruiting: Winter.

Uses: Ornamental, medicinal (folklore).

**5. *Ilex viridis*** Champ. ex Benth.

綠冬青(亮葉冬青)

(Fig. 152; Photo 290)

*Hooker's J. Bot. Kew Gard. Misc.* 4: 329. 1852; *FHK* 65. 1861; *FKH* 59. 1912; *S. Y. Hu, J. Arnold Arb.* 30: 319. 1949; *FRPS* 45(2): 62. 1999.

*Ilex triflora* var. *viridis* (Champ. ex Benth.) Loes., *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 78: 345. 1901.

Evergreen shrub or small trees, 1–5 m high. Branchlets subquadrangular, strongly ridged. Leaves alternate; stipules narrowly deltoid; petioles 4–5 mm, narrowly winged by the decurrent leaf-base; leaf blade thick-leathery, ovate, obovate or elliptic, 2.5–7 × 1.5–3 cm, crenate-serrate, dull and conspicuously punctate abaxially. Staminate cymes 1–5-flowered, solitary, axillary to the scales or lower leaves of the current year's growth or fasciculate on the second year's growth; peduncles 3–5 mm; pedicels 2 mm; calyx 2–3 mm across, glabrous, 4-lobed; corolla rotate, 7 mm across, connate at base; stamens shorter than petals; anthers oblong; rudimentary ovary minute. Pistillate flowers solitary, axillary, on current year's growth; pedicels 12–15 mm; calyx 4–5 mm in diam., glabrous, 4-lobed; corolla rotate, 7 mm across, petals connate at base; staminodes short; sterile anthers sagittate; ovary ovoid, stigma discoid. Fruit globose, black, 8–9 mm in diam., stigma discoid-mammiform. Pyrenes 4, rugose, 4–6 × 3–5 mm, striate, sides smooth.

Locality: Victoria Peak, Wan Chai Gap, Ma On Shan, Sha Tin, High Island, Pat Sin Leng, Sunset Peak. *H. C. Tang 1163; P. S. Choi 491; N. H. Li 130; S. Y. Hu & P. H. But 20434* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hubei, Jiangxi, Anhui, Fujian.

Ecology: Secondary forests and thickets. Flowering: May–Jun.; fruiting: Oct.

Notes: The type specimen was collected by J. G. Champion from Mount Parker between 1847 and 1850.

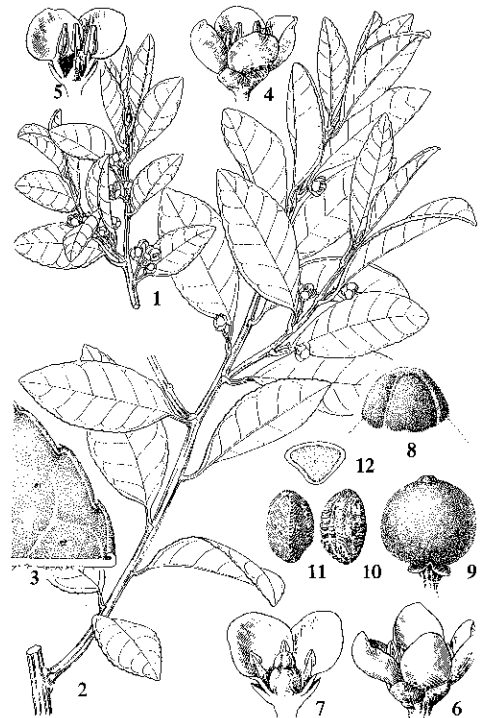


Figure 152. *Ilex viridis* Champ. ex Benth.

1. male flowering branch; 2. female flowering branch; 3. portion of abaxial surface of leaf; 4. male flower (lateral view); 5. vertical section of male flower; 6. female flower; 7. vertical section of female flower; 8. stigma; 9. fruit; 10. pyrene (dorsal view); 11. pyrene (ventral view); 12. cross section of pyrene. (drawn by P. Ma)



6. *Ilex crenata* Thunb. 齒葉冬青

Fl. Jap. 78. 1784; S. Y. Hu, J. Arnold Arb. 30: 321. 1949; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 199. 1901; FHN 2: 430. 1965; FTW ed. 2, 3: 634, pl. 321, 1993; FRPS 45(2): 60. 1999.

Evergreen shrub, up to 2 m high; branchlets puberulous. Leaves leathery; stipules subulate, persistent; petioles short, 2–3 mm; leaf blade obovate, ovate or oblong-elliptic, 1–2.5 × 0.5–1.5 cm, base obtuse, acute or cuneate, apex rounded, obtuse, mucronulate, margin crenate or serrate, punctate abaxially. Staminate cymes 1–7-flowered, solitary, axillary to scales or lower leaves of the current year's growth; peduncles 4–9 mm; pedicels 2–3 mm; flowers 4-merous; calyx 2 mm in diam., glabrous, 4-lobed; corolla 4 mm across, petals broadly elliptic, one-fifth connate; stamens short; anthers ellipsoidal; rudimentary ovary conical. Pistillate flowers solitary, rarely in 2- or 3-flowered cymes, axillary, on the current year's growth only; pedicels 4–6 mm long; flower 4-merous; calyx 3 mm in diam., lobes rounded; corolla rotate, 6 mm across, petals one-third connate; staminodes short, sterile anthers sagittate; ovary ovoid-conic, style sometimes evident, stigma discoid, 4-lobed. Fruit black, globose, 6–8 mm in diam., stigma thickly discoid, lobed. Pyrenes 4, oblong-elliptic, 5 × 3–3.5 mm, smooth, striate, esulcate, striae slightly impressed, endocarp coriaceous.

Locality: Cultivated. *S. Y. Hu 9914* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Japan.

Ecology: Forests. Flowering: May–Jun.; fruiting: Aug.–Oct.

7. *Ilex triflora* Blume 三花冬青

Bijdr. 1150. 1820; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 344. 1901; Pitard in Lecomte, Fl. Gen. Indo-Chine 1: 852. 1912; S. Y. Hu, J. Arnold Arb. 30(3): 328. 1949; FHN 2: 432. 1965; FRPS 45(2): 53. 1999.

*Ilex theicarpa* Hand.-Mazz., Sinensia 3: 188. 1933.

Evergreen tree, 2–20 m high; trunk 10–40 cm in diam. Branchlets ± quadrangular, puberulent when young. Leaves sub-leathery; stipules callose, triangular; leaf blade elliptic, 4–8.5 × 2.5–3.6 cm, base acute or obtuse, apex abruptly acuminate or acute, acumens detoid, 5–10 mm, margin crenate-serrate, punctate abaxially. Flowers lavender, 4-merous, fasciculate in leaf axils of 2-year-old branchlets. Staminate fascicles mostly with 3-flowered cymes; calyx 3 mm across, 4-lobed, lobes erose; corolla rotate, 6 mm across, petals rounded; stamens with oblong anthers. Pistillate fascicles consisting of 1-flowered units, pedicels 4–8 mm. Fruit globose, 6–8 mm in diam.; persistent calyx 3–4 mm across. Pyrenes 4, oblong, 7 mm long, 4 mm across back, striate, esulcate.

Locality: Hong Kong Island, Kadoorie Farm and Botanic Garden, Jubilee Reservoir, Ng Tung Chai, Tai Mo Shan, Tai Po Kau, Wong Chuk Yeung. *S. Y. Hu 1072, 11939* (CUHK); *S. Y. Hu & P. H. But 22208* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian; India, Indochina, Malesia.

Ecology: Well preserved forests along streams. Flowering: May–Jul.; fruiting: Aug.–Nov.

8. *Ilex cornuta* Lindl. & Paxton 枸骨 (Fig. 153; Photo 291)

Flow. Gard. 1: 43, fig. 38, 1850; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 280. 1901; S. Y. Hu, J. Arnold Arb. 30: 353. 1949; FRPS 45(2): 85, pl. 11: 5–8. 1999.

Evergreen shrub or small tree, 1–3 m high; branchlets stout, subterete, minutely puberulent or glabrescent. Leaves thick-leathery; petioles 4–8 mm, puberulent; leaf blade quadrangular-oblong, rarely ovate, 5–6 × 2.5–3 cm, base rounded or sub-truncate; apex acute or shortly acuminate, always with 3 spines; margin entire or sinuate, with 1–3 spines on each side, dark green and shining adaxially, paler abaxially. Inflorescences fasciculate, sessile, axillary, on second year's growth, branches of the fascicles unflowered; flowers 4-merous. Staminate pedicels 5–6 mm long; calyx patelliform, 2.5 mm across, sparsely puberulent, ciliate; corolla rotate, 7 mm across, petals connate at base; stamens subequaling the petals, anthers ovoid-oblong; rudimentary ovary subglobose. Pistillate pedicels 8–9 mm long, after fruiting 13–14 mm long; calyx patelliform, lobes obtuse, ciliate; corolla rotate, 7 mm across, petals sparsely ciliate; staminodes short; ovary oblong-ovoid, stigma discoid. Fruit globose 8–10 mm in diam., stigma discoid. Pyrenes 4, 7–8 × 5 mm, wrinkled-pitted, rugose all over.

Locality: Hong Kong Island, Tai Tam Tuk Reservoir, The Chinese University of Hong Kong. *S. Y. Hu 11932, 5068* (CUHK); *S. Y. Hu & P. But 22952* (CUHK).

Distribution: Hunan, Hubei, Jiangxi, Anhui, Jiangsu.

Ecology: Flowering: Apr.–May; fruiting: Oct.–Dec.

Uses: Ornamental, medicinal (folklore).



Figure 153. *Ilex cornuta* Lindl. & Paxt.

1. male flowering branch; 2. fruiting branch; 3. male flower (young); 4. male flower (full anthesis); 5. vertical section of male flower; 6. fruit. 7–8. pyrene (dorsal and ventral view). (drawn by P. Ma)

**9. *Ilex latifolia* Thunb.** 大葉冬青

(Photo 292)

Fl. Jap. 79. 1784. Loes., *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 78: 289. 1901; S. Y. Hu., *J. Arnold Arb.* 30: 374. 1949; *FRPS* 45(2): 107, pl. 16: 5–9. 1999.

Evergreen tree, up to 20 m high, trunk 60–90 cm in diam., glabrous throughout. Branchlets stout, second year's growth 5–7 mm in diam. Leaves occurring on the third year's growth; stipules very minute, callose; petioles thick, 15–20 mm; leaf blade thick-leathery, oblong or ovate-oblong, 8–17 × 4.5–7.5 cm, base rounded, apex obtuse or very shortly acuminate, acumen 3–6 mm, margin serrate. Inflorescences paniculate, sessile, axillary, on second year's growth; rachis 1–2 cm; flowers 4-merous. Staminate branches of fascicles 3–9-flowered, cymose; peduncles 2 mm; pedicels 6–8 mm; calyx subcupuliform, shallowly 4-lobed, lobes rounded; corolla rotate, 9 mm across, petals ovate-oblong, connate at the base; stamens equaling the petals in length; anthers ovoid-oblong; rudimentary ovary subglobose. Pistillate branches of fascicles 3-flowered; peduncles 2 mm; pedicels of uniflorous ones 5–8 mm; calyx 3 mm across; corolla erect, 5 mm across, petals ovate; staminodes small, sterile anthers minute; ovary ovoid; stigma 4-lobed discoid. Fruit red, globose, 9–12 mm in diam. Pyrenes 4, oblong-elliptic, 5 × 2.5 mm, irregularly wrinkled and pitted; endocarps bony.

Locality: Cultivated. It was introduced from Guangdong to the Medicinal Plant Garden of The Chinese University of Hong Kong in 1998. *S. Y. Hu & K. H. Yung 459* (CUHK); *H. C. Tang 99*; *Y. S. Lau 587*.

Distribution: Guangxi, Yunnan, Hubei, Henan, Jingxi, Anhui, Zhejiang, Fujian; Japan.

Ecology: Flowering: Apr.; fruiting: Nov.

Uses: Medicinal (folklore), tea (leaves).

**10. *Ilex cinerea* Champ. ex Benth.** 灰冬青 (Fig. 154; Photo 293)

Hooker's *J. Bot. Kew Gard. Misc.* 4: 327. 1852; FHK 64. 1861; Loes., *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 78: 333. 1901; FKH 59. 1912; S. Y. Hu., *J. Arnold Arb.* 31: 56. 1950; *FRPS* 45(2): 165. 1999.

Evergreen shrub or small tree, up to 6 m high. Branchlets straight, second year's growth 5–6 mm in diam., lenticels lacking; current year's growth minutely pubescent, glabrescent, striate, terminal buds conical. Leaves with reduced stipules; petioles very short, 2–4 mm; leaf blade oblong-obovate 5–15 cm × 2–4 cm, base rounded or obtuse, apex acute or shortly acuminate, acumen 4–8 mm, margin minutely crenate or serrate; lateral veins 9–11 on each side of midvein. Inflorescence fasciculate, axillary on last year's growth; flowers 4-merous. Staminate branches of fascicles 3–9-flowered, cymose, pubescent; pedicels 3–4 mm; calyx patelliform, 2.5 mm across, lobes sparsely pubescent, rounded, ciliate; corolla rotate, 7 mm across, petals connate at base, apical halves ciliate; stamens equal or shorter than petals, anthers ovate-oblong; rudimentary ovary globose. Pistillate branches of the fascicles uniflorous; pedicels 2–3 mm; calyx subcupulate, 2 mm in diam., shallowly 4-lobed, ciliate; petals 3 mm, divided nearly to the base; staminodes short; ovary pubescent, oblong-ellipsoidal, 2 mm; stigma discoid. Fruit globose, 7 mm in diam., persistent calyx explanate. Pyrenes 4, obovoid, 4 × 3 mm, palmately striate, sulcate, rugose, wrinkled along the sides; endocarp stony.

Locality: Hong Kong Island, Lugard Rd., Pok Fu Lam Reservoir, Mount Parker, Kowloon Hills, Tai Au Mun, Pat Sin Leng, Wu Kau Tang, Lantau Island. *C. Ford (ex Herb. HK Bot. Gard. No. 1104, A)*; *S. Y. Hu 7223, 7244* (CUHK); *Y. W. Lam 1860*; *C. H. Tsou 1900*.

Distribution: Hainan, Guangdong.

Ecology: Forests and thickets. Flowering: Mar.–Apr.; fruiting: May–Dec.

Notes: The type specimen was collected by J. G. Champion from Victoria Peak, Hong Kong Island between 1847 and 1850.

**11. *Ilex graciliflora* Champ. ex Benth.** 細花冬青(纖花冬青)

(Photo 294)

Hooker's *J. Bot. Kew Gard. Misc.* 4: 328. 1852; FHK 65. 1861; FKH 60. 1912; S. Y. Hu., *J. Arnold Arb.* 30: 378. 1949; *FRPS* 45(2): 126. 1999.

Evergreen tree, 6–9 m high. Branchlets subterete, current year's growth angular, sparsely puberulous. Leaves stipulate; petioles 10–15 mm, distal half winged; leaf blade thick-leathery, obovate- or oblong-elliptic, 2–7.5 × 1.5–3.5 cm wide; base obtuse or acute, apex obtuse, rarely acute, margin minutely and remotely serrulate, glabrous on both surfaces. Inflorescences fasciculate, axillary, on

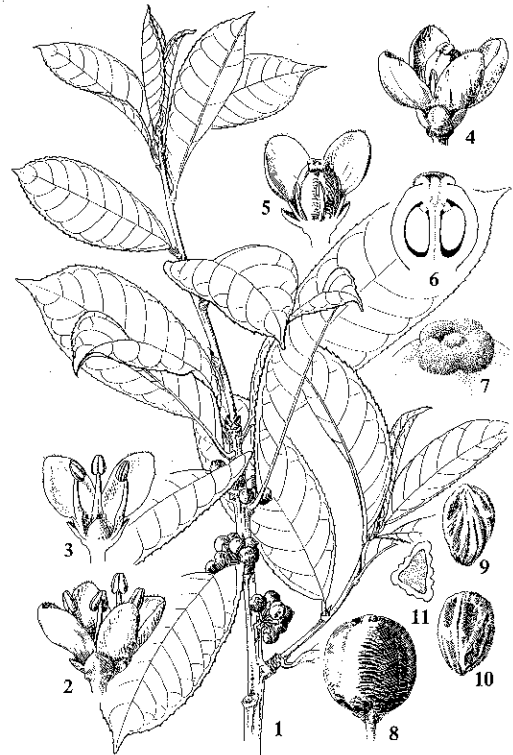


Figure 154. *Ilex cinerea* Champ. ex Benth.

1. fruiting branch; 2. male flower; 3. vertical section of male flower; 4. female flower; 5. vertical section of female flower; 6. vertical section of fruit; 7. stigma; 8. fruit; 9. pyrene (dorsal view); 10. pyrene (ventral view); 11. cross section of pyrene. (drawn by P. Ma)

second year's growth; flowers 4-merous. Staminate branches of the fascicles 3-flowered; peduncles 1–2 mm; pedicels 3–6 mm; calyx 2 mm across, 4-lobed, lobes ciliate; corolla rotate, 6 mm across, petals oblong, 2.5 mm long, ciliate; stamens shorter than the petals; anthers oblong-ovoid; rudimentary ovary subglobose-ovoid. Pistillate branches uniflorous; pedicels 4 mm, lengthening to 6 mm in fruiting time; corolla choripetalous, petals oblong-obovate, 2.5 mm; staminodes short, sterile anthers sagittate; ovary globose-ovoid, stigma discoid. Fruits globose, 5–6 mm in diam.; persistent calyx explanate, suborbicular, ciliate, the stigma thin-discoid. Pyrenes 4, suborbicular, ends rounded, 4 mm × 3 mm, wrinkled and rugose, striate-sulcate, the striae reticulate, the endocarp woody.

Locality: Hong Kong Island, Lugard Rd., Wong Nai Chung, Ma On Shan, Pat Sin Leng, Bride's Pool, Lantau Island. *Y. W. Taam* 1603, 2013; *Y. Tsiang* 49, 256.

Distribution: Endemic to Hong Kong and the nearby Islands.

Ecology: Woods or thickets. Flowering: Apr. The red fruits persist long on the tree, even into Feb. or later of the following year.

Notes: The type specimen was collected by J. G. Champion from Happy Valley, Hong Kong Island between 1847 and 1850.

### 12. *Ilex ficoidea* Hemsl. 榕葉冬青

(Photo 295)

J. Linn. Soc. Bot. 23: 116. 1886; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 328. 1901; FKH 59. 1912; S. Y. Hu, J. Arnold Arb. 31: 72. 1950; FHN 2: 431, 1965; FTW ed. 2, 3: 624. 1993; FRPS 45(2): 184, pl. 32: 5–7. 1999.

Evergreen tree, up to 8 m high; branchlets glabrous. Leaves exstipulate; petioles 10–15 mm, glabrous; leaf blade leathery, oblong-elliptic, ovate- or rarely obovate-elliptic, 5–9 × 1.5–3.5 cm, base obtuse or rounded, apex abruptly long-caudate, acumen 15 mm, margin irregularly crenate-serrate, glabrous on both surfaces; lateral veins 7–10 on each side of midvein, straight, parallel. Inflorescences fasciculate, axillary on second year's growth; flowers 4-merous. Staminate branches of fascicles 1–3-flowered, cymose; peduncles 1–2 mm; pedicels 1–3 mm; calyx patelliform, 2–2.5 mm in diam., ciliate; corolla rotate, 6 mm across, petals ciliate, slightly connate at base; stamens longer than petals, anthers oblong-ovoid; rudimentary ovary conical. Pistillate branches uniflorous; pedicels 2–3 mm; calyx patelliform; corolla erect, 3–4 mm in diam., ciliate; staminodes with small sterile anthers; ovary ovoid, 2 mm; stigma discoid. Fruits globose 5–7 mm in diam. Pyrenes 4, oblong-elliptic or suborbicular, 2–4 mm, palmately striate, sulcate and slightly depressed along the median longitudinal line, sides rugose, pitted and wrinkled, endocarp stony.

Locality: Aberdeen, Happy Valley, High West, Violet Hill, Tai Mo Shan, Tai Po Kau, Lantau Island. *Ford* 31 (Isotype, N); *H. C. Tang* 642, 2432; *N. H. Li* 136; *S. Y. Hu* 12644, 13580.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan.

Ecology: Forests. Flowering: Mar.–Apr.; fruiting: Sep.–Nov.

Notes: The type specimen (*C. Ford* 31, K) was collected from Happy Valley, Hong Kong Island.

### 13. *Ilex pubescens* Hook. & Arn. 毛冬青

(Photo 296)

Bot. Beechey Voy. 167, pl. 35. 1833; FHK 65. 1861; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 356. 1901; FKH 59. 1912; S. Y. Hu, J. Arnold Arb. 31: 220. 1950; FHN 2: 434. 1965; FTW ed. 2, 3: 632, pl. 325. 1993; FRPS 45(2): 199, pl. 45: 1–4. 1999.

Evergreen shrub, up to 3 m high. Branchlets slender, longitudinally ridged, subquadrangular, densely covered with harsh long hairs, terminal buds poorly developed or lacking. Leaves papery or membranous; stipules acute, deltoid, callose, persistent; petioles 2.5–5 mm, hirsute or hispid; leaf blade elliptic or obovate-elliptic, 2–5.5(–7) × 1–2.5(–3) cm, base obtuse, apex acute or shortly acuminate, margin sparsely and sharply serrulate or subentire, hirsute on both surfaces; lateral veins 4–5 on each side of midvein. Inflorescences fasciculate, hirsute, axillary on second year's growth only; flowers 5–8-merous. Staminate branches of the fascicles uniflorous, rarely 3-flowered cymose; pedicels 1–2 mm, calyx patelliform, 2 mm across, deeply 5- or 6-lobed; corolla 4–5 mm across, petals connate at base; stamens with oblong anthers; rudimentary ovary pulvinate. Pistillate branches of the fascicles 1- or rarely 3-flowered; pedicels 2–3 mm; calyx 2.5 mm across, 6- or 7-lobed; corolla rotate, petals 5–8, oblong; staminodes with sagittate anthers; ovary ovoid, 1.5 mm, glabrous, style evident, stigma capitate. Fruits globose, 4 mm in diam., stigma thick-discoid or capitate. Pyrenes (5–)6(–7), ca. 3 mm, dorsal surface roughened, 3-striate-esulcate, the sides smooth; endocarp thick-leathery.

Locality: Common in Hong Kong. *S. Y. Hu* 11648, 6236 (CUHK); *Y. S. Lau* 2915.

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan.

Ecology: Thin forests and thickets. Flowering: Apr.–May; fruiting: Aug.–Nov.

Uses: Medicinal (folklore).

### 14. *Ilex memecylifolia* Champ. ex. Benth. 谷木葉冬青(谷木冬青)

(Photo 297)

Hooker's J. Bot. Kew Gard. Misc. 4: 328. 1852; FHK 65. 1861; Loes., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 350. 1901; FKH 60. 1912; S. Y. Hu, J. Arnold Arb. 31: 230. 1950; FRPS 45(2): 210. 1999.

*Ilex memecylifolia* var. *oblongifolia* Champ. ex. Benth., Hooker's J. Bot. Kew Gard. Misc. 329. 1852.

Evergreen shrub, up to 2 m high. Branchlets and terminal buds puberulent. Leaves leathery, stipulate; petioles 5–7 mm, puberulent; leaf blade ovate-oblong or rarely obovate, 3.5–8.5 × 1.4–3.5 cm, base cuneate, apex shortly and abruptly acuminate, acumen 2–8 mm, margin entire, glabrous except for the puberulent midvein on abaxial surface; lateral veins inconspicuous. Inflorescences pseudo-fasciculate, axillary, on the second year's growth; the central axis 1–5 mm, with a dormant or active terminal bud; flowers 4–6-merous. Staminate

branches of the fascicles 1–3-flowered; peduncles 1–2 mm; pedicels 3–7 mm, puberulent; calyx patelliform, 2 mm across, puberulent, 5- or 6-lobed, lobes deltoid, obtuse, often erose, ciliate; corolla 5–6 mm across, base connate, petals 4 or 5, stamens 4 or 5, anthers ovoid; rudimentary ovary subglobose. Pistillate branches uniflorous; pedicels 6–8 mm; calyx and corolla as in the staminate flower; staminode puberulent; ovary subglobose-ovoid, 1.5–2 mm in diam., style evident, ca. 1 mm, stigma capitate. Fruits globose, 6 mm in diam.; persistent calyx 3 mm across; stigma columnar; pyrenes 4 or 5, reticulately striate, elliptic-trigonous, 5 mm; endocarp coriaceous, rough and hairy.

Locality: Hong Kong Island, Kowloon City, Long Ke, Lantau Island. *Y. S. Lau 2914, 2928; K. L. Yip 4524.*

Distribution: Guangdong, Guangxi, Jiangxi, Fujian.

Ecology: Dry slopes, thickets and woods, roadsides. Flowering: Apr.; fruiting: Oct.–Nov.

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

### 15. *Ilex championii* Loes. 凹葉冬青

Nova Acta. Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 349. 1901; S. Y. Hu, J. Arnold Arb. 31: 249. 1950; FRPS 45(2): 241, pl. 47: 5–8. 1999.

*Ilex memecylifolia* var. *nummularifolia* Champ. ex Benth., Hooker's. J. Bot. Kew Gard. Misc. 4: 329. 1852.

Evergreen shrub or tree, up to 12 m high. Branchlets of the current year's growth angular, puberulent, purplish brown. Leaves thickly leathery; stipules callose, acute, deltoid, persistent; petioles 4–5 mm; punctate beneath, leaf blade ovate or obovate or rarely obovate-elliptic, 2–4.5 × 1.5–2.5 cm, base obtuse, apex obtuse, abruptly acuminate or rounded and retuse or emarginate, margin entire, glabrous on both surfaces. Inflorescences fasciculate, puberulent, axillary on the second year's growth. Staminate branches of fascicles 1–3-flowered, flowers 4-merous; peduncles 1–1.5 mm; pedicels 0.5–1 mm; calyx patelliform, 1.5 mm across, pubescent, deeply 4-lobed, lobes rounded, ciliate; corolla 5 mm across, petals oblong-ovate, one-fifth connate; stamens shorter than petals, anthers oblong; rudimentary ovary pulvinate. Pistillate flowers not seen. Infructescences fasciculate; branches of fascicles bearing 1–3 fruits; pedicels 1.5–2 mm. Fruit compressed-globose, 3–4 mm in diam.; persistent calyx explanate, quadrangular, pubescent and ciliate; stigma discoid, convex, 4-lobed, exocarp very thin. Pyrenes surface 3-striate and esulcate, endocarp coriaceous.

Locality: Tai Mo Shan, Ma On Shan, Sunset Peak. *S. Y. Hu 12551* (CUHK); *S. Y. Hu & P. H. But 20838* (CUHK).

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi.

Ecology: Secondary forests.

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850. *Ilex championii* was discovered in Hong Kong and first interpreted as a variety of *I. memecylifolia*. The paucifasciculate inflorescences, shortly pedicellate small fruits, and the four striate-esulcate pyrenes of *I. championii* indicate its close relationship with *I. lohfauiensis*, but the latter has pilose branchlets and smaller, thinly leathery leaves with epunctate lower surfaces.

### 16. *Ilex lohfauiensis* Merr. 羅浮冬青(矮冬青)

(Photo 298)

Philipp. J. Sci. Bot. 13: 144. 1918; S. Y. Hu, J. Arnold Arb. 31: 260. 1950; FRPS 45(2): 238, pl. 49: 2–6. 1999.

*Ilex hanceana* var. *lohfauiensis* (Merr.) Chun, Sunyatsenia 1: 261. 1934.

Evergreen shrub up to 2 m high, with thick-pubescent branchlets and thin-conic, pilose terminal buds. Leaves occurring on the third year's growth, thin leathery or papery; stipules narrowly deltoid; petioles 1–2 mm; leaf blade oblong or elliptic, rarely obovate or rhomboid, 1–2.5 × 5–12 mm, base cuneate, apex retuse or emarginate, margin entire, puberulent along midvein on both surfaces. Inflorescence fasciculate, puberulent, axillary on the second year's growth. Staminate branches of fascicles 1–3-flowered; peduncles 1 mm; pedicels ca. 1 mm, pilose; flowers 4(–5)-merous; calyx 1.5 mm across, pubescent, shallowly 4-lobed, the lobes rounded, erose, ciliate; corolla rotate, 4.5 mm across; petals 4 or 5 broad-elliptic, eciliate, one-fifth connate at the base; stamens shorter than the petals, the anthers oblong; rudimentary ovary pulvinate. Pistillate fascicles with 2(–3) flowers, individual branches uniflorous; pedicels 1 mm; calyx and corolla as in the staminate flowers. Staminodes shorter than the petals, the sterile anthers cordate; ovary globose-ovoid, 0.75 mm in diam., stigma discoid, style evident. Fruits globose, 3.5 mm in diam., stigma 4(–5)-lobed, discoid. Pyrenes 4, broad-elliptic in outline, trigonous in cross-section, smooth, 3 mm, ends acute, dorsal surface 3-striate-esulcate, the sides and the ventral keel each with a single stria, endocarp leathery.

Locality: Tai Mo Shan, Sunset Peak. *S. Y. Hu 5536, 10573, 13800* (CUHK); *Y. W. Lam 2163; HK sheet 39926.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Thin forests and thickets. Flowering: Jun.–Jul.; fruiting: Aug.–Dec.

Notes: In its thin leathery leaves, paucifasciculate inflorescences, paired and shortly pedicellate fruits and striate-esulcate pyrenes, *Ilex lohfauiensis* is very closely related to *I. hanceana*, but the latter has puberulous branchlets and elliptic or obovate leaves with short-acuminate or obtuse or rarely rounded and retuse apices, and plane or slightly impressed midveins.

**17. *Ilex hanceana* Maxim.** 青茶冬青(青茶) (Fig. 155; Photo 299)  
Mém. Acad. Sci. St. Pétersb. VII, 29(3): 33. 1881; Loes., Nova Acta. Acad. Caes. Leop.-Carol. German. Nat. Cur. 78: 203, pl. 7, fig. 1. 1901; FKH 59. 1912; S. Y. Hu, J. Arnold Arb. 31: 261. 1950; FRPS 45(2): 242. 1999.

Evergreen shrub. Branchlets slender puberulent, lenticles lacking, the terminal buds conic, acute, pubescent. Leaves leathery; stipules deltoid, callose, acute, persistent; petioles 2–5 mm; leaf blade obovate or obovate-oblong, 3.5 × 1–2 cm; base obtuse or cuneate, apex obtuse or very rarely retuse, margin entire, glabrous or puberulent along midvein on adaxial surface; lateral veins 6 or 7 on each side of midvein. Inflorescences fasciculate, pubescent, axillary on second year's growth. Staminate branches of fascicles 2–3-flowered; peduncles 1–2 mm; pedicels 1–1.5 mm; flowers 4-merous; calyx patelliform, 2 mm across, pubescent, shallowly 4-lobed, lobes rounded, ciliate; corolla rotate, 3 mm across, petals ovate, connate at base; stamens shorter than the petals; rudimentary ovary conic. Pistillate branches uniflorous; pedicels 1.5 mm long, pubescent; calyx and corolla as in the staminate flowers; staminode with sterile cordate anthers; ovary subglobose-ovoid, 1.25 mm in diam., glabrous, stigma broadly discoid. Fruits globose, 5 mm in diam., red, shiny, the persistent calyx explanate, quadrangular, pubescent, ciliate; stigma very thinly discoid, 4- or 5-lobed. Pyrenes 4, broad-elliptic, 4 mm, dorsal surface longitudinally striate.

Locality: Hong Kong Island. *H. C. Tang* 2105, 2397, 2414.

Distribution: Hainan, Guangdong, Fujian.

Ecology: Thin forests. Flowering: May–Jun.; fruiting: Jul.–Dec.

Notes: The type specimen (*J. Lamont* 1101, A) was collected from Happy Valley, Hong Kong Island.



Figure 155. *Ilex hanceana* Maxim.

1. male flowering branch; 2. fruiting branch; 3. male flower; 4. vertical section of male flower; 5. female flower; 6. vertical section of female flower; 7. stigma; 8. fruit; 9. pyrene (dorsal view); 10. pyrene (ventral view); 11. cross section of pyrene. (drawn by P. Ma)

## 229. ICACINACEAE 茶茱萸科

WU De-lin 吳德鄰

Trees, shrubs or climbers, sometimes with white sap. Stipules absent. Leaves simple, alternate, rarely opposite. Inflorescences spicate, racemose, paniculate or cymose. Flowers bisexual or unisexual and dioecious, rarely polygamous and dioecious, actinomorphic. Calyx 4–5-lobed; lobes imbricate, rarely valvate. Petals 4–5, free or connate, rarely absent, valvate, rarely imbricate. Stamens as many as and alternate with petals; filaments free; anthers 2-celled, longitudinally dehiscent; disk present or absent. Ovary superior, 1-locular, rarely 3–5-locular; styles very short or absent, stigma 2–3-lobed, capitate or peltate; ovules 2, anatropous, pendulous. Fruits often a 1-seeded drupe, rarely samaroid. Seeds often with well-developed oily endosperm; coat thin, embryo straight or curved.

About 52 genera, 300 species distributed in tropical regions; 13 genera and 25 species in China; one genus and one species in Hong Kong.

### 1. *Mappianthus* Hand.-Mazz. 甜果藤屬

Woody climbers, sometimes with tendrils. Leaves leathery, opposite or subopposite, entire, petiolate, pinnately-veined. Inflorescences axillary, rarely terminal or super-axillary, usually cymose, female inflorescence usually more strong and few-flowered than male ones. Flowers unisexual (plants dioecious). Male flowers: calyx small, cupular, 5-dentate; corolla funnel-form, fleshy, 5-lobed, lobes valvate, hairy; stamens 5, free, shorter than corolla, filaments slightly thinner at base, upward ampliate; anther dorsifixed, introrse, pistillode present. Female flowers: calyx as in male flowers, persistent and enlarged in fruiting; corolla 5-lobed, base slightly connate, apex incurved; ovary 1-locular, ovules 2, stigma disciform, 5-lobed, staminodes present. Drupe elliptic, 1-seeded.

Two species in tropical Asia; one species in China; it also occurs in Hong Kong.

#### 1. *Mappianthus iodoides* Hand.-Mazz. 甜果藤(定心藤)

(Fig. 156; Photo 300)

Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 58: 150. 1912; FRPS 46: 53. 1981.

Woody climber, young shoots, petioles and inflorescence densely tawny strigose. Petioles 6–14 mm; leaf blade oblong, 8–17 × 3–7 cm, base rounded or broadly cuneate, apex acuminate or caudate, olive-green adaxially, yellow-green abaxially, glabrous on both surfaces or sparsely strigose abaxially, lateral veins 3–5 on each sides of midvein. Cymes axillary, rarely super-axillary or terminal, 1–4(–8) cm. Male flowers: pedicels 1–2 cm; calyx small, cupular, ca. 2 mm, shallowly 5-dentate, densely strigose; corolla 4–6 mm,

lobes ovate, apex caudate, incurved, densely strigose; stamens 5, as long as corolla; pistillode conic. Female inflorescence not more than 1 cm. Female flowers: calyx as in male flowers; petals oblong, 3–4 mm, apex acute, incurved, densely yellow-brown strigose; staminode 2 mm; ovary subglobose, 2 mm; stigma disciform. Drupe orange, elliptic, 2–3.5 × 1–1.5 cm, sweet, with persistent slightly enlarged calyx; 1-seeded.

Locality: Tai Mo Shan, Kadoorie Farm, Pat Sin Leng, Tai Po Kau. *S. Y. Hu & P. P. H. But 24072; Y. S. Lau 3327; Y. W. Lam 129.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Fujian, Yunnan; Vietnam.

Ecology: Sunny places of forests. Flowering: Apr.–Jul.; fruiting: Jul.–Nov.

Uses: Medicinal (folklore).

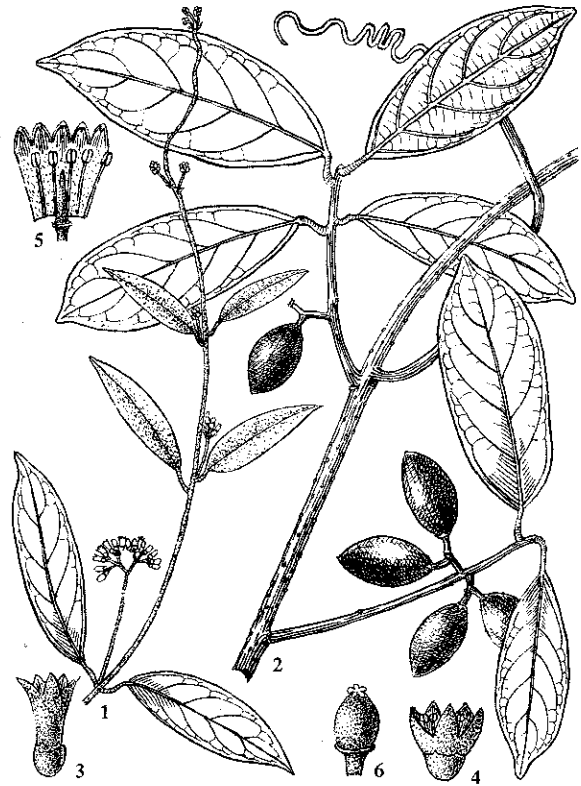


Figure 156. *Mappianthus iodoides* Hand.-Mazz.  
1. flowering branch; 2. fruiting branch; 3. male flower;  
4. female flower; 5. male flower opened; 6. gynoecium.  
(drawn by H. P. Yu)

**234. BUXACEAE 黄楊科**

HU Qi-ming 胡啟明

Evergreen shrubs, rarely small trees or herbs. Leaves simple, opposite or alternate, usually leathery, without stipules. Flowers unisexual (plants monoecious or rarely dioecious), apetalous, in axillary or terminal racemes or spikes. Male flowers: sepals 4, in 2 series; stamens 4, free, opposite to the sepals; anthers 2-celled, dehiscent by valves or longitudinal slits. Female flowers: sepals usually 6, or rarely 4, imbricate; ovary superior, usually 3-locular, rarely 2–4-locular, with 1–2 ovules on axile placenta in each locule; styles free or connate at the base. Fruit a capsule or a drupe.

Four genera about 100 species in temperate, subtropical and tropical regions; three genera about 28 species in China; two genera, four species and one variety in Hong Kong.

- 1a. Leaves opposite, pinnately-veined; fruit a capsule ..... 1. *Buxus*
- 1b. Leaves alternate, 3-veined; fruit a drupe ..... 2. *Sarcococca*

**1. Buxus L. 黄楊屬**

Evergreen shrubs or small trees; branchlets 4-angled. Leaves opposite, leathery, entire and pinnately-veined. Inflorescence axillary or terminal, racemose, spicate or capitate, with a solitary female flower at the apex and several male flowers at the lower part. Male flowers: sepals 4, in 2 series; stamens as many and opposite to the sepals; sterile stamen 1; rudimentary ovary very small. Female flowers: sepals 6, in 2 series; rudimentary stamens very small; ovary consisting of 3 carpels, surmounted by 3 separate styles. Fruit a loculicidal capsule.

About 70 species in C Europe, the Mediterranean region, E Asia and C America; 17 species in China; three species and one variety in Hong Kong.

- 1a. Leaves broadly elliptic, oblong-elliptic or lanceolate; male flowers sessile.
  - 2a. Apex of leaves obtuse or emarginate ..... 1. *B. sinica*
  - 2b. Apex of leaves acuminate or acute ..... 1a. *B. sinica* subsp. *aemulans*
- 1b. Leaves spatulate or obovate; male flowers pedicellate.
  - 3a. Leaves 8–18 mm broad, lateral veins raised on both surfaces ..... 2. *B. bodinieri*
  - 3b. Leaves 5–8(–9) mm broad, lateral veins obscure abaxially ..... 3. *B. harlandii*

**1. Buxus sinica** (Rehder & E. H. Wilson) M. Cheng 黄楊

FRPS 45(1): 37. 1980; FGD 3: 234. 1995.

*Buxus microphylla* Siebold & Zucc. var. *sinica* Rehder & E. H. Wilson, Pl. Wils. 2: 165. 1914.

Evergreen shrub or rarely small trees. Young shoots puberulous; old branches subterete, greyish white. Leaves leathery to thick-leathery; petioles very short, usually puberulous; leaf blade broadly elliptic, broadly obovate, ovate-elliptic or oblong, 1.5–3.5 × 0.8–2 cm, base rounded or broadly cuneate, apex rounded or obtuse, usually emarginate, adaxial surface dark green and shining, with raised midvein and conspicuous lateral veins, abaxial surface paler, midvein plane, lateral veins obscure. Inflorescence axillary, head-like, with 8–10 male flowers and 1 terminal female flower; rachis 3–4 mm, puberulous. Bracts broadly ovate, 2–2.5 mm, ± puberulous.

Male flowers sessile; sepals 4, outer 2 ovate-elliptic, inner 2 suborbicular, 2.5–3 mm, glabrous; stamens ca. 4 mm; rudimentary pistil 2/3 or sometimes 1/2 the length of sepals. Female flower: sepals ca. 3 mm; ovary slightly longer than styles. Capsule subglobose, 6–8(–10) mm in diam.

Locality: Cape D'Aguilar, Tai Tam, Tai Mo Shan, Po Toi Islands. *Y. S. Lau* 919, 1265, 2374.

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Gansu, Shaanxi, Hubei, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang.

Ecology: Thickets by streams and in ravines.

Uses: Ornamental.

**1a. *Buxus sinica* subsp. *aemulans*** (Rehder & E. H. Wilson) M. Cheng 尖葉黃楊

FRPS 45(1): 40. 1980; FGD 3: 234. 1995.

*Buxus microphylla* var. *aemulans* Rehder & E. H. Wilson, Pl. Wils. 2: 169. 1914.

This subspecies is characterized by the leaves being elliptic-lanceolate to lanceolate 2–3.5 × 1–1.3 cm, shortly acuminate to both ends, and render it easily identifiable.

Locality: Ping Fung Shan, Wong Lung Hang, Lantau Peak. *C. Ford s.n. (HK sheet 6357)*; *L. T. Lo* 566; *Y. S. Lau* 1737.

Distribution: Guangdong, Guangxi, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Thickets by streams.

Uses: Ornamental.

**2. *Buxus bodinieri*** H. Lévl. 雀舌黃楊

Repert. Spec. Nov. Regni Veg. 11(304–308): 549. 1913; M. Cheng, FRPS 45(1): 36, pl. 9: 15–21. 1980; FGD 3: 231. 1995.

Evergreen shrub, 2–4 m tall. Young shoots 4-angled, puberulous, subterete and glabrous in age. Leaves subleathery; petioles 1–2 mm; leaf blade spatulate, rarely obovate, 2–4 × 0.8–1.8 cm, base or narrowly cuneate, or sometimes acute, apex obtuse or rounded, usually emarginate, adaxial surface green and shining, sometimes puberulous on midvein, abaxial surface paler, ± glaucescent; midvein raised on both surfaces; lateral veins numerous, conspicuous on both surfaces. Inflorescence axillary, head-like, with 8–10 male flowers and 1 terminal female flower; rachis ca. 2.5 mm. Bracts ovate, glabrous or puberulous abaxially. Male flowers: pedicels ca. 0.4 mm; sepals 4, ovate-orbicular, ca. 2.5 mm, glabrous; stamens ca. 6 mm; rudimentary pistil as long as sepals or slightly longer. Female flower: sepals 2–2.5 mm; ovary ovoid, ca. 2 mm in diam.; styles ca. 1.5 mm. Capsule ovoid, ca. 5 mm in diam.

Locality: Nam Chung, Shek Pan Tam, Luk Keng. *P. S. Choi s.n. (HK sheet 34758)*; *Y. S. Lau* 1823.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Gansu, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Zhejiang.

Ecology: Thickets by streams or in ravines. Flowering: Feb.–Mar.; fruiting: May–Aug.

Uses: Ornamental.

**3. *Buxus harlandii*** Hance 匙葉黃楊 (Fig. 157; Photo 301)

*J. Linn. Soc. Bot.* 13: 123–124. 1873 ('*Harlandii*'); *FHN* 2: 339. 1965; FRPS 45(1): 33, pl. 9: 9–14. 1980; FGD 3: 233. 1995.

*Buxus sempervirens* auct. non L.: *FHK* 315. 1861; *FKH* 233. 1912.

Evergreen shrub, ca. 1 m tall, much branched. Young shoots 4-angled, glabrescent; old branches subterete, glabrous. Leaves leathery, subsessile or with a very short petiole; leaf blade spatulate or sometimes narrowly oblong, 2–4 × 0.5–0.9 cm, apex rounded or obtuse, usually emarginate, gradually narrowed to the base, adaxial surface green and shining, sometimes puberulous on midvein; midvein raised on both surface, lateral veins conspicuous adaxially, obscure abaxially. Inflorescence head-like, axillary and terminal, with 8–10 male flowers and 1 terminal female flower; rachis 3–4 mm. Bracts ovate, acute. Male flowers: pedicels ca. 1 mm; sepals broadly ovate to broadly elliptic, ca. 2 mm, glabrous; stamens ca. 4 mm; rudimentary pistil ca. 1 mm, half as long as sepals. Female flower: sepals broadly ovate, ca. 2 mm; ovary ovoid, glabrous; styles dilated at the base, as long as ovary. Capsule subglobose, ca. 7 mm in diam.

Locality: Nam Chung, Wu Kau Tang. *H. C. Tang* 1499; *W. J. Tutcher* 11180; *HK sheet* 39398.

Distribution: Hainan and E Guangdong.

Ecology: Rocky banks of streams and in thin forests. Flowering: May.

Uses: Ornamental.

Notes: The type specimens were collected by A. W. Harland



Figure 157. *Buxus harlandii* Hance

1. flowering branch; 2. fruiting branch; 3. male flower; 4. female flower; 5. fruit. (drawn by H. P. Yu)

and H. F. Hance from Tai Tam Tuk, Hong Kong Island in 1858. Listed in *Rare and Precious Plants of Hong Kong*.

## 2. *Sarcococca* Lindl. 野扇花屬

Evergreen shrubs. Leaves alternate, entire, pinnately-veined or 3-veined. Inflorescence axillary or terminal, head-like or racemose. Flowers unisexual (plants monoecious), usually androgynous, with female flowers at the lower part and male flowers on the upper part, or sometimes males and females borne on separate inflorescences. Male flowers: bracteoles 2; sepals 4, in 2 series; stamens as many as and opposite to sepals, exserted; rudimentary pistil oblong, 4-angled, concave at apex. Female flowers: bracteoles numerous, imbricate; sepals 4–6, decussate or in 2 series; ovary 2–3-locular; style 2–3, initially coalescent at apex, separate and recurved after pollination. Fruit drupe-like, ovoid or globose, exocarp fleshy or dry, endocarp crustaceous, 1–2-seeded.

About 20 species in SE and S Asia; nine species in China; one species in Hong Kong.

### 1. *Sarcococca longipetiolata* M. Cheng

長柄野扇花 (Fig. 158; Photo 302)

Act. Phytotax. Sin. 17(3): 99, pl. 8: 1–2. 1979; FRPS 45(1): 44, pl. 13. 1980; FGD 3: 235, fig. 158. 1995.

*Sarcococca pruniformis* auct. non Lindl.: Dunn & Tutcher, FKH 233. 1912.

Evergreen shrub, 1–3 m tall. Branchlets angled, glabrous or nearly so. Leaves leathery; petioles 1–1.5 cm; leaf blade lanceolate, oblong-lanceolate or narrowly lanceolate, rarely ovate-lanceolate, 6–12 × 1.5–2.5 cm, base attenuate or cuneate, apex acuminate to long-acuminate, glabrous or puberulous on the midvein of adaxial surface, triple-veined; veins conspicuous on adaxial surface. Racemes 1–1.5 cm, solitary or 2–4-clustered in axils of leaves. Bracts ovate, ca. 1.5 mm, ± acuminate. Male flowers: pedicels thick, ca. 1 mm, subtended by 2 small (ca. 3 mm) ovate bracteoles; sepals broadly ovate or elliptic, ca. 3 mm; stamens ca. 6 mm. Female flowers: bracteoles ovate, 1.5–3 mm, imbricate; sepals similar to the upper bracteoles. Fruit subglobose, ca. 8 mm in diam., red or purplish red when mature.

Locality: Mount Parker. *W. J. Tutcher 5219; Y. W. Lam 1453.*

Distribution: Guangdong, S Hunan.

Ecology: Forests by streams.

Uses: Ornamental.

Notes: Listed in *Rare and Precious Plants of Hong Kong*.

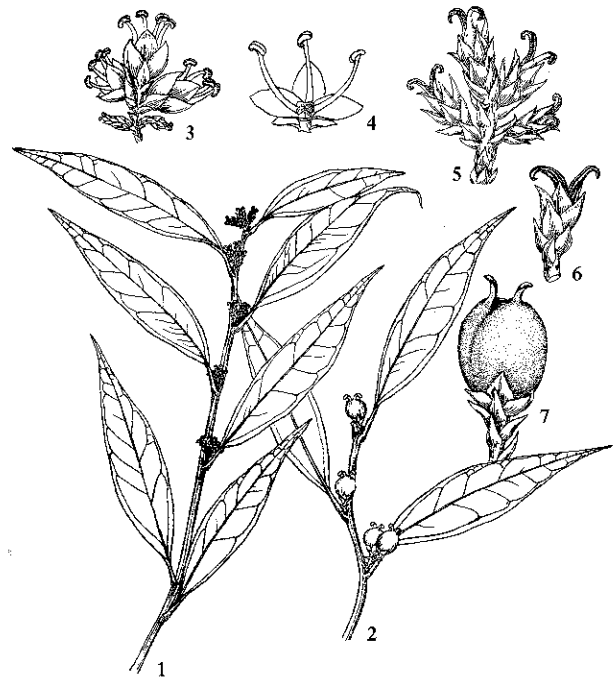


Figure 158. *Sarcococca longipetiolata* M. Cheng

1. flowering branch; 2. fruiting branch; 3. male inflorescence; 4. male flower; 5. female inflorescence; 6. female flower; 7. fruit. (drawn by H. P. Yu)

## 236. PANDACEAE 小盤木科

LI Ping-tao 李秉滔

Trees or shrubs, without milky juice. Stipules small. Leaves simple, alternate, distichous, pinnately-veined; stipules small, unequally inserted. Flowers small, unisexual, in terminal or axillary or cauline racemes or raceme-like inflorescence, or solitary or clustered in the leaf-axils; sepals 5, distinct or connate into a toothed or lobed cup; petals 5, imbricate or valvate, distinct; stamens in one or two sets of 5 each, or 10 or 15 in a single series; anthers opening by longitudinal slits; disk wanting; ovary superior, 2–5-locular, with a single ovule in each locule, lacking obturators; styles free or basally connate, or the stigmas virtually sessile. Fruit drupaceous; endocarp slightly bony or stony, thin to very thick and massive, usually variously tuberculate or muricate or pitted or ridged, sometimes dehiscent by valves; seeds not carunculate.

Three genera about 26 species in tropical Africa, Asia and New Guinea; one genus and one species in China; it also occurs in Hong Kong.

### 1. *Microdesmis* Hook. f. 小盤木屬

Shrubs or treelets. Leaves simple, alternate, pinnately-veined, short-petiolate; stipules small. Flowers unisexual (plants dioecious), usually in axillary fascicles, or sometimes female flowers solitary. Male flowers: sepals 5, imbricate; petals 5, longer than the sepals; stamens 10 or 5, in 2 or 1 series, inserted at the fleshy receptacle, the outer ones alternating to the petals, the inner ones sometimes absent or reduced and scale-formed; filaments free; anthers longitudinally dehiscent. Female flowers: sepals and petals as male flowers, but slightly larger; ovary fleshy, 2(–3)-locular, with 1 ovule in each locule; styles short, 2-parted, lobes divaricate. Drupes usually globose, epicarp scabrous, endocarps bony; seeds with fleshy endosperm.



About ten species in tropical Asia and Africa; one species in China; it also occurs in Hong Kong.

1. *Microdesmis caseariifolia* Planch.

小盤木

(Fig. 159; Photo 303)

Hooker's Icon. Pl. 8: 758. 1848; FRPS 43(1): 2. 1998; FGD 5: 120, fig. 71. 2003.

*Microdesmis caseariifolia* f. *sinensis* Pax & Hoffm., Pflanzenz. 47(IV 147, 3): 106. 1911.

Shrub or treelet 3–8 m tall; branchlets slender, initially pubescent, glabrescent. Leaves alternate, papery to thin-leathery; petioles 3–6 mm, pubescent to glabrous; stipules narrowly triangular, ca. 1 mm; leaf blade lanceolate, oblong-lanceolate to oblong, 6–16 × 2.5–5 cm, base cuneate or broadly cuneate, apex acuminate, sometimes caudate, margin crenulate or subentire, glabrous on both surfaces or sparsely puberulous along midvein abaxially when young; lateral veins slender, 4–6 on each side of midvein. Flowers small, yellow, in axillary fascicles. Male flowers: pedicels 2–3 mm; sepals ovate, ca. 1 mm; petals elliptic, ca. 2 mm; stamens 10, the outer 5 longer; anthers 2-celled, connectives triangular or caudate-acuminate; staminodes fleshy. Female flowers: sepals and petals as in male flowers, but slightly larger; ovary globose, 2-locular, glabrous. Drupes subglobose, ca. 5 mm in diam., red when mature.

Locality: Au Ha. *Y. W. Lam* 2317; *F. W. Xing* 6905.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Indochina, Malay Peninsula, Philippines to Indonesia.

Ecology: Thin forests or thickets. Flowering: Mar.–Sep.; fruiting: Jul.–Nov.

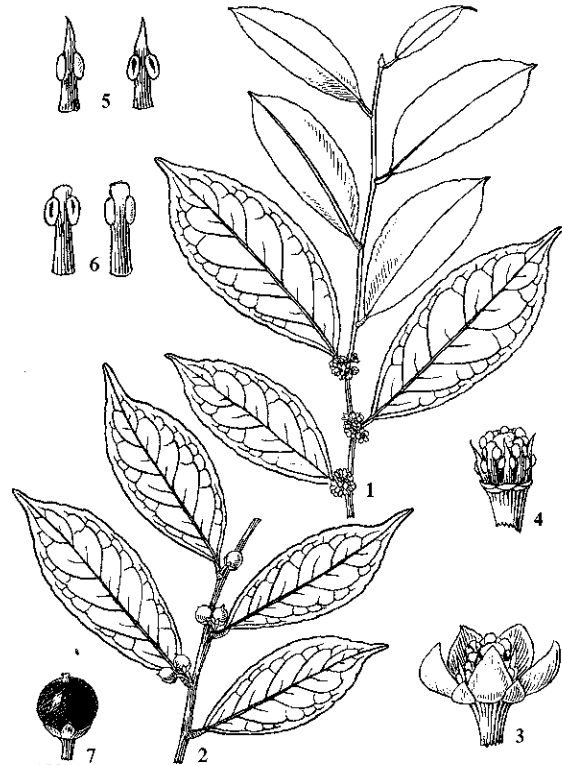


Figure 159. *Microdesmis caseariifolia* Planch.

1. flowering branch; 2. fruiting branch; 3. male flower; 4. male flower with calyx and corolla removed viewing stamens; 5. stamen of outer whorl (dorsal and ventral views); 6. stamen of inner whorl (dorsal and ventral views); 7. drupe. (drawn by H. P. Yu)

## 237. EUPHORBIACEAE 大戟科

LI Ping-tao 李秉滔

Trees, shrubs or herbs, rarely woody or herbaceous climbers, sometimes succulent, often with milky juice, very variable in habit. Leaves alternate or opposite, rarely whorled, simple, rarely variously compound, or reduced to scale-like, usually stipulate, sometimes with 1–2 glands at apex or base of petioles. Inflorescences very varied. Flowers unisexual (plants monoecious or dioecious), usually small, regular, either without a perianth in one or both sexes, or more frequently with a simple calyx-like perianth, or sometimes also with 4 or 5 petals alternating with the calyx-lobes; staminate flowers usually with intrastaminal disk and with 1 to many stamens; pistillate flowers with hypogynous Disk; ovary consisting of 3 or sometimes 2 or more than 3 united 1-locular or rarely 2-locular carpels, each with 1 or 2 pendulous ovules; styles as many as carpels, free or ± united, entire or divided. Fruit usually capsular, separating into as many elastically 2-valved cocci as carpels, leaving a persistent axis, or rarely succulent and indehiscent, the endocarp consisting of as many as indehiscent nuts or cocci as carpels. Seed laterally attached at or above the middle, with or without an aril.

A very large family containing about 317 genera and 5000 species, widespread in the world, primarily in the tropics and subtropics, poorly represented in the temperate regions; about 70 genera and 470 species present in China; 30 genera and 95 species in Hong Kong.

- 1a. Leaves trifoliate; fruit baccate, indehiscent.....1. *Bischofia*  
 1b. Leaves simple.  
 2a. Leaves palmately divided.  
 3a. Leaves not peltate (cultivated species of Hong Kong) .....2. *Jatropha*  
 3b. Leaves peltate.  
 4a. Juice not milky; lobes of leaf serrate .....3. *Ricinus*  
 4b. Juice milky; lobes of leaf entire.....4. *Manihot*  
 2b. Leaves undivided or shallowly lobed.  
 5a. Plants without milky juice.  
 6a. Petioles and leaf-base without glands.  
 7a. Flowers with petals and disk.....5. *Bridelia*  
 7b. Flowers apetalous.  
 8a. Flowers without disk or only male ones with disk.  
 9a. Fruit a drupe .....6. *Putranjiva*

- 9b. Fruit capsular.
- 10a. Leaf blade serrate or nearly entire, sepals valvate; filaments free.....7. *Acalypha*
- 10b. Leaf blade entire; sepals imbricate; filaments connate.
- 11a. Sepals free; fruits with many longitudinal grooves.....8. *Glochidion*
- 11b. Male calyx discoid, cup-shaped or turbinate; fruit without longitudinal grooves.
- 12a. Male flowers with 6–12-lobed disk; female calyx 6-parted; capsule dehiscent.....9. *Sauropus*
- 12b. Male flowers without disk; female calyx turbinate, funnellform or hemispherical; capsule bacciform, indehiscent.....10. *Breynia*
- 8b. Flowers with disk.
- 13a. Leaves distichous; fruit capsular or baccate.
- 14a. Male flowers with pistillode.....11. *Flueggea*
- 14b. Male flowers without pistillode.....12. *Phyllanthus*
- 13b. Leaves not distichous; fruit a drupe.
- 15a. Sepals free; styles very short or nearly absent; stigma usually dilate, peltate or reniform; drupes larger, 1–2.5 cm in diam.....13. *Drypetes*
- 15b. Sepals connate into cup-shaped or discoid calyx; styles terminal or lateral, not dilate at apex; drupes less than 8 mm in diam.....14. *Antidesma*
- 6b. Petioles or leaf-base with glands.
- 16a. Leaves with glandular glands.
- 17a. Inflorescences terminal, rarely axillary; anthers 2-celled.....15. *Mallotus*
- 17b. Inflorescences axillary; anthers 3–4-celled.....16. *Macaranga*
- 16b. Leaves without glandular glands.
- 18a. Leaves barbate at axils of veins abaxially; pedicels in fruit 3–7.5 cm; anthers 4-celled...17. *Cleidion*
- 18b. Leaves not barbate at axils of veins; pedicels in fruit less than 5 mm; anthers 2-celled.
- 19a. Leaves with 2 small subulate stipules at base, reddish abaxially, margin with glandular tipped teeth.....18. *Alchornea*
- 19b. Leaves without stipules at base, green or glaucous abaxially, margin without glandular teeth.
- 20a. Plant usually stellate-hairy; leaves alternate or opposite; capsules usually softly echinate or glandular punctate.....15. *Mallotus*
- 20b. Plant glabrous or pubescent; leaves alternate; capsules unarmed.
- 21a. Leaves leathery, elliptic to oblanceolate; petioles to 1.5 cm; sepals imbricate; stamens 2–4; ovules 2 per locule.....19. *Aporusa*
- 21b. Leaves papery, ovate; petioles to 5–15 cm; sepals valvate; stamens 15–25; ovules 1 per locule.....20. *Claoxyton*
- 5b. Plants with milky juice.
- 22a. Leaves without glands at base or at apex of petioles.
- 23a. Branches with leaf scars; flowers in racemes, with sepals, male flowers with petals and disk.....21. *Codiaeum*
- 23b. Branches without leaf scar; flowers in cyathium, without sepal, petal and disk.....22. *Euphorbia*
- 22b. Leaves with glands at base or at apex of petioles.
- 24a. Branches, leaves, inflorescences and fruits covered with stellate hairs or scales.
- 25a. Branches with leaf scars; leaves entire; stipules triangular, hairy; calyx cup-shaped; petals absent.....23. *Endospermum*
- 25b. Branches without leaf scars; leaves usually obscurely serrate or lobed; stipules glabrous, caducous; calyx 2–5-lobed; petals present.
- 26a. Leaves alternate, opposite or nearly whorled, with glands at apex or sinus of serration; calyx 5-lobed; fruit capsular.....24. *Croton*
- 26b. Leaves alternate, without glands at apex or sinus of serration; calyx 2–3-lobed; fruit drupaceous ..25. *Aleurites*
- 24b. Branches, leaves, inflorescences and fruits glabrous or pubescent.
- 27a. Perennial herbs; leaves linear or linear-lanceolate; fruits spinose.....26. *Sebastiania*
- 27b. Shrubs or trees; leaves otherwise; fruits spineless.
- 28a. Leaves usually lobed, with glands at sinus of lobes; basal veins 3–7; fruit drupaceous.....27. *Vernicia*
- 28b. Leaves entire or unlobed, margin eglandular; veins pinnate; fruit capsular.
- 29a. Flowers with petals and disk.....28. *Trigonostemon*
- 29b. Flowers without petals and disk.
- 30a. Plant dioecious; inflorescences axillary; petioles usually eglandular; sepals free in male flowers.....29. *Excoecaria*
- 30b. Plant monoecious; inflorescences terminal; petioles biglandular at the tip; calyx of male flowers 2–5 shallowly lobed.....30. *Sapium*

1. *Bischofia* Blume 秋楓屬

Evergreen or deciduous trees, dioecious, rarely monoecious. Leaves alternate, palmately 3(–5)-foliolate, long-petiolate; stipules small, caducous. Flowers unisexual, apetalous, without disk, in axillary or lateral panicles or racemes. Male flowers: sepals 5, valvate, initially concealing the stamens, afterwards reflexed; stamens 5, free, opposite the sepals; filaments short, anthers large, introrse, longitudinally dehiscent; pistillode short and broad, with short stalk. Female flowers: sepals 5, imbricate; ovary 3–4-locular, with 2 ovules in each locule; styles 3–4, stout, entire, erect or recurved. Fruits small, baccate, globose, indehiscent, epicarps fleshy, endocarps chartaceous; seeds 3–6, oblong, estrophiolate, testa crustaceous, endosperm fleshy, embryo erect, cotyledon broad and flattened.

Two species in India and Sri Lanka to Indonesia, Australia and Polynesia; both in China and cultivated in Hong Kong.

- 1a. Evergreen; flowers in panicles; leaflets broad-cuneate or obtuse at base, margin with 2–3 denticles in each cm..... 1. *B. javanica*  
 1b. Deciduous; flowers in racemes; leaflets rounded or shallowly cordate at base, margin with 4–5 denticles in each cm.....  
 ..... 2. *B. polycarpa*

1. *Bischofia javanica* Blume 秋楓 (Fig. 160; Photo 304)

Bijdr. Fl. Ned. Ind. 17: 1168. 1825; FKH 236. 1912; FRPS 44(1): 185, pl. 56: 2–4. 1994; FGD 5: 67, fig. 37. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 124. 2005.

*Andrachne trifoliata* Roxb., Fl. Ind., ed. 1832, 3: 728. 1832.

*Bischofia trifoliata* (Roxb.) Hook., Hooker's Icon. 9: pl. 844. 1851.

Evergreen tree, up to 40 m tall; branchlets glabrous. Leaves papery, palmately 3(–5)-foliolate; stipules membranous, lanceolate, ca. 8 mm, caducous; petioles 8–20 cm; leaflets ovate, elliptic, obovate or elliptic-ovate, 7–15 × 4–8 cm, base broadly cuneate to obtuse, apex acute or caudate-acuminate, margin denticulate, with 2–3 denticles in each cm, sparsely pubescent on veins when young, glabrous in age. Flowers in axillary panicles, the male 8–13 cm, the female 15–27 cm, pendent. Male flowers: pedicels ca. 1 mm; sepals 5, membranous, semiorbicular, puberulous abaxially; filaments short; pistillode small, peltate, pubescent. Female flowers: pedicels 2–3 mm; sepals 5, oblong-ovate, puberulous abaxially, margin membranous; ovary smooth, glabrous, 3–4-locular; styles 3–4, linear, entire. Fruits globose or subglobose, 6–13 mm in diam., brownish; seeds oblong, ca. 5 mm.

Locality: Common in Hong Kong. *H. C. Tang* 790, 1238; *Y. S. Lau* 512, 1419; *S. Y. Hu* 6491, 11590 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; widely distributed in SE Asia, Malesia and Australia

Ecology: Lowland forests, streamsides, often cultivated in gardens or as roadside tree. Flowering: Apr.–May; fruiting: Aug.–Oct.

Uses: Material (wood), environmental.

2. *Bischofia polycarpa* (H. Lév.) Airy Shaw 重陽木

Kew Bull. 27(2): 271. 1972; FRPS 44(1): 187, pl. 56: 1. 1994; FGD 5: 67. 2003.

*Celtis polycarpa* H. Lév., Repert. Spec. Nov. Regni Veg. 11(286–290): 296. 1912.

*Bischofia racemosa* Cheng & C. D. Chu, Sci. Silv. Sin. 8(1): 13. 1963.

Deciduous tree, up to 15 m tall, glabrous throughout. Leaves 3-foliolate; stipules small, caducous; petioles 9–13.5 cm; leaflets papery, ovate or elliptic-ovate, sometimes oblong-ovate, 5–9(–14) × 3–6(–9) cm, the terminal usually larger than the lateral ones, base rounded or shallowly cordate, apex acute or short-acuminate, margin denticulate, with 4–5 denticles in each cm. Flowers in pendent racemes on branches of previous year, the male 8–13 cm, the female 3–12 cm. Male flowers: sepals 5, semiorbicular, membranous, spreading; filaments short, pistillode prominent. Female flowers: sepals as in male flower, with white-membranous margin; ovary 3–4-locular, with 2 ovules in each locule; styles 2–3, entire. Fruits globose, 5–7 mm in diam., brownish red when mature.

Locality: Cultivated in Sheung Shui, Yuen Long, Tai Po. *Y. W. Lam* 267, 268; *HK sheet* 39527.

Distribution: N Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Henan, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Flowering: Apr.–May; fruiting: Oct.–Nov.

Uses: Material (wood), environmental.

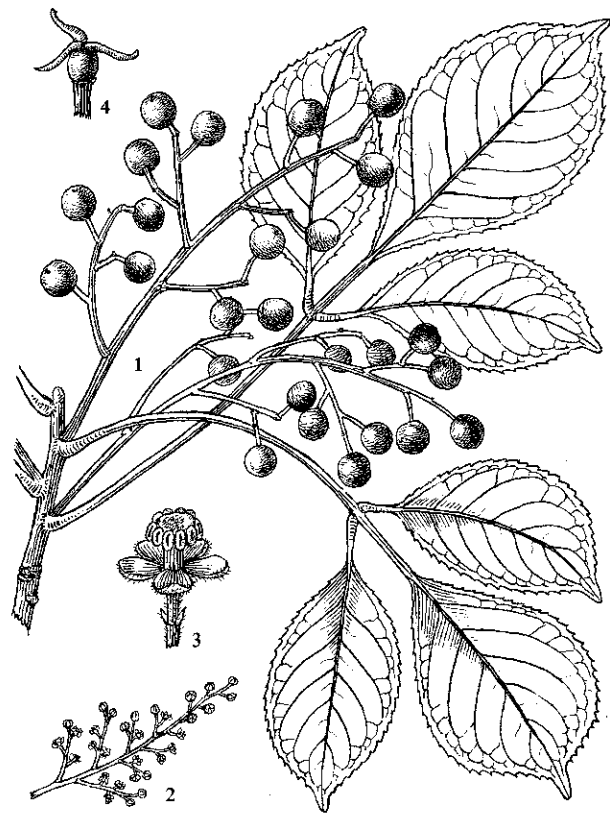


Figure 160. *Bischofia javanica* Blume

1. fruiting branch; 2. male inflorescence; 3. male flower; 4. pistil. (drawn by H. P. Yu)

(Photo 305)

2. *Jatropha* L. 麻瘋樹屬

Trees, shrubs or tall herbs with milky or watery juice. Leaves alternate, unlobed or palmately lobed; petioles usually biglandular at apex; stipules small, setiform or modified into a series of stipitate glands. Flowers unisexual (plant monoecious, rarely dioecious), in terminal or axillary cymes or panicles. Male flowers: sepals 5, imbricate, slightly connate at the base; petals 5, imbricate, free or sometimes connate at the base; disk-glands 5, free or connate into annular; stamens 8–12, sometimes more, in 2–6 series, filaments ± connate, anthers 2-celled; pistillode filamentous or absent. Female flowers: sepals 5–6, free, imbricate, usually persistent; disk annular, lobed or dissected, sometimes with staminodes; ovary 2–5-locular, with 1 ovule in each locule; styles unlobed or bifid, sometimes dilated. Fruits capsular; seeds carunculate; testa crustaceous; albumen fleshy.

About 175 species in tropics and subtropics of America; five species cultivated in China and Hong Kong.

- 1a. Petals yellowish green, united to middle.....1. *J. curcas*  
 1b. Petals red, free or only united at base.  
 2a. Leaves peltate; stem swollen at base or lower part .....2. *J. podagrica*  
 2b. Leaves not peltate; stem not swollen at base.  
 3a. Leaves deeply divided into 7–11 lanceolate lobed; stipules bristle-like .....3. *J. multifida*  
 3b. Leaves shallowly lobed or entire; stipules not bristle-like.  
 4a. Stipules small, caducous; leaves various in shape, less than 10 cm long ..... 4. *J. integerrima*  
 4b. Stipules prominent, bristle-like, spiny or linear; leaves longer than 10 cm.....5. *J. gossypifolia*

1. *Jatropha curcas* L. 麻瘋樹 (Fig. 161; Photo 306)

Sp. Pl. 1006. 1753; FHK 309. 1861; FKH 237. 1912; FRPS 44(2): 148. 1996; FGD 5: 110, fig. 64. 2003.

Shrub or treelet 2–5 m tall, with watery juice; branches stout, glabrous. Leaves papery; stipules small; petioles 6–18 cm; leaf blade ovate-orbicular, 7–18 × 6–16 cm, base cordate, apex acute, unlobed or 3–5 angular or obtusely lobed, glabrous adaxially, puberulous on veins or glabrous abaxially; palmately 5–7-veined. Cymes axillary, 6–10 cm; bracts lanceolate, 4–8 mm. Male flowers: calyx-lobes 5, ca. 4 mm, connate at base; petals oblong, greenish yellow, ca. 6 mm, connate up to middle, hairy adaxially; disk-glands 5, nearly terete; stamens 10, the inner 5 united in a column. Female flowers: pedicels elongate; calyx-lobes free, ca. 6 mm; petals and disk-glands as in male flowers; ovary 3-locular, glabrous; styles bifid at apex. Capsules of 2–3 bivalved cocci, ellipsoidal or globose, 2.5–3 cm; seeds ellipsoidal, 1.5–2 cm, black.

Locality: Fanling, Tai Po, Yuen Long, Wu Kuai Sha, Luk Keng, Shek Pik Reservoir, Sheung Shui, Sha Tin, Lantau Island (cultivated). *Y. S. Lau* 795, 2193; *L. T. Lo* 439; *S. Y. Hu* 12912 (CUHK).

Distribution: Native to America; cultivated in Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; cultivated and naturalized elsewhere in tropics.

Ecology: Hedges and near habitats. Flowering: Sep.–Nov.; fruiting: Oct.–Dec.

Uses: Material (lipids), poison (mammals).

2. *Jatropha podagrica* Hook. 佛肚樹 (Photo 307)

Curt. Hot. Mag. 74, t. 4376. 1848; FHK 301. 1861; FKH 237. 1912; FRPS 44(2): 148. 1996; FGD 5: 111. 2003.

Erect shrub to 2 m tall. Stems swollen at base; branches stout and short, fleshy, with bristled scars. Leaves peltate; petioles 6–16 cm, glabrous; stipules spiniform, 1–2 mm, glandular tipped, persistent; leaf blade orbicular-ovate to elliptic, 8–18 × 6–16 cm, base truncate or obtuse, apex obtuse, entire or shallowly 2–6-lobed, with obtuse sinuses, green and shining adaxially, paler abaxially, glabrous on both surfaces. Cymes terminal, long-pedunculate; pedicels red. Flowers small, coral-red; calyx ca. 2 mm, lobed to middle; petals obovate-oblong, ca. 6 mm; stamens 6–8, connate at base, anthers nearly as long as the filaments; ovary glabrous; styles 3, connate at base, bifid at apex. Capsules ellipsoidal, 1.3–1.8 × 1.5 cm, with 3 longitudinal grooves; seeds ca. 1.1 cm, smooth.

Locality: Cultivated. *Y. S. Lau* 1512; *L. T. Lo* 356; *HK sheet* 24692; *K. Y. Chan* 1561 (CUHK).

Distribution: Native to America; cultivated in Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; widely cultivated in tropical regions of Asia.

Ecology: Flowering & fruiting: Almost all year round.

Uses: Ornamental, poison (mammals), medicinal (folklore).



Figure 161. *Jatropha curcas* L.

1. flowering branch; 2. fruiting branch; 3. petal; 4. stamens and glands. (drawn by H. P. Yu)

**3. *Jatropha multifida* L. 珊瑚花**

(Photo 308)

Sp. Pl. 1006. 1753; FRPS 44(2): 149. 1996; FGD 5: 111. 2003.

Shrub or treelet, 2–6 m tall. Branches stout, glabrous. Leaves basifixed; petioles slender, 10–25 cm; stipules bristle-like, 1–2 cm; leaf blade nearly orbicular in outline, 10–30 cm in diam., palmately and deeply divided into 7–11 lobes; lobes lanceolate, 10–15 cm, apex long-acuminate, often with 1–3 small lobelets on each side, glabrous on both surfaces. Cymes compound, terminal; peduncles 13–22 cm; pedicels short. Male flowers: calyx 2–3 mm, 5-lobed; lobes rotund, glabrous; petals 5, spatulate, ca. 4 mm, red; stamens 8, filaments connate at base, anthers elongate. Female flowers: calyx as in male flowers; petals 6–7 mm, red; ovary glabrous; styles 3, connate in lower half part. Capsules ellipsoidal to obovoid, ca. 3 cm, glabrous.

Locality: Cultivated. *HK sheet 24690*; *S. Y. Hu 11288* (CUHK); *Hu & But 21137* (CUHK).

Distribution: Native of tropical and subtropical America; widely cultivated and naturalized in tropical regions.

Ecology: Flowering: Jul.–Dec.; fruiting: Sep. of the following year.

Uses: Ornamental, poison (mammals), medicinal (folklore).

**4. *Jatropha integerrima* Jacq. 全緣葉麻瘋樹(全緣葉珊瑚)**

Enum. Pl. Carib. 32. 1760; FGD 5: 111. 2003.

*Jatropha hastata* Jacq., Select. Strip Amer. Hist. 256, pl. 173, f. 43. 1763.

Shrub 1–3 m tall, with milky sap, glabrous or close-pubescent. Leaves leathery, basifixed; petioles 2–3 cm, pilose; stipules small, caducous; leaf blade various in shape, ovate, obovate, oblanceolate or fiddle-shaped, 9–11 × 2–4.5 cm, base broad-cuneate or rounded, often with 2 small lobes on each side; lobes caudate or sharp-acuminate, with a gland at apex, glabrous or the midvein pilose on both surfaces. Flowers scarlet to vermilion or rose, in supra-axillary cymes; peduncles 13.5 cm, glabrous; bracts lanceolate, 3–6 mm. Male flowers numerous; calyx ca. 3 mm, 5-lobed; petals 5, narrowly obovate, ca. 1 cm, red; stamens 10, filaments united to middle. Female flower solitary, calyx and petals as in male flowers, but slightly larger; ovary glabrous, styles 3, united at base; stigma divided into 2 linear lobes. Capsules globose, 1 × 1 cm, with 3-ridges.

Locality: Cultivated. *HK sheet 34810, 34975*; *Hu & But 22900* (CUHK).

Distribution: Native to Brasil; cultivated in Hainan and Guangdong.

Ecology: Flowering: Apr.–Sep.

Uses: Ornamental.

**5. *Jatropha gossypifolia* L. 棉葉麻瘋樹**

Sp. Pl. 1006. 1753; FGD 5: 110. 2003.

Shrub 1–2 m tall, with milky juice. Leaves red when young, deep green or glossy coppery green and with red veins when mature; petioles 5–10 cm, with branched glandular scaly or bristly hairs; stipules capillary multifid glandular; leaf blade broadly ovate or sub-orbicular in outline, 5–10 cm, palmately 3–5-lobed or 3–5-partite; lobes broadest in the middle, glandular-serrulate. Cymes paniculate, terminal, 5–15 cm; bracts linear lanceolate, glandular-ciliate. Male flowers: calyx-lobes lanceolate, ca. 3 mm; petals elliptic, ivory-white, ca. 4 mm; stamens 10–12; filaments united up to middle. Female flowers: calyx-lobes lanceolate to ovate, ca. 5 mm, ciliate, persistent; petals as in male flowers; ovary hairy; styles 3, slender, free; stigma bilobed. Capsules ellipsoidal-globose, ca. 1 cm in diam., 3-ribbed, glabrous.

Locality: Cultivated. *H. C. Tang 2511*.

Distribution: Native to Brasil; widely cultivated in tropical regions.

Ecology: Flowering: Jun.–Oct.

Uses: Ornamental, medicinal (folklore).

**3. *Ricinus* L. 蓖麻屬**

Tall herbs or subshrubs. Leaves alternate, peltate, palmately divided; stipules connate, deciduous. Flowers monoecious, without petals, in terminal raceme-like panicles; the upper ones female, the lower male. Male flowers: calyx 3–5-partite, lobes valvate in bud; stamens numerous, up to 100, anthers crowded on branched filaments; anther 2-celled, globular, distinct; rudimentary pistil absent. Female flowers: calyx-lobes 5, valvate in bud, caducous; staminodes none; ovary globose, 3-locular, with 1 ovule in each locule; styles 3, deeply 2-cleft and plumose. Capsules mostly echinate, dividing into 3 bivalved cocci.

A monotypic genus native to NE Africa, now widely cultivated in tropical and subtropical regions.

**1. *Ricinus communis* L. 蓖麻**

(Fig. 162; Photo 309)

Sp. Pl. 1007. 1753; FHK 307. 1861; FKH 240. 1912; FRPS 44(2): 88. 1996; FGD 5: 92, fig. 53. 2003.

Shrub up to 5 m tall (annual herb of 1.5–2 m in cold places), glabrous and glaucous throughout. Leaves alternate; petioles 3.5–50 cm, fistulose; stipules narrowly triangular, 2–3 cm, caducous; leaf blade suborbicular in outline, 10–65 × 10–75 cm, palmately 7–11-lobed, lobes broadly lanceolate, apex acute or acuminate, margin serrate. Racemes or panicles terminal, 15–30 cm, sometimes becoming leaf-opposed by the development of a terminal shoot. Male flowers: calyx-lobes ovate-triangular, 6–10 mm; staminal fascicles many. Female flowers: calyx-lobes ovate-lanceolate, 5–8 mm, deciduous; ovary ovoid, ca. 5 mm in diam., densely and softly echinate or spineless; styles red, ca. 4 mm, apex 2-cleft and densely papillose. Capsules ovoid or subglobose, 1.5–2.5 cm, softly echinate or

tuberculate; seeds ellipsoidal, slightly depressed, 8–18 mm, glabrous, variously marked and colored.

Locality: Cultivated & naturalized. *Y. S. Lau 2146, 2360; S. Y. Hu 6770, 9510* (CUHK).

Distribution: Cultivated and naturalized throughout tropics and subtropics, probable origin Africa.

Ecology: Wastelands or in gardens. Flowering: Jun.–Sep.; fruiting: Oct.–Dec.

Uses: Material (lipids), host (silkworms), medicinal (folklore), ornamental.

Notes: A cultivar (*Ricinus communis* L. 'Sanguineus' 紅蔥麻) with red stems and leaves is also cultivated in Hong Kong.

#### 4. *Manihot* Mill. 木薯屬

Shrubs or treelets, rarely herbs, with milky juice. Leaves alternate, mostly palmately lobed or dissected; petioles glandular or stipellate at apex; stipules small, usually caducous. Inflorescences mostly racemose-paniculate, terminal or axillary on upper branchlets, usually with a few female flowers at the base and many male flowers on the upper part. Flowers unisexual, apetalous; calyx usually campanulate; lobes 5, imbricate, free or connate at base. Male flowers: disk intrastaminal, usually 10-lobed; stamens 8–15, in 2 series, filaments free, slender, anthers 2-celled, longitudinally dehiscent, connectives hairy at apex; pistillode small, or absent. Female flowers: disk annular, sometimes with staminodia; ovary 3-locular, rarely 5-locular, with 1 ovule in each locule; styles short, free, mostly multifid or lacerate, rarely bifid, stigmas broad. Capsule dividing into 3 valved cocci; columella often persistent; seeds carunculate, testa dry, crustaceous; albumen fleshy, cotyledon broad and flat.

About 60 species in tropic of America, mostly native to Brazil; five species cultivated in China; one species cultivated in Hong Kong.

**1. *Manihot esculenta* Crantz. 木薯 (Fig. 163; Photo 310)**  
Inst. Rei Herb. 1: 167. 1766; FRPS 44(2): 172, pl. 44: 1–4. 1996; FGD 5: 121, fig. 73. 2003.

*Jatropha manihot* L., Sp. Pl. 1007. 1753.

*Manihot utilissima* Pohl, Pl. Bras. Icon. Descr. 1: 32, pl. 24. 1827.

Erect shrub, 1.5–3 m tall, with fleshy elongated tuberous root. Leaves ± peltate; stipules triangular-lanceolate, 5–7 mm, entire or with 1–2 bristly segments; petioles 6–35 cm; leaf blade usually deeply palmately 3–9-parted; lobes spatulate- or linear-lanceolate, 8–18 × 1.5–4 cm, apex acuminate, entire. Racemes terminal or axillary, 5–8 cm; bracts oblong-lanceolate; pedicels 4–6 mm. Male flowers: calyx ca. 7 mm, purplish red, divided beyond middle; lobes narrowly ovate, 3–4 mm, hairy adaxially; stamens 10; anthers white-pubescent at apex. Female flowers: calyx as in male flowers, but slightly longer; lobes oblong-lanceolate, ca. 8 × 3 mm; ovary ovoid, with 6 longitudinal ridges; styles 3, connate at base, apex dilated. Capsules ellipsoidal, 1.5–1.8 × 1–1.5 cm, with 6 winged angles.

Locality: Cultivated. *Y. S. Lau 631, 1109, 3001*.

Distribution: Native to Brazil; widely cultivated in tropical and subtropical regions.

Ecology: Flowering: Sep.–Nov.

Uses: Food (starch), material (petroleum substitute, alcohol).

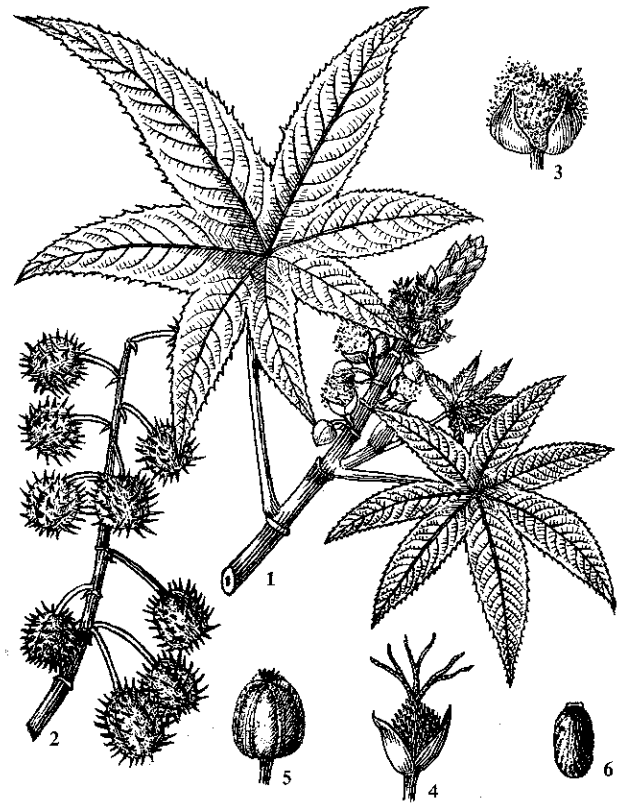


Figure 162. *Ricinus communis* L.

1. flowering branch; 2. fruiting branch; 3. male flower; 4. female flower; 5. capsule; 6. seed. (drawn by H. P. Yu)

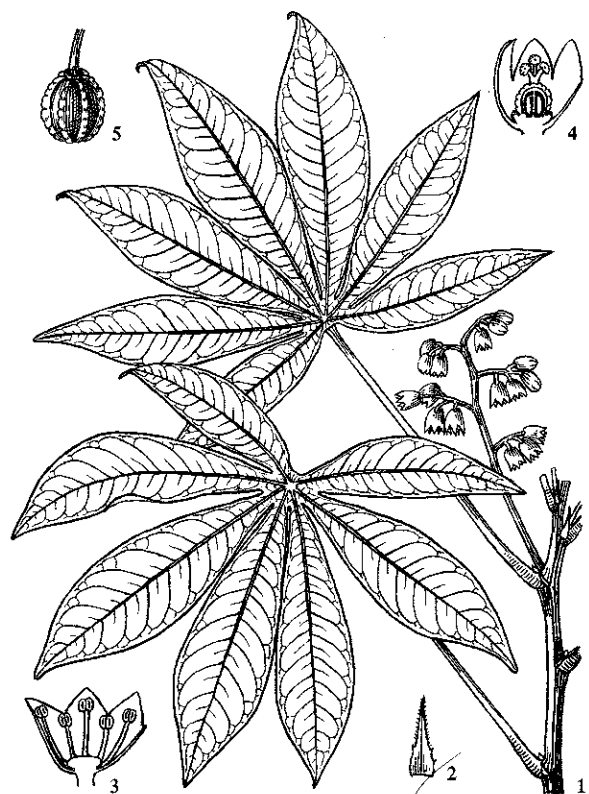


Figure 163. *Manihot esculenta* Crantz.

1. fruiting branch; 2. stipule; 3. longitudinal section view of male flower; 4. longitudinal section view of female flower; 5. capsule. (drawn by H. P. Yu)

5. *Bridelia* Willd. 土蜜樹屬

Trees, shrubs, rarely woody lianas. Leaves simple, alternate, entire, pinnately-veined, petiolate and stipulate. Flowers small unisexual (plant usually monoecious), in axillary clusters. Calyx 5-lobed; lobes valvate in the bud. Petals 5, small. Male flowers: stamens 5; filaments connate at the base, surrounding rudimentary ovary; anthers dorsifixed, introrse, 2-celled; rudimentary ovary terete or obovate, sometimes conical, 2–4-cleft or rarely undivided; disk cup-shaped or discoid. Female flowers: ovary 2-locular, half-enclosed in a cupular disk, with 2 ovules in each locule; styles shortly bifid. Fruit dupaceous, globular or ovoid, enclosing 2 indehiscent cocci.

About 60 species in tropical Africa, Asia and Australia; nine species in China; two species in Hong Kong.

- 1a. Young branches, leaves and petioles pubescent; drupes 2-celled, subglobose, 4–7 mm in diam. .... 1. *B. tomentosa*  
 1b. Branches, leaves and petioles glabrous, rarely puberulous abaxially; drupes 1-celled, oblong ovoid or ovoid, 7–8 mm in diam. ....  
 ..... 2. *B. insulana*

1. *Bridelia tomentosa* Blume 土蜜樹(逼迫仔)

(Fig. 164; Photo 311)

Bijdr. 597. 1825; FHK 309. 1861; FKH 233. 1912; FRPS 44(1): 30, pl. 8: 1–4. 1994; FGD 5: 32, fig. 21. 2003; K. Chayamarit & P.C. van Welzen, Fl. Thailand 8(1): 151. 2005.

*Bridelia tomentosa* Blume  $\beta$  *chinensis* Müll. Arg., Prodr. 15(2): 501. 1866.

*Bridelia monoica* Merr., Philipp. J. Sci. Bot. 13: 142. 1918.

Shrub or treelet, monoecious or dioecious, 2–5 m tall; branchlets slender, tawny pubescent when young. Stipules linear-lanceolate, ca. 7 mm, usually caducous, pubescent. Petioles 3–5 mm, pubescent; leaf blade papery, oblong, oblong-elliptic or obovate-oblong, 3–9 × 1.5–4 cm, base broadly cuneate to rounded, apex acute or obtuse, scabrous adaxially, greenish and pubescent abaxially; lateral veins 9–12 on each side of midvein, elevated abaxially. Flowers very small, in globular sessile, axillary clusters. Male flowers: calyx-lobes 5, triangular, ca. 1.2 × 1 mm; petals obovate, membranous, ca. 1 mm, apex 3–5-toothed; stamens 5, filaments connate at proximal half; rudimentary ovary conical; disk shallowly cup-shaped. Female flowers: calyx as in male flowers; petals obovate or spatulate, entire or denticulate; shorter than sepals; disk urceolate, enclosing the ovary; ovary ovoid, styles 2, bipartite, lobes linear. Drupes subglobose, 4–7 × 5 mm, 2-locular; seeds brown-red, oblong-ovate, 3.5–4 × 3 mm, ventral surface compressed with longitudinal groove, dorsal surface slightly elevated, with longitudinal stripes.

Locality: Common in Hong Kong. *H. C. Tang* 45, 294, 630, 1363, 1459; *HK Sheet* 5374, 5376.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; SE Asia, Indonesia, Malaysia to Australia.

Ecology: Montane sparse forests or thickets. Flowering & fruiting: Almost all year round.

Uses: Medicinal (folklore).



Figure 164. *Bridelia tomentosa* Blume

1. flowering branch; 2. fruiting branch; 3. male flower;  
 4. female flower; 5. petal of female flower; 6. drupe. (drawn by  
 H. P. Yu)

2. *Bridelia insulana* Hance 禾串樹(大葉逼迫仔) (Photo 312)

J. Bot. 15: 337. 1877; FRPS 44(1): 47, pl. 12: 4–7. 1994; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 146. 2005.

*Bridelia balansae* Tutcher, J. Linn. Soc. Bot. 37: 66. 1905; FKH 233. 1912; FGD 5: 33. 2003.

Tree up to 17 m tall, monoecious; stems scatteringly spinose; branchlets glabrous. Leaves thin-leathery or papery; stipules linear-lanceolate, ca. 3 mm, caducous; petioles 3–10 mm; leaf blade elliptic, oblong-elliptic or oblong-lanceolate, 5–25 × 1.5–7.5 cm, base obtuse, apex acuminate or caudate-acuminate, glabrous or only puberulous abaxially, margin slightly revolute; lateral veins 5–11 on each side of midvein. Flowers clustered in axil of leaves or bracts; bracts triangular ca. 1 mm, pubescent. Male flowers: pedicels ca. 2 mm, pubescent; calyx ca. 2 mm, lobes triangular, puberulous abaxially; petals spatulate, ca. 1 mm; filaments connate to middle; disk shallowly cup-shaped; rudimentary ovary ovoid-conical. Female flowers 4–5 mm in diam.; pedicels ca. 1 mm; calyx as in male flowers; petals obovate, ca. 1 mm; disk urceolate, enclosing the lower part of ovary; ovary ovoid, styles 2, free, ca. 1.5 mm, bifid at the apex, lobes linear. Drupes oblong-ovoid or ovoid, 9–11 × 7–8 mm, purple-black when mature, 1-celled, the stalk very stout, 3–5 mm.

Locality: Aberdeen, Bowen Rd., Tai Mo Shan, Lady Clementi's Ride, Fanling, Wong Nai Chung. *H. C. Tang* 2032, 2429; *HK sheet* 5368; *W. J. Tutcher* 7090, 9973; *S. Y. Hu* 12582 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; India, Indonesia, Malaysia, Philippines, Thailand, Vietnam.

Ecology: Montane forests. Flowering: May–Aug.; fruiting: Sep.–Nov.

Uses: Medicinal (folklore).

Notes: The type specimen of *Bridelia balansae* (Hongkong Bot. Gard. no. 974) was collected from Hong Kong Island.

## 6. *Putranjiva* Wall. 假黃楊屬

Trees or shrubs. Leaves simple, alternate, petiolate, pinnately-veined. Flowers unisexual (plant dioecious), apetalous; disk absent. Male flowers in axillary racemes or spikes; calyx 4–6-parted, lobes imbricate; stamens 2–4; pistillode absent. Female flowers solitary, axillary; calyx 5-parted, lobes narrow, imbricate; ovary ovoid or oblong-ovoid, 2-locular, with 2 ovules in each locule; styles dilated, petaloid, 2–5-branched at the upper portion, papillose. Drupes indehiscent, long-pedicellate, 1-locular, 1-seeded; mesocarp fleshy; pyrene stone-hard; testa membranous or crustaceous; endosperm fleshy.

About four species distributed from India, Sri Lanka to Ryukyu Islands; two species (one cultivated) in China (Guangdong, Taiwan, Hong Kong).

- 1a. Leaves glabrescent; male flowers in dense glomerules, glabrous..... 1. *P. roxburghii*  
1b. Leaves glabrous; male flowers in long racemes (6–8 cm), velutinous..... 2. *P. formosana*

### 1. *Putranjiva roxburghii* Wall. 假黃楊(藥用核果木)

Tent. Fl. Nepal. 61. 1826; Airy Shaw, Kew Bull. 26: 257, fig. 62. 1972.

*Drypetes roxburghii* (Wall.) Hurus., J. Sci. Uni. Tokyo, Sect. 3, Bot. 6: 337. 1954.

Tree up to 15 m tall; branchlets sulcate, pubescent. Petioles 2.5–7 mm. Leaves distichous, obliquely ovate or ovate-lanceolate, sometimes elliptic or rhomboid, 4–13 × 1.5–4.5 cm, base obliquely cuneate or acute, apex acute or acuminate, margin closely and shallowly serrulate, glabrescent; veins fine. Flowers small, yellow. Male flowers in axillary glomerules, 6–12-flowered; pedicels short; calyx 4–5-partite, ca. 1 mm; stamens 2–3(–4), ca. 1.5 mm; anthers subglobose, sparsely hairy. Female flowers solitary or in pairs; pedicels 1.5–2.5 cm, pubescent; calyx 5-partite; lobes erect, very unequal, 1–2.5 mm; ovary ovoid, densely pubescent, with 2 ovules in each locule; stigmas 2–3, divaricate-curved. Drupes indehiscent, rhombic-ellipsoidal, white-tomentose, 1-seeded.

Locality: Cultivated in Botanical Garden of Hong Kong. *Y. S. Lau* 588, 1384, 1392, 1813; *HK sheet* 5824.

Distribution: India, Sri Lanka, Myanmar, Cambodia, Laos, Indonesia, New Guinea.

Ecology: Flowering: May–Jul.; fruiting: Aug.–Oct.

Notes: The species was reported as *Drypetes roxburghii* (Wall.) Hurus. previously (Check List HK Plants 179. 2002; 65. 2004).

### 2. *Putranjiva formosana* Kaneh. & Sasaki ex Shimada

台灣假黃楊(台灣核果木) (Fig. 165)

Trans. Nat. Hist. Soc. Taiwan 24: 83. 1934.

*Drypetes formosana* (Kaneh. & Sasaki ex Shimada) Kaneh., Formosan Trees (rev. ed.), 336, fig. 292. 1916; FRPS 44(1): 42. 1994; FGD 5: 37. 2003.

Small tree; branchlets sulcate or angulate, glabrescent or glabrous. Leaves thin-leathery; petioles 6–10 mm; leaf blade elliptic to oblong-ovate, 5–8 × 3–5 cm, base unequally obtuse, apex acuminate, margin entire to crenulate-serrulate, glabrous on both surfaces; Racemes axillary, 6–8 cm, velutinous, bracteate. Male flowers: calyx 4–6-partite, lobes imbricate; stamens 2; petals, disk and rudimentary ovary absent. Female flowers: calyx 5-partite, lobes narrowly elliptic; ovary ovoid, 2-locular, with 2 ovules in each locule. Drupes ovoid-ellipsoidal, 10–13 × 7–8 mm, covered with appressed grey short hairs, 1-seeded.

Locality: Lamma Island, Sung Kong, Ninepin Group, Ching Chau. *F. W. Xing* 8625, 10144.

Distribution: Guangdong, Taiwan.

Ecology: Shrublands and forests at low altitudes. Flowering: May–Jul.; fruiting: Jul.–Sep.

Notes: The species was reported as *Drypetes formosana* (Kaneh. & Sasaki ex Shimada) Kaneh. previously (Check List HK Plants 179. 2002; 65. 2004). Listed in *Rare and Precious Plants of Hong Kong*.



Figure 165. *Putranjiva formosana* Kaneh. & Sasaki ex Shimada  
1. fruiting branch; 2. drupe rudimented stigma 3. cross section of drupe. (drawn by H. P. Yu)



7. *Acalypha* L. 鐵莧菜屬

Herbs, shrubs or treelets. Leaves alternate, dentate or subentire, 3–5-veined from the base or pinnately-veined; stipules lanceolate or subulate, deciduous. Flowers apetalous, in axillary or terminal spikes or racemes of unisexual or androgynous; perianth small and calyx-like. Male flowers: clustered in axils of minute bracts; calyx-lobes 4, valvate in bud; anthers usually 8; filaments free; anther-cells 2, divaricate or pendulous, wavy or tortuous; rudimentary pistil absent. Female flowers: 1–6 subtended by a leafy bract; calyx-lobes 3–5, imbricate in bud; ovary 3- or 2-locular, with 1 ovule in each locule; styles 3, finely branched. Capsules small, usually dehiscent into 3 bivalved cocci; pericarp hairy or softly echinate.

About 450 species in world, chiefly in tropical and subtropical regions; 17 species in China; six species in Hong Kong.

- 1a. Annual herbs.
- 2a. Leaves with 3 basal veins; bracts of female flowers more than 1 cm long; styles 3 ..... 1. *A. australis*
- 2b. Leaves with 5–7 basal veins; bracts of female flowers less than 5 mm long; style 1.
- 3a. Young branches slightly pubescent; bracts of female flowers orbicular-cordate, shallowly and obtusely dentate ..... 2. *A. indica*
- 3b. Young branches densely pubescent; bracts of female flowers half orbicular, serrate, with short acute teeth ..... 3. *A. lanceolata*
- 1b. Shrubs or small trees.
- 4b. Leaves mottled with red, purple or pale yellow; flowers monoecious; bracts of female flowers large, coarsely toothed ..... 4. *A. wilkesiana*
- 4a. Leaves green; flowers dioecious; bracts of female flowers small, entire.
- 5a. Female bracts ovate; bract-axil with 1 female flower; styles 2–5 mm long; axil of vein clustered-hispid ..... 5. *A. suirensiensis*
- 5b. Female bracts ovate-rhombic; bract-axil with 3–7 female flowers; styles 6–7 mm long; axil of vein glabrous ..... 6. *A. hispida*

1. *Acalypha australis* L. 鐵莧菜 (朴草)

(Fig. 166; Photo 313)

Sp. Pl. 1004. 1753; FKH 239. 1912; FRPS 44(2): 100, pl. 24: 1–6. 1996; FGD 5: 96, fig. 57. 2003.

*Acalypha chinensis* Roxb., Fl. Ind. 3: 880. 1826.

Annual herb, 20–50 cm tall; branchlets slender, appressedly pubescent to pilose. Leaves alternate; petioles 2–6 cm, pubescent; stipules lanceolate, 1.5–2 mm, pubescent; leaf blade narrowly ovate, subrhomboid or broadly lanceolate, 3–9 × 1–5 cm, base cuneate, rarely obtuse, apex short-acuminate, glabrous adaxially, pubescent on midvein abaxially, margin crenulate-serrate; basal veins 3. Spikes axillary, rarely terminal, 1.5–5 cm, with female flowers at base and male flowers on the upper part; female bracts ovate-cordate, 1.4–2.5 × 1–2 cm in fruiting time, margin with triangular serratures, pilose on the palmate veins; male bracts ovate, ca. 0.5 mm. Male flowers: 5–7 clustered in axil of bract; calyx-lobes 4, ovate, ca. 0.5 mm; stamens 7–8. Female flowers: 1–3 in axil of bract, sessile; calyx-lobes 3, narrowly ovate, 0.5–1 mm, pilose; ovary pilose; styles 3, ca. 2 mm; stigma lacerate. Capsules of 3 bivalved cocci, globose, 4 mm in diam., pilose, the hairs thickened at base.

Locality: Bowen Rd., Victoria Peak, Kowloon Railway Terminus, Fanling, Sha Tin. *Y. S. Lau 1913, 2809; HK sheet 36072; S. Y. Hu 10698* (CUHK).

Distribution: Widely spread almost over all provinces of China; Russia, India, Japan, Korea, Laos, Vietnam, Philippines and N Australia.

Ecology: Wastelands, roadsides and cultivated fields. Flowering & fruiting: Apr.–Dec.

Uses: Medicinal (folklore).

2. *Acalypha indica* L. 熱帶鐵莧菜 (山朴草)

Sp. Pl. 1003. 1753; FHK 303. 1861; FKH 239. 1912; FRPS 44(2): 102. 1996; FGD 5: 97. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 26. 2005.

Annual erect herb, 0.5–1 m tall; young branches slightly pubescent. Leaves alternate; petioles 1.5–3.5 cm, pubescent; stipules narrowly triangular, ca. 1 mm; leaf blade rhomboid-ovate or ovate, 2–3.5 × 1.5–2.5 cm, base cuneate, apex acute, margin

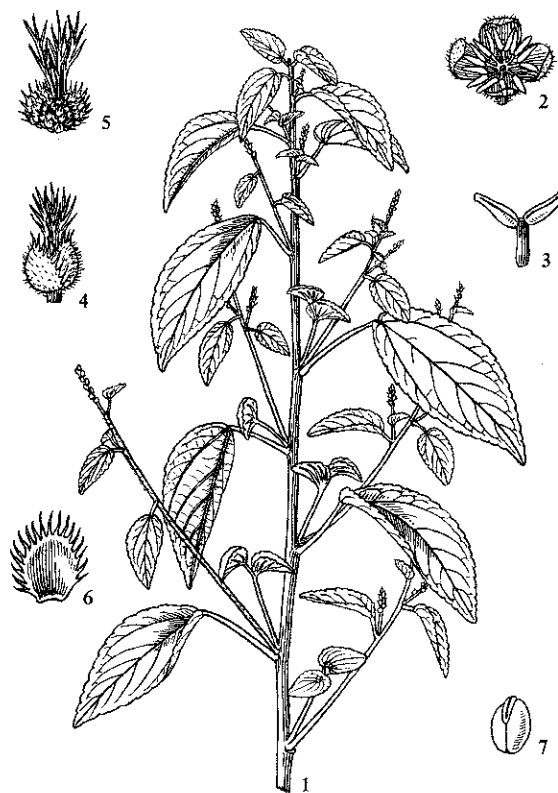


Figure 166. *Acalypha australis* L.

1. flowering branch; 2. male flower; 3. stamen; 4. female flower; 5. female flower with sepal removed; 6. sepal of female flower; 7. seed. (drawn by H. P. Yu)

serrulate on distal half, pubescent along veins on both surfaces; basal veins 5. Spikes axillary, rarely terminal, 2–7 cm, interrupted, with 1–8 distant orbicular leafy bracts, of 4–5 mm in diam., each containing 1–2 sessile female flowers, and ending in a small slender male catkin, with ovate-triangular or broadly triangular bracts of 0.5 mm, each subtending 5–7 male flowers. Male flowers: pedicels ca. 0.5 mm; calyx-lobes 4, narrowly ovate, 0.4 mm; stamens 8. Female flowers: sepals 3, narrowly triangular, ca. 0.5 mm, sparsely ciliate; ovary hairy, styles 3, 2.5–3 mm; lacerate. Capsules of 3 bivalved cocci, ca. 2 mm in diam., pubescent.

Locality: Shau Kei Wan. *HK sheet 6117*.

Distribution: Hainan, Guangdong, Taiwan; India, Sri Lanka, Cambodia, Vietnam, Malaysia, Indonesia, Philippines, tropical regions of Africa and C America.

Ecology: Wastelands. Flowering & fruiting: Mar.–Oct.

Notes: A common weed in tropical and subtropical Asia and Africa.

### 3. *Acalypha lanceolata* Willd. 麻葉鐵莧菜

Sp. Pl. 4: 524. 1805; FRPS 44(2): 103, pl. 24: 7–9. 1996; FGD 5: 97. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 29. 2005.

*Acalypha fallax* Müll. Arg., Linnaea 34: 43. 1865; FKH 239. 1912.

Annual erect herb, 40–70 cm tall; young branches densely tawny pubescent and sparsely hirsute. Leaves alternate; petioles 2–5.5 cm, densely pubescent; stipules linear-lanceolate, ca. 4–10 mm, sparsely pubescent; leaf blade rhomboid-ovate or oblong-ovate, 4–8 × 2–4 cm, base cuneate or broadly cuneate, apex acuminate, margin serrate, sparsely hairy on both surfaces; basal veins 5–7. Spikes axillary, 1–2.5 cm, with female flowers at base and male flowers on the distal part, sometimes with 1–3 abnormal female flowers at apex of rachis; bracts of female flowers 3–9, half orbicular, 2.5–4 × 5–6 mm, with short acute teeth, tomentose abaxially; bracts of male flowers lanceolate, ca. 0.5 mm. Male flowers: 5–7 clustered in axil of bracts; pedicels 0.5 mm; calyx-lobes 4; stamens 8. Female flowers: solitary in axil of bracts; calyx-lobes 3, narrowly triangular, ca. 0.5 mm; ovary pubescent; styles 3, ca. 2 mm, lacerate; ovary oblate-obovoid, 1-locular; style 1, inserted at base of ovary, lacerate. Capsules of 3 bivalved cocci, ca. 2.5 mm in diam., pubescent; seeds ovoid, ca. 1.8 mm, smooth.

Locality: Tsing Yi Island. *M. F. Lui, K. M. To, C. P. Jung s.n.* (CUHK).

Distribution: Hainan; S to SE Asia and Pacific Islands.

Ecology: Wastelands near villages. Flowering & fruiting: Mar.–Oct.

### 4. *Acalypha wilkesiana* Müll. Arg. 紅桑

(Photo 314)

Prodr. 15(2): 817. 1866; FRPS 44(2): 112. 1996; FGD 5: 99. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 32. 2005.

Shrub, 1–4 m tall; young branches pubescent. Leaves papery; petioles 2–3 cm, pilose; stipules narrowly triangular, ca. 8 × 2–3 mm, pubescent, leaf blade broadly ovate, 10–18 × 6–12 cm, rounded or shortly acute at base, apex acuminate, margin crenate-dentate, glabrous except on the veins, bronzy-green variously mottled with shades of red and purple; basal veins 3–5. Spikes slender, axillary, the male 10–20 cm, with ovate bracts, the female 5–10 cm with broader and larger bracts. Male flowers: 9–17 clustered in axil of bracts; pedicels ca. 1 mm; calyx-lobes 4, narrowly ovate, ca. 0.7 mm; stamens 8. Female flowers: 1–2 in axil of bracts, sessile; calyx-lobes 3–4, narrowly ovate or triangular-ovate, 0.5–1 mm, ciliate; ovary densely hairy; styles 3, 6–7 mm, lacerate. Capsules of 3 bivalved cocci, ca. 4 mm in diam., sparsely villose.

Locality: Cultivated in gardens. *Y. S. Lau 1964; HK sheet 24845; S. Y. Hu 6166* (CUHK).

Distribution: Native of Polynesia and Fiji, widely cultivated in tropical and subtropical regions.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

Notes: There are two cultivars commonly cultivated in Hong Kong, *Acalypha wilkesiana* 'Marginata' [金邊紅桑 (金紅桑)] with red leaf margin and *A. wilkesiana* 'Java White' (白邊紅桑) with white leaf margin.

### 5. *Acalypha suirenbiensis* Yamam. 花蓮鐵莧菜

J. Soc. Trop. Agric. 5: 178. 1935; FRPS 44(2): 111. 1996.

Shrub; young branches densely pubescent. Leaves papery; petioles 8–20 cm, pubescent; leaf blade ovate, 10–20 × 8–15 cm, base obtuse, subtruncate or shallowly cordate, apex caudate-acuminate, margin subentire or crenate-serrate, with tufts of hairs in axil of veins; basal veins 5. Flowers dioecious; female spikes axillary, 10–25 cm; peduncles 2–5 cm; bracts ovate, ca. 1 mm, hairy. Female flowers: solitary in axil of bracts; calyx-lobes 3, ovate, ca. 1 mm; ovary pubescent; styles 3, 2.5–5 mm, lacerate. Male flower not seen. Capsules of 3 bivalved cocci, globose, ca. 4 mm in diam.

Locality: Cultivated. *S. Y. Hu 23035* (CUHK).

Distribution: Taiwan (Lanyu).

Ecology: Flowering: Jul.–Aug.

Uses: Ornamental.

### 6. *Acalypha hispida* Burm. f. 紅穗鐵莧菜 (狗尾紅)

(Fig. 167; Photo 315)

Fl. Indica 303, pl. 61: 1. 1768; FRPS 44(2): 110. 1996; FGD 5: 99. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 26. 2005.

Shrub, 1–3 m tall; branchlets initially grey-tomentellous, glabrous in age. Leaves papery; petioles 4–8 cm, pubescent; stipules narrowly triangular, 0.6–1 cm, pilose; leaf blade broadly ovate or ovate, 8–20 × 5–14 cm, base broadly cuneate to rounded or slightly cordate, apex acuminate or acute, margin serrate, subglabrous adaxially, pilose on veins abaxially, basal veins 3–5. Female spikes axillary, 15–30 cm, pendulous, rachis pubescent; bracts of female flowers ovate-rhomboid, ca. 1 mm, entire, pubescent abaxially. Female flowers: 3–7 clustered in axil of bracts; calyx-lobes 3–4, subovate, ca. 0.8 mm, apex acute, pubescent; ovary subglobose, densely yellowish hirsute; styles 3, 6–7 mm, crimson, lacerate. Male flowers and fruits unknown.

Locality: Cultivated in Gardens. *Y. S. Lau 1976; HK sheet 6121; S. Y. Hu 5335* (CUHK).

Distribution: Native to the Pacific Islands, widely cultivated in tropical and subtropical regions of the world.

Ecology: Flowering: Feb.–Nov.

Uses: Ornamental.

### 8. *Glochidion* J. R. Forst. & G. Forst. 算盤子屬

Trees or shrubs, monoecious, rarely dioecious. Stipules thick, mostly persistent. Leaves simple, alternate, distichous or spirally arranged on the branchlets, entire, pinnately-veined, short-petiolate. Flowers apetalous; without disk, in axillary clusters or short-cymules, usually female clusters inserted at the upper part of branchlets, male ones at the lower part. Male flowers: sepals 5–6, imbricate; stamens 3–8; anthers oblong, sessile on a central column, tipped by their projecting connectivum; pistillode absent. Female flowers: sepals as in male flowers, but slightly thicker; ovary globose, 3–15-locular; with 2 ovules in each locule; styles short, erect and connivent in an oblong or globular mass or in a short ring, or rarely spreading. Capsules globose or depressed-globose, with many longitudinal grooves, loculicidally dehiscent or separating into 2-valved cocci.

About 200 species chiefly in tropical Asia, Pacific Islands, and Malaysia, few in tropical America and Africa; 28 species and two varieties in China; eight species in Hong Kong.

- 1a. Stamens 5–8.
  - 2a. Branchlets densely villose, leaves pubescent ..... 1. *G. hirsutum*
  - 2b. Branchlets and leaves glabrous.
    - 3a. Leaf blade acute or broadly cuneate at base; flowers in axillary clusters; male sepals obovate or oblong-obovate; ovary densely pubescent ..... 2. *G. lanceolarium*
    - 3b. Leaf blade shallowly cordate, truncate or rounded at base; flowers in supra-axillary cymules; male sepals ovate or broad-ovate; ovary glabrous ..... 3. *G. zeylanicum*
- 1b. Stamens 3.
  - 4a. Leaf-base symmetrical.
    - 5a. Leaves and capsules covered with spreading long hairs; leaf-base obtuse, truncate to rounded; styles three times longer than the ovary ..... 4. *G. eriocarpum*
    - 5b. Leaves and capsules pubescent; leaf-base cuneate to obtuse; styles as long as the ovary ..... 5. *G. puberum*
  - 4b. Leaf-base asymmetrical.
    - 6a. Leaf blade white-pubescent abaxially; branchlets angular; sepals pubescent outside ..... 6. *G. triandrum*
    - 6b. Leaf blade glabrous; branchlets terete; sepals glabrous.
      - 7a. Young branchlets, ovary and capsules pubescent ..... 7. *G. philippicum*
      - 7b. Young branchlets, ovary and capsules glabrous ..... 8. *G. wrightii*

#### 1. *Glochidion hirsutum* (Roxb.) Voigt 厚葉算盤子

Hort. Suburb. Calcutt. 153. 1845; FRPS 44(1): 141, pl. 42: 1–4. 1994; FGD 5: 57. 2003.

*Bradleja hirsuta* Roxb., Fl. Ind. 3: 699. 1832.

*Glochidion dasyphyllum* K. Koch, Hort. Dendrol. 85: 3. 1853.

*Glochidion molle* Hook. & Arn., Bot. Beechey Voy. 210. 1837, *nom. illeg.*; FHK 314. 1861.

*Glochidion arnottianum* Müll. Arg., Linnaea 32: 60. 1863; FKH 235. 1912.

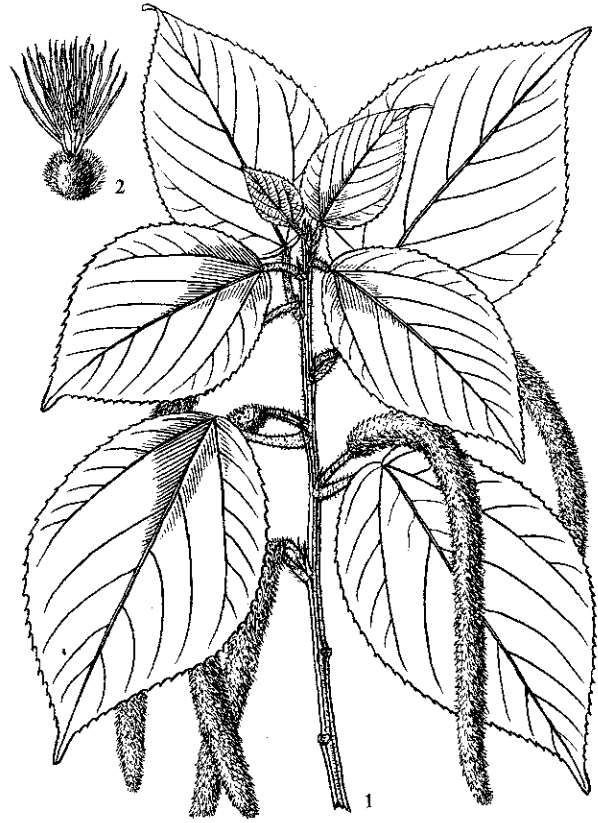


Figure 167. *Acalypha hispida* Burm. f.

1. flowering branch; 2. pistil. (drawn by H. P. Yu)

(Photo 316)

Shrub or treelet, 1–8 m tall; branchlets densely villose. Leaves leathery; stipules lanceolate, 3–4 mm; petioles 5–7 mm; leaf blade ovate, oblong-ovate or oblong, 7–15 × 4–7 cm, base shallowly cordate, truncate or rounded, obliquely inaequilateral, apex obtuse or acute, adaxially pubescent, glabrous in age, abaxially, densely pubescent; lateral veins 6–10 pairs. Cymules usually supra-axillary, pedunculate, but sometimes sessile and axillary; peduncles 5–7 mm, pubescent; sepals 6, biseriata, pubescent abaxially. Male flowers: pedicels 6–10 mm; sepals oblong or obovate; stamens 5–8. Female flowers: pedicels 2–3 mm; sepals ovate or broadly ovate, ca. 2.5 mm; ovary globose, ca. 2 mm in diam., pubescent, 5–6-locular, styles forming a short subconical column, truncate at apex. Capsules depressed globose, 8–12 mm in diam., pubescent, 5–6-sulcate.

Locality: Common in Hong Kong. *W. J. Tutcher 9472*; *L. T. Lo 92*; *Y. W. Lam 640*.

Distribution: Hainan, Guangdong, Fujian, Taiwan, Guangxi, Yunnan, Xizang; India.

Ecology: Thin forests, stream banks, shrublands. Flowering & fruiting: Almost all year round.

Uses: Medicinal (folklore).

## 2. *Glochidion lanceolarium* (Roxb.) Voigt 艾膠算盤子(大葉算盤子)

(Photo 317)

Hort. Suburb. Calcutt. 153. 1845; FRPS 44(1): 144, pl. 42: 5–8. 1994; FGD 5: 58. 2003.

*Bradleja lanceolaria* Roxb., Fl. Ind. 3: 697. 1832.

*Glochidion macrophyllum* Benth., London J. Bot. 1: 491. 1842; FHK 315. 1861; FKH 235. 1912.

*Glochidion cantoniense* Hance, Ann. Sci. Nat., Bot., ser. 5, 5(5): 241. 1866.

Evergreen shrub or tree, usually 1–3 m, rarely 7–12 m tall; throughout glabrous except for the hairy ovary and capsules. Leaves leathery; stipules triangular-lanceolate, 2.5–3 mm. petioles 3–5 mm; leaf blade elliptic, oblong or oblong-lanceolate, 6–16 × 2.5–6 cm, base acute or broadly cuneate, slightly decurved, subaequilateral, dark-green adaxially, yellowish-green when dry; lateral veins 5–7 pairs. Flowers in axillary clusters. Male flowers: pedicels 8–10 mm; sepals 6, obovate or obovate-oblong, ca. 3 mm, yellow; stamens 5–6. Female flowers: pedicels 2–4 mm, biseriata, inner ones narrowly ovate, 2.5–3 mm, outer ones slightly larger, ovate; ovary globose, 6–8-locular, densely pubescent; styles connate, less than 1 mm, subtruncate at apex. Capsules subglobose, 12–18 × 7–10 mm, apex usually concave, puberulous to glabrous, 6–8-sulcate.

Locality: Common in Hong Kong. *Y. S. Lau 251, 489*; *L. H. Li 34*.

Distribution: Hainan, Guangdong, Fujian, Guangxi, Yunnan; Cambodia, India, Laos, Thailand, Vietnam.

Ecology: Thin forests, shrublands. Flowering: Apr.–Sep.; fruiting: Jul. of the following year.

## 3. *Glochidion zeylanicum* (Gaertn.) A. Juss. 香港算盤子

(Fig. 168; Photo 318)

Euphorb. Gen. 107. 1824; FRPS 44(1): 145, pl. 42: 9–12. 1994.

*Bradleia zeylanica* Gaertn., Fruct. Sem. Pl. 2: 128. 1791.

*Glochidion hongkongense* Müll. Arg., Linnaea 32: 60. 1863; FKH 235. 1912.

*Glochidion littorale* auct. non Blume: FHK 314. 1861.

Shrub or treelet 1–6 m tall, glabrous throughout. Leaves leathery; stipules triangular, persistent; petioles 5–8 mm; leaf blade oblong, ovate-oblong or ovate, sometimes oblong-elliptic, 6–18 × 4–8 cm, base cordate, subcordate, truncate or rounded, slightly oblique; lateral veins 5–7 pairs. Flowers in axillary clusters or forming supra-axillary, pedunculate, short cymules, usually female flowers inserted at upper part of branchlets, male flowers inserted at lower part of branchlets. Male flowers: pedicels 6–9 mm; sepals 6, biseriata, ovate or broadly ovate, spreading, yellowish-green; stamens 5–6, connate into a column. Female flowers: sepals as in male flowers; ovary globose, 5–6-locular, styles very short, connate into very short column. Capsules depressed globose, 8–10 × 5 mm, 8–12-sulcate; seeds hemispheroid, red.

Locality: Common in Hong Kong. *H. C. Tang 1964*; *Y. S. Lau 864*; *P. S. Choi 335*; *S. Y. Hu 6400* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; India, Sri Lanka, Vietnam, Japan, Indonesia.

Ecology: Ravines, stream banks shrublands. Flowering: Mar.–Aug.; fruiting: Jul.–Nov.

Uses: Medicinal (folklore).

Notes: The type specimen of *Glochidion hongkongense* was collected by H. F. Hance from Victoria Peak between 1844 and 1850.



Figure 168. *Glochidion zeylanicum* (Gaertn.) A. Juss.

1, fruiting branch; 2, male flower; 3, female flower. (drawn by H. P. Yu)

**4. *Glochidion eriocarpum* Champ. & Benth.** 毛果算盤子(毛漆、漆大姑)

(Photos 319–321)

Hooker's J. Bot. Kew Gard. Misc. 6: 6. 1854; FHK 314. 1861; FKH 235. 1912; FRPS 44(1): 150, pl. 40: 1–5. 1994; FGD 5: 58. 2003.

*Phyllanthus eriocarpus* (Champ. & Benth.) Müll. Arg., Linnaea 32: 67. 1863.

Shrub or treelet to 5 m tall; branchlets densely hirsute with short spreading often reddish hairs. Leaves papery; stipules subulate, 3–4 mm; petioles 1–2 mm, villose; leaf blade broadly ovate to narrowly ovate, 4–8 × 1.5–3.5 cm, base obtuse, truncate or rounded, aequilateral, apex acuminate or acute, wrinkled and hirsute on both surface; lateral veins 4–5 pairs. Flowers solitary or in axillary clusters of 2–4. Male flowers: inserted at lower part of branchlets; pedicels 4–6 mm; sepals 6, oblong-obovate, 2.5–4 mm, apex acute, sparsely pubescent abaxially; stamens 3, connate. Female flowers: inserted at upper part of branchlets, subsessile; sepals 6, oblong, 2.5–3 mm, villose on both surfaces; ovary depressed globose, densely pubescent, 4–5-locular, style-column cylindric, erect, ca. 1.5 mm, 4–5-lobed. Capsules depressed globose, 8–10 mm in diam., densely yellowish- or grey-villose, 4–5-sulcate, with a cylindrical, persistent style-column.

Locality: Common in Hong Kong. *H. C. Tang 2220; Y. S. Lau 74; HK sheet 39974; S. Y. Hu 7159* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Fujian, Taiwan; Vietnam, Thailand.

Ecology: Ravines, shrublands, margins of forests. Flowering & fruiting: Almost all year round.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by J. G. Champion from Happy Valley woods, Hong Kong Island between 1847 and 1850.

**5. *Glochidion puberum* (L.) Hutch.**

算盤子

(Fig. 169; Photo 322)

Pl. Wilson. 2: 518. 1916; FRPS 44(1): 151, pl. 44: 5–9, 45: 1–9. 1994; FGD 5: 59. 2003.

*Agyneia pubera* L., Mant. Pl. 2: 296. 1771.

*Bradleja sinica* Gaertn., Fruct. Sem. Pl. 2: 127, pl. 109: 1. 1791.

*Glochidion sinicum* (Gaertn.) Hook. & Arn., Bot. Beechey Voy. 210. 1836; FHK 314. 1861.

*Glochidion fortunei* Hance, Ann. Sci. Nat., Bot., ser. 4, 18: 228. 1862; FKH 235. 1912; FGD 5: 61. 2003.

Erect shrub, 1–5 m tall, much branched; branchlets densely pubescent. Leaves papery or sub-leathery; stipules triangular, ca. 1 mm; petioles 1–3 mm; leaf blade oblong, oblong-ovate or obovate-oblong, rarely lanceolate, 3–8 × 1–2.5 cm, base cuneate to obtuse, apex obtuse, acute, short-acuminate or rounded, glaucous and glabrous adaxially except on the midvein, pubescent abaxially; lateral veins 4–8 pairs, raised abaxially, reticulation of veins prominent. Flowers small, in axillary clusters of 2–5. Male flowers: pedicels 4–15 mm; sepals 6, narrowly oblong or oblong-obovate, 2.5–3.5 mm, spreading green to yellowish, densely pubescent abaxially; stamens 3, connate into a cylindrical column. Female flowers: pedicels ca. 1 mm; sepals 6, as in male flowers but shorter and thicker, green; ovary globose, densely pubescent, 5–10-locular, with 2 ovules in each locule; styles forming a short thick annular. Capsules depressed globose, 8–15 mm in diam., 8–10-sulcate, densely pubescent, reddish when mature.

Locality: Aberdeen, Barker Rd., Shek O Rd., Cape D'Aguilar, D'Aguilar Peak, Fanling, Sai Kung, Tai Mei Tuk, Chuen Lung. *Y. S. Lau 2186, 2394; Y. W. Lam 771; S. Y. Hu 5820* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Gansu, Shaanxi, Hubei, Henan, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Montane slopes, stream banks shrublands or margins of forests. Flowering: Apr.–Aug.; fruiting: Jul.–Nov.

Uses: Medicinal (folklore).

**6. *Glochidion triandrum* (Blanco) C. B. Rob.** 裏白算盤子

(Photo 323)

Philip. J. Sci. 4(1): 92. 1909; FRPS 44(1): 146, pl. 44: 1–4. 1994; FGD 5: 59. 2003.

*Kirganelia triandra* Blanco, Fl. Filip. 1: 711. 1837.

Shrub or treelet, 3–7 m tall; branchlets angulate, tawny pubescent. Leaves papery; stipules ovate-triangular, 1–1.5 mm, pubescent; petioles 2–4 mm, sparsely pubescent; leaf blade oblong-elliptic or lanceolate, 4–13 × 2–4.5 cm, base broadly cuneate or obtuse, slightly inaequilateral, apex acuminate, acute or obtuse, adaxial surface sparsely pubescent when young, glabrous in age, abaxial surface glaucous,

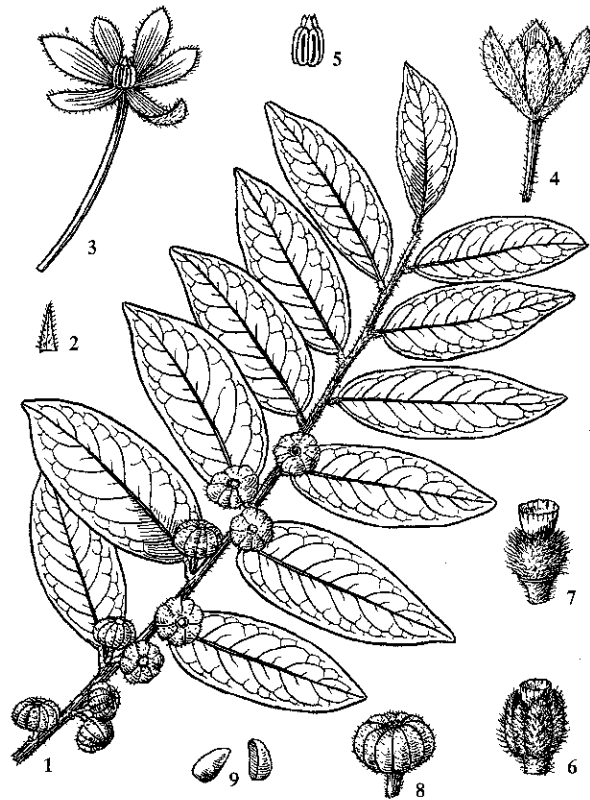


Figure 169. *Glochidion puberum* (L.) Hutch.

1. fruiting branch; 2. stipule; 3–4. male flower; 5. stamen; 6. female flower; 7. pistil; 8. capsule; 9. seeds. (drawn by H. P. Yu)

pubescent; lateral veins 5–7 pairs. Flowers in axillary clusters of 5–6-flowered. Male flowers: pedicels slender, 6–7 mm; bracteoles ovate-triangular, ca. 1 mm; sepals 6, biseriate, obovate, ca. 2 mm, pubescent; stamens 3, connate. Female flowers: subsessile; sepals as in male flowers, ca. 1.5 mm, concave inside; ovary ovoid, pubescent, 4–5-locular, styles forming a column, dilated at apex. Capsules depressed globose, ca. 4 × 5–10 mm, sparsely pubescent, 8–10-sulcate; fruiting pedicels 5–6 mm; seeds triangular, ca. 3 mm, brownish red.

Locality: Ng Tung Chai. *P. S. Choi 484, 485, 535.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Fujian, Taiwan; Cambodia, India, Nepal, Sikkim, Japan, Philippines.

Ecology: Thin forests, valley woods, stream banks. Flowering: Mar.–Jul.; fruiting: Jul.–Dec.

**7. *Glochidion philippicum*** (Cav.) C. B. Rob. 菲島算盤子 (甜葉算盤子)

(Photo 324)

Philipp. J. Sci. 4(1): 103. 1909; FRPS 4(1): 154, pl. 4: 6–10. 1994; FGD 5: 60. 2003.

*Bradleja philippica* Cav., Icon. 3: 48, pl. 371. 1797.

*Glochidion philippinense* (Cav.) Benth., FHK 314. 1861; FKH 235. 1912.

Tree, 5–12 m tall; branchlets pubescent when young, glabrescent. Leaves papery or sub-leathery; stipules ovate-triangular, 1–1.5 mm; petioles 4–6 mm; leaf blade ovate-lanceolate or oblong, 5–15 × 2.5–5.5 cm, base acute or broadly cuneate, usually oblique, apex acuminate to obtuse, dark green and shining adaxially, paler abaxially, glabrous on both surfaces; lateral veins 6–8 pairs. Flowers in axillary clusters, 4–10-flowered per cluster. Male flowers: pedicels 6–7 mm; sepals 6, oblong or obovate-oblong, 1.5–2.5 mm, glabrous, yellowish-green; stamens 3. Female flowers: pedicels 2–4 mm; sepals 6, as in male flowers; ovary globose, pubescent, 5–6-locular, styles thick, connivent in a short almost globular mass. Capsules depressed globose, 4.5–5.5 × 8–12 mm, very much impressed in the centre, deeply 10–14-sulcate, pubescent.

Locality: Bowen Rd., Aberdeen, Wong Chuk Hang, Sai Kung, Tai Long, Lantau Island. *Y. W. Lam 1714; K. Y. Tam 129; H. C. Tang 105* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; Indonesia, Malaysia, Philippines.

Ecology: Forests. Flowering: Mar.–Aug.; fruiting: Jul.–Dec.

**8. *Glochidion wrightii*** Benth. 白背算盤子

(Photo 325)

FHK 313. 1861; FKH 235. 1912; FRPS 44(1): 158, pl. 39: 1–4. 1994; FGD 5: 60, fig. 34. 2003.

Shrub or treelet 1–8 m tall, glabrous throughout. Leaves papery; petioles 3–5 mm; leaf blade oblong or oblong-lanceolate, 2.5–5.5 × 1.5–2.5 cm, base acute, very oblique, apex acuminate, often obliquely falcate, green adaxially, glaucous abaxially; lateral veins 3–6 pairs. Flowers androgynous, in axillary clusters. Male flowers: pedicels 2–4 mm; sepals 6, oblong, ca. 2 mm, yellowish; stamens 3, connate. Female flowers: subsessile; sepals 6, biseriate, ovate, elliptic or oblong, ca. 1 mm, the inner ones smaller; ovary globose, 3–4-locular, styles erect, oblong and connivent, less than 1 mm. Capsules subglobose, 6–8 mm in diam., very depressed in the centre.

Locality: Common in Hong Kong. *H. C. Tang 2361; Y. S. Lau 3101; L. T. Lo 110; S. Y. Hu 6420, 13239* (CUHK).

Distribution: Hainan, Fujian, Guangdong, Guangxi, Guizhou, Yunnan.

Ecology: Thin forests, shrublands. Flowering: May–Sep.; fruiting: Jul.–Nov.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by C. Wright from Hong Kong Island around 1854.

**9. *Sauropus* Blume 守宮木屬**

Shrubs, rarely herbs or climbers, monoecious or dioecious. Leaves simple, alternate, entire, pinnately-veined or rarely 3-veined. Stipules paired, inserted bilaterally at the base of petiole. Flowers smaller, apetalous. Male flowers clustered or solitary, rarely forming racemes or short cymes, axillary or borne on stems; pedicels usually bracteolate at base; calyx discoid, cup-shaped or turbinate, entire or 6-lobed; lobes imbricate, erect or spreading; disk 6–12-lobed, segments unequal, opposite to sepals, rarely without disk; stamens 3, filaments usually connate into a short column, anthers free, longitudinally dehiscent; pistillode absent. Female flowers: 1–2 or mixed with male flowers in axil of leaves, rarely inserted at the base of male inflorescences; calyx usually 6-parted; lobes biseriate, imbricate, sometimes thickened in fruiting times; disk absent; ovary ovoid or depressed globose, 3-locular, with 2 ovules in each locule; styles 3, free or connate at base, 2-branched at apex, arms recurved. Capsules depressed or ovoid, separating into 3 bivalved cocci when mature.

About 56 species in Madagascar, India, Sri Lanka, Malaysia, Philippines, Indonesia and Australia; 14 species and two varieties species in China; four species in Hong Kong.

- 1a. Creeping or ascending herbs; stipules awn-tipped..... 1. *S. bacciformis*  
 1b. Erect shrubs; stipules not awn-tipped.  
   2a. Leaves usually spatulate, apex rounded; flowers borne on stems or branches at ground level..... 2. *S. spatulifolius*  
   2b. Leaves not spatulate, apex acuminate; flowers or inflorescences and fruits axillary.  
     3a. Branchlets and veins of young leaves puberulous; leaf blade glaucous; capsules obovoid to ovoid..... 3. *S. garrettii*  
     3b. Branchlets and veins of leaves glabrous; leaf blade yellowish-green; capsules depressed globose or globose.....  
     ..... 4. *S. androgynus*

**1. *Sauropus bacciformis* (L.) Airy Shaw 艾堇**

(Photo 326)

Kew Bull. 35: 685. 1980; FRPS 44(1): 177, pl. 53: 3–6. 1994; FGD 5: 65, fig. 35. 2003.

*Phyllanthus bacciformis* L., Mant. Pl. 2: 294. 1771; FHK 310. 1861.

Herb, annual or a perennial of short duration, 14–60 cm tall, glabrous throughout; branches diffuse, angular. Leaves somewhat fleshy; stipules narrowly triangular, ca. 2 mm, awn-tipped; petioles ca. 1 mm; leaf blade oblong, elliptic-obovate or lanceolate, 1–2.5 × 0.2–1.2 cm, base rounded or obtuse, rarely cuneate, apex obtuse or acute, mucronulate; lateral veins obscure. Male flowers: several in axillary clusters, 1–2 mm in diam.; pedicels 1–1.5 mm; sepals 6, broadly ovate or obovate, inside with gland-pools, apex irregularly crenate; disk almost petaloid, 6-lobed, fleshy, segments opposite with sepals, yellow-green; stamens 3, 3–4 mm, filaments connate. Female flowers: solitary, axillary, 3–4 mm in diam., green; pedicels 1–1.5 mm; sepals 6, oblong-lanceolate, 2–2.5 mm, apex acuminate, inside with gland-pools; disk absent; ovary 3-locular, styles 3, free, 2-lobed. Capsules ovoid, ca. 5–6 × 4–4.5 mm, purple when matured, separating into 3 bivalved cocci; seeds trigonous.

Locality: Aberdeen, Ngau Tau Kok, Ma On Shan, Pak Shek Kok, Sha Tin, Tai Po Kau, Ping Chau, Lung Kwu Chau. *Y. S. Lau 1216, 1985; P. S. Choi 445; S. Y. Hu 5885, 11765* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Taiwan; Vietnam, India, Sri Lanka, Malaysia, Indonesia, Philippines, Mauritius.

Ecology: Coastal areas. Flowering: Apr.–Jul.; fruiting: Jul.–Nov.

**2. *Sauropus spatulifolius* Beille 龍脷葉**

(Photo 327)

Fl. Indo-Chine 5: 652. 1927; FRPS 44(1): 165, pl. 50: 1–3. 1994; FGD 5: 63. 2003.

*Sauropus changianus* S. Y. Hu, J. Arnold Arbor. 32(4): 393, pl. 1: 12–15. 1951, 'changiana'.

Evergreen shrublet, 10–40 cm tall; branches terete, initially glandular-pubescent, glabrous in age, internodes short, 2–20 mm. Leaves ± fleshy in fresh, papery when dry, usually crowded towards upper part of branchlets; stipules 2, triangular-auriculate, 4–8 × 3–4 mm, persistent; petioles 2–5 mm, glandular-pubescent when young; leaf blade spatulate, obovate oblong or ovate, sometimes oblong, 4.5–16.5 × 2.5–6.5 cm, base cuneate or obtuse, rarely rounded, apex rounded or obtuse, rarely retuse, adaxial surface dark-green but with grey-white blotches, usually glabrous; lateral veins 6–9 pairs. Flowers red or purple, 2–5 clustered or sometimes in short cymes borne on leafless branches or stems; peduncles short and thick, with many lanceolate small (2 mm) bracts. Male flowers: pedicels slender, 3–5 mm; sepals 6, biseriate, subequal, obovate, 2–3 × 1.5 mm; disk segments 6, opposite with sepals; stamens 3, filaments connate into a short column. Female flowers: pedicels ca. 2–3 mm; sepals as in male flowers; disk absent; ovary subglobose, ca. 1 mm in diam., 3-locular; styles 3, bilobed, lobes recurved.

Locality: Cultivated. *Y. S. Lau 3228; S. Y. Hu 5258* (CUHK); *Hu & But 22084, 22336* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Fujian (cultivated); native to Vietnam.

Ecology: In Hong Kong usually cultivated as a pot plant. Flowering: Feb.–Oct.

Uses: Medicinal (folklore), ornamental.

**3. *Sauropus garrettii* Craib 蒼葉守宮木**

Bull. Misc. Inform. Kew 1914(8): 284. 1914; FRPS 44(1): 175, pl. 49: 1–4. 1994.

*Sauropus chorisepalus* Merr. & Chun, Sunyatsenia 2(1): 10, pl. 5. 1934.*Sauropus garrettii* var. *chorisepalus* (Merr. & Chun) H. S. Kiu, FGD 5: 64. 2003.

Shrub, 1–4 m tall; branches sometimes compressed, usually sharply bicarinate; branchlets slender, obscurely angulate and puberulent when young. Leaves membranous or thin-papery; stipules oblong-lanceolate, 2.5–4 mm; petioles ca. 2 mm; leaf blade rhombic-ovate to ovate-lanceolate, rarely oblong or ovate, 2–15 × 1–5.5 cm, base broadly cuneate, rounded or truncate, apex usually acuminate, rarely acute, dark-green adaxially when dry, glaucous or glaucescent abaxially; lateral veins 5–6 pairs. Flowers 1 to several in axillary cluster. Male flowers: pedicels slender, 3–10 mm, densely bracteolate at base; calyx disk-shaped, 1–5 mm in diam., shallowly 6-lobed, segments ovate or subelliptic, apex acute or acuminate, membranous; stamens 3, filaments connate. Female flowers: pedicels 6–15 mm, slender; calyx 6-lobed, lobes ovate or subrhomboid, ca. 5 mm, apex acute; ovary obovate or turbinate, apex truncate, 3-locular; styles 3, bilobed, arms recurved. Capsules obovate or subovoid, 1–2.5 cm in diam., 3-locular; seeds black, triquetrous, ca. 7 × 5 mm.

Locality: Cultivated. *HK sheet 36045, 36046*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei; Malaysia, Myanmar, Thailand, Malay Peninsula.

Ecology: Ravines, moist shrublands. Flowering: Apr.–Aug.; fruiting: Aug.–Nov.

**4. *Sauropus androgynus* (L.) Merr. 守宮木(樹仔菜)**

(Fig. 170; Photos 328–329)

Philipp. Bur. For. Bull. 1: 30. 1903; FRPS 44(1): 175, pl. 49: 8–11. 1994; FGD 5: 64. 2003.

*Clutia androgyna* L., Mant. Pl. 1: 128. 1767.*Sauropus albicans* Blume, Bijdr. 596. 1825.

Shrub, 1–3 m tall, glabrous throughout; branchlets slender, green, ± angular when young. Leaves sub-membranous or thin-papery; stipules lanceolate or linear-lanceolate, 1.5–3 mm; petioles 2–4 mm; leaf blade ovate-lanceolate, oblong-lanceolate or lanceolate, 3–10 × 1.5–3.5 cm, base cuneate, rounded or truncate, apex acuminate; lateral veins 5–7 pairs. Flowers 1 to 2, or several in axillary clusters. Male flower: pedicels slender, 4–7.5 mm; calyx shallowly disk-shaped, 5–12 mm in diam., shallowly 6-lobed, lobes obovate, imbricate; pistillode none; stamens 3, filaments connate; disk-segments 6, opposite to the sepals, incurved. Female flowers: pedicels 6–8 mm; calyx 6-lobed, lobes red, obovate or obovate-triangular, 5–6 × 3–5.5 mm, base attenuate into a short claw, imbricate; disk absent; ovary

3-locular, with 2 ovules in each locule; styles 3, bilobed. Capsules depressed-globose or globose, 1.2 × 1.7 cm, thinly crustaceous, persistent calyx red; fruiting pedicels 5–10 mm long; seeds triquetrous, ca. 7 × 5 mm, black.

Locality: Cultivated. *Y. S. Lau 3261*; *S. Liu 239* (CUHK); *S. Y. Hu 8751* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan (cultivated); widely spread in Vietnam, Cambodia, Laos, Malaysia, Indonesia, Philippines, Sri Lanka, India and New Guinea.

Ecology: Flowering: Apr.–Jul.; fruiting: Jul.–Dec.

Uses: Medicinal (folklore), food (vegetable).

### 10. *Breynia* J. R. Forst. & G. Forst. 黑面神屬

Shrubs or treelets, monoecious. Leaves simple, alternate, distichous, entire, usually turning black. Flowers apetalous, without disk, solitary or several in axillary clusters. Male flowers: calyx turbinate, funnel-form or hemispherical, fleshy, apex usually shortly 6-lobed; stamens 3, filaments 3, connate into an entirely capitate column; anthers 2-locular, longitudinally dehiscent; pistillode absent. Female flowers: calyx turbinate, hemispherical campanulate, or cap-shaped, 6-dentate to (5–)6-lobed, persistent, accrescent into saucer-shaped or discoid; ovary globose, truncate or depressed, 3-locular, with 2 ovules in each locule; styles 3, bilobed. Capsules usually baccate, globose or depressed-globose, indehiscent, epicarp more or less fleshy, harder when dry, with 3–6 trigonous cocci when mature.

About 26 species in SE to S Asia, Pacific Islands and Australia; five species and one variety in China; one species in Hong Kong.

#### 1. *Breynia fruticosa* (L.) Hook f.

黑面神(鬼畫符)

(Fig. 171; Photo 330)

Fl. Brit. Ind. 5(14): 331, *in obs.* 1887; FKH 255. 1912; FRPS 44(1): 181, pl. 55: 1–6. 1994; FGD 5: 65. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 136. 2005.

*Andrachne fruticosa* L., Sp. Pl. 1014. 1753.

Shrub, 1–3 m tall, glabrous throughout; branches purple, compressed at upper part; branchlets green. Leaves leathery; stipules triangular-lanceolate, ca. 2 mm; petioles 3–4 mm; leaf blade ovate, broadly ovate, or rhombic-ovate, 3–7 × 1.8–3.5 cm, obtuse or acute on both ends, dark-green adaxially, glaucous abaxially, turning black when dry; lateral veins 3–5 pairs. Flowers small, solitary or 2–4 in axillary clusters, usually the male flowers in lower axils, female flowers in upper axils, sometimes male and female flowers borne on different branchlets. Male flowers: pedicels 2–3 mm; calyx turbinate, ca. 2 mm, 6-dentate; stamens 3, connate into a column. Female flowers: pedicels ca. 2 mm; calyx campanulate, shallowly 6-lobed, ca. 4 mm in diam., lobes subequal, subtruncate and apiculate, much enlarged in fruit, radiate spreading; ovary ovoid, styles 3, bilobed, lobes recurved. Fruits globose, 6–7 mm in diam., crowned with persistent calyx.

Locality: Common in Hong Kong. *Y. S. Lau 2037, 2227*; *S. P. Lau 147, 179*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Zhejiang, Fujian; Vietnam, Cambodia, Laos.

Ecology: Shrublands or sunny margins of forests. Flowering: Apr.–Sep.; fruiting: May–Dec.

Uses: Medicinal (folklore).



Figure 170. *Sauropus androgynus* (L.) Merr.

1. flowering and fruiting branch; 2. male flower; 3. female flower; 4. capsule. (drawn by H. P. Yu)

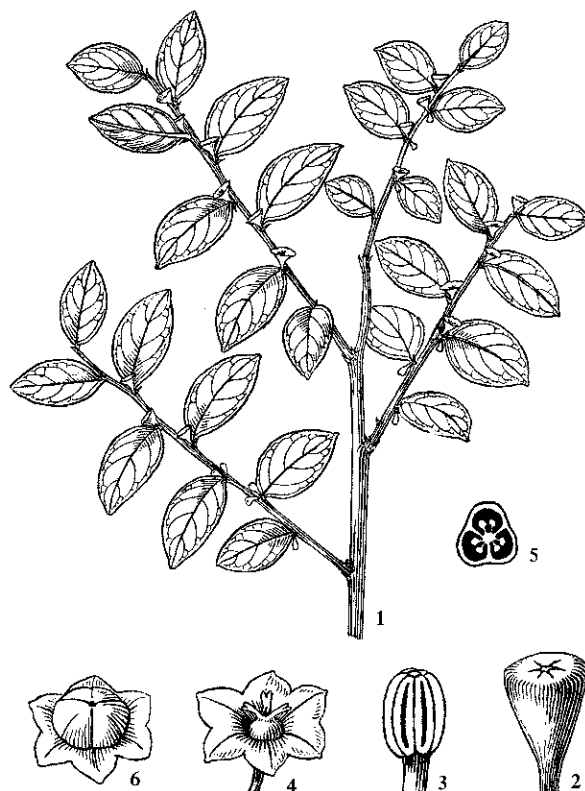


Figure 171. *Breynia fruticosa* (L.) Hook f.

1. flowering branch; 2. male flower; 3. stamen; 4. female flower; 5. cross section of ovary and ovule; 6. capsule. (drawn by H. P. Yu)



11. *Flueggea* Willd. 白飯樹屬

Shrubs or treelets, usually unarmed. Leaves simple, alternate, often distichous, pinnately-veined, stipulate. Flowers small, dioecious, rarely monoecious, solitary or in fascicles; bracts obscure, apetalous. Male flowers: pedicels slender; sepals 4–7, imbricate, margin entire or serrulate; stamens 4–7, inserted at the base of disk and alternate with disk-glands, longer than calyx-lobes; filaments free; anther erect, extrorse, bilocular, longitudinally dehiscent; disk of 4–7 segments, these sometimes connivent or fused; rudimentary ovary small, 2–3-lobed. Female flowers: pedicels terete or angled; sepals as in male flowers; disk saucer-shaped or patelliform, sometimes thickened, entire or lobed; ovary (2–)3(–4)-carpellate; styles free, spreading, bifid or entire; ovules hemitropous, 2 per locule. Capsules globose or triangular, dehiscent into 3 cocci or indehiscent and more or less baccate; columella and sepals persistent; seeds usually triangular, normally 2 per locule.

About 13 species widespread in tropical to temperate regions, especially in Africa, Asia, America and Europe; four species in China; one species in Hong Kong.

1. *Flueggea virosa* (Roxb. ex Willd.) Voigt

白飯樹(金柑藤)

(Fig. 172; Photo 331)

Hort. Suburb. Calcutt. 152. 1825; FRPS 44(1): 72, pl. 19: 1–3. 1994; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 301. 2005.

*Phyllanthus vorosus* Roxb. ex Willd., Sp. Pl. 4: 578. 1805.

*Securinega virosa* (Roxb. ex Willd.) Baill., Adansonia 6: 334. 1866; FGD 42, fig. 25. 2003.

Unarmed, glabrous shrub, 1–4 m tall; branchlets sharply angular, glabrous, reddish-brown in new growth. Leaves papery; stipules lanceolate, 1.5–3 mm, entire or minutely lacerate; petioles 2–9 mm; leaf blade elliptic, oblong, obovate or rotund, 2–5 × 1–3 cm, base obtuse to cuneate, apex rounded to acute, mucronulate, entire and slightly revolute when dry, whitish abaxially; lateral veins 5–8 pairs. Flowers small, yellowish, in axillary glomerules; bracts thin, scarious, mostly less than 1 mm. Male flowers: pedicels slender, 3–6 mm; sepals 5, ovate, 0.8–1.5 × 0.6–1.2 mm, entire or obscurely serrulate; stamens 5, filaments 1–3 mm, anther ellipsoidal, 0.4–0.7 mm; rudimentary ovary usually 3-partite. Female flowers: 3–10-clustered, sometimes solitary; pedicels 1.5–12 mm; sepals as in male flowers; disk annular, entire; ovary ovoid, 3-locular; styles 3, 0.7–1.1 mm, bifid, connate at base. Capsules baccate, subglobose to obovate, 3–5 mm in diam., pericarps whitish when mature, indehiscent.

Locality: Tai Tam, Ngau Chi Wan, Fanling, Po Leng, Tai Po, Butterfly Hill. *Y. S. Lau* 396, 2226; *L. T. Lo* 342; *S. Y. Hu* 7891 (CUHK).

Distribution: Widely distributed in the area S of Qingling Range; widespread in Africa, Oceania, E and SE Asia.

Ecology: Shrublands on montane slopes. Flowering: Mar.–Aug.; fruiting: Jun.–Nov.

Uses: Medicinal (folklore).

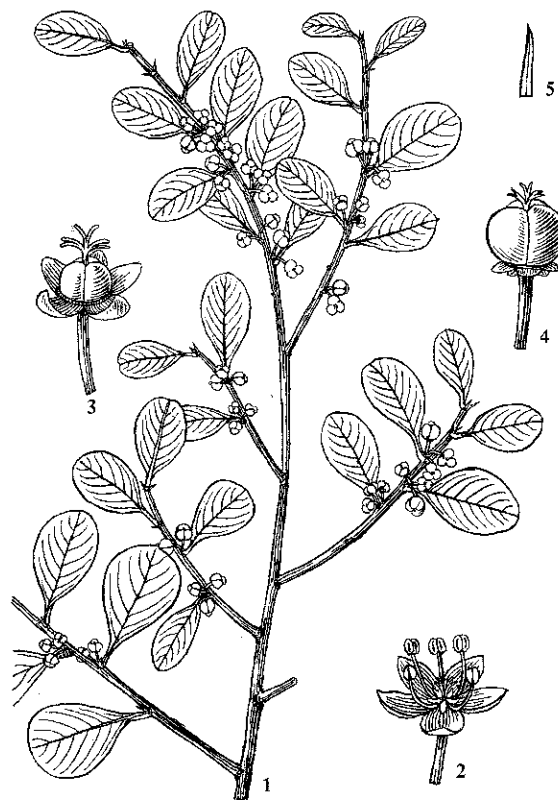


Figure 172. *Flueggea virosa* (Roxb. ex Willd.) Voigt

1. fruiting branch; 2. male flower; 3. female flower; 4. capsule; 5. stipule. (drawn by H. P. Yu)

12. *Phyllanthus* L. 葉下珠屬

Trees, shrubs or herbs, without laticiferous juice. Leaves alternate, entire, usually distichous, giving the smaller branches the appearance of pinnate leaves; stipules small, usually persistent. Flowers usually small, unisexual (plant monoecious or rarely dioecious), apetalous in axillary clusters or solitary. Male flowers: sepals (2–)3–6, in 1 or 2 series, free, imbricate, in the buds; disk prominent, entire or 3–6-lobed; stamens 2–6, filaments united in a central column or free; anthers 2-celled, extrorse; pistillode absent. Female flowers: sepals as in male flowers; ovary usually 3(–4–12)-locular, with 2 ovules in each locule; styles 3–12, free or united at the base, more or less 2-lobed. Fruit usually a capsule, separating into 2-valved cocci or loculicidally dehiscent; seeds trigonous.

About 750–800 species distributed primarily in the tropics and subtropics, poorly represented in the temperate regions; 33 species, one subspecies and four varieties in China; 12 species in Hong Kong.

1a. Trees or shrubs.

2a. Fruit a berry or drupe, indehiscent when dry, black when mature.

3a. Fruit a berry; leaves elliptic to ovate; stamens 5.

- 4a. Young branches, leaves and pedicels glabrous; fruits 3-locular, 1 cm in diam., black..... 1. *P. glaucus*  
 4b. Young branches, leaves and pedicels hairy; fruits 4–12-locular, ca. 6 mm in diam., red to grey-black.....  
 ..... 2. *P. reticulatus*
- 3b. Fruit a drupe.  
 5a. Leaves oblong to linear-elliptic; stamens 3. .... 3. *P. emblica*  
 5b. Leaves obovate-oblong; stamens 4. .... 4. *P. acidus*
- 2b. Fruit a capsule, dehiscent when dry, brown or brownish when mature.  
 6a. Leaves membranous, obovate-elliptic, apex slightly falcate, base inaequilateral; male sepals 4; stamens 2.....  
 ..... 5. *P. leptoclados*
- 6b. Leaves leathery; male sepals 5; stamens 3.  
 7a. Branches terete; leaves oblanceolate, base ± cordate; cultivated species. .... 6. *P. myrtifolius*  
 7b. Branches angular; leaves obovate, obovate-elliptic or spatulate.  
 8a. Plant monoecious; flowers in fascicles; sepals 5. .... 7. *P. maderaspatensis*  
 8b. Plant dioecious; male flowers solitary; sepals 6. .... 8. *P. cochinchinensis*
- 1b. Annual or perennial herbs.  
 9a. Stems with a line of hairs down one side; leaves hispidulous near the margin..... 9. *P. urinaria*  
 9b. Stems and leaves glabrous.  
 10a. Branches terete; sepals and male disk-glands 5. .... 10. *P. niruri*  
 10b. Branches angular; sepals and male disk-glands 6 or 4.  
 11a. Leaf-base inaequilateral; sepals and male disk-glands 6..... 11. *P. virgatus*  
 11b. Leaf-base aequilateral; sepals and male disk-glands 4..... 12. *P. ussuriensis*

**1. *Phyllanthus glaucus* Wall. ex Müll. Arg. 青灰葉下珠**

Linnaea 32: 14. 1863; FRPS 44(1): 85, pl. 22: 4–6. 1994; FGD 5: 49. 2003.

Shrub up to 4 m tall, glabrous throughout; branchlets slender. Leaves membranous or thin-papery; petioles 2–4 mm; stipules ovate-lanceolate, membranous; leaf blade elliptic or oblong, 2.5–5 × 1.5–2.5 cm, base obtuse to rounded, apex acute, mucronulate, slightly glaucous abaxially; lateral veins 8–10. Flowers 3–7 in axillary clusters, with 1 female and several male flowers in each cluster. Male flowers: pedicels slender, ca. 8 mm; sepals 6, ovate; disk-glands 6; stamens 5, filaments free. Female flowers: pedicels ca. 9 mm; sepals 6, ovate; disk annular; ovary ovoid, 3-locular; styles 3, connate at base. Fruit baccate, globose, ca. 1 cm in diam., black, with persistent sepals at base.

Locality: Ma On Shan, Tap Mun. *S. Y. Hu 10524* (CUHK); *Hu & But 233234* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian; Bhutan, India, Nepal, Sikkim.

Ecology: Lowland forests and shrublands. Flowering: Apr.–Jul.; fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

**2. *Phyllanthus reticulatus* Poir. 小果葉下珠(爛頭碎)**

(Photo 332)

Lam., Encycl. Meth. 5: 198. 1804; FRPS 44(1): 82, pl. 22: 1–2. 1994; FGD 5: 48, fig. 29. 2003.

*Cicca microcarpa* Benth., FHK 312. 1861.

Shrub to 4 m tall; branchlets slender, initially yellowish pubescent or puberulous glabrescent. Leaves membranous or papery; petioles 2–5 mm; stipules triangular-lanceolate, 1.7 mm; leaf blade very variable in shape, mostly elliptic to ovate, 1–5.5 × 0.7–3 cm, base obtuse to rounded, apex acute, obtuse or rounded; lateral veins 5–7 pairs, usually prominent on both surfaces. Flowers usually in axillary clusters, with 2–10 male flowers and 1–2 female flowers in each cluster. Male flowers: pedicels slender, 5–10 mm; sepals 5–6, in 2 series, ovate or obovate, unequal, 0.7–1.5 × 0.5–1.2 mm, entire; stamens 5, erect, in two sets: three with longer filaments coherent in a central column, two with shorter filaments, free; anthers triangular; disk-glands 5, scale-like. Female flowers: pedicels slender, 4–8 mm; sepals 5–6, in 2 series, unequal, broad-ovate, 1–1.6 × 0.9–1.2 mm, puberulous inside at base; disk-glands 5–6, oblong or obovate; ovary 4–12-locular, smooth, styles free, bifid at apex, lobes linear, revolute and connivent over the top of the ovary. Fruit baccate, globose to oblate, ca. 4–6 mm across, black with dark purplish when mature.

Locality: Pok Fu Lam Rd., Stubbs Rd., Deep Water Bay, Lam Tsuen, Ma On Shan, Tai O, Lantau Island. *H. C. Tang 2263, 2287; Y. S. Lau 2688; S. Y. Hu 5233, 5730* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Fujian, Taiwan; Vietnam, Laos, Cambodia, Thailand, Indonesia, Malaysia, Philippines, India, Sri Lanka, Queensland, W Africa.

Ecology: Lowland forests. Flowering: Mar.–Jun.; fruiting: Jun.–Oct.

Uses: Medicinal (folklore).

**3. *Phyllanthus emblica* L. 餘甘子(油甘子)**

(Fig. 173; Photo 333)

Sp. Pl. 982. 1753; FHK 312. 1861; FKH 235. 1912; FRPS 44(1): 87, pl. 23: 1–5. 1994; FGD 5: 49. 2003.

*Embllica officinalis* Gaertn., Fruct. Sem. Pl. 2: 122, pl. 108. 1791.

Tree or shrub, up to 10 m tall; branchlets tawny pubescent. Leaves papery or leathery, distichous; stipules triangular, 0.8–1.5 mm, ciliate; petioles 0.3–0.7 mm; leaf blade oblong or linear-oblong, 8–20 × 2–6 mm, base shallowly cordate and slightly oblique, apex

truncate, rounded or obtuse, mucronate or retuse at the tip, green adaxially, greenish abaxially, reddish or brownish when dry; lateral veins 4–7 pairs. Flowers in axillary cymes, 3–7-flowered, usually with only one female flower in each cyme. Male flowers: pedicels 1–2.5 mm; sepals 6, membranous, yellow, obovate or spatulate, 1.2–2.5 × 0.5–1 mm, apex obtuse or rounded, margins entire or denticulate; stamens 3, filaments coherent into a central column, anthers erect, oblong, 0.5–0.9 mm, apex mucronate. Female flowers: pedicels ca. 0.5 mm; sepals 6, oblong or spatulate, 1.6–2.5 × 0.7–1.3 mm, apex obtuse or rounded, thicker, margins membranous, apex ± lobed; ovaries ovoid, 3-locular; styles 3, connate at base, apex deeply bilobed. Fruit a drupe, globose, 1–1.3 cm in diam., epicarp fleshy, pale green or yellowish-white, endocarp crustaceous; seeds reddish, 5–6 × 2–3 mm.

Locality: Common in Hong Kong. *Y. S. Lau* 933, 1152; *Y. W. Lam* 1055; *S. Y. Hu* 5211 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Sichuan, Jiangxi, Fujian, Taiwan; Vietnam, Cambodia, Laos, Malaysia, Philippines, India, Sri Lanka, Indonesia.

Ecology: Dry and open forests or shrublands. Flowering: Apr.–Jun.; fruiting: Jul.–Sep.

Uses: Food (fruit), material (lipids), medicinal (folklore).

#### 4. *Phyllanthus acidus* (L.) Skeels 酸果棠下珠

U.S.D.A. Bur. Pl. Industr. Bull. 148: 17. 1909.

*Averrhoa acida* L., Sp. Pl. 428. 1755.

*Cicca acida* (L.) Merr., Interpr. Rumph. Herb. Amboin. 314. 1917.

Small tree, up to 10 m tall; branchlets slender, glabrous. Leaves distichous, borne on deciduous branchlets resembling pinnate leaves; stipules triangular-acuminate, 0.8–1.2 × 0.5–0.8 mm, entire or denticulate-fimbriate; petioles 2–3 mm; leaf blade papery, broadly ovate or ovate-lanceolate, 3.5–9 × 2–4.5 cm, base obtuse to rounded, apex acute, mucronate, olive-green adaxially, glaucous abaxially; lateral veins 5–7 pairs. Flowers mostly borne on short leafless branchlets of the thick older stems; cymes many-flowered, with 1–9 female flowers accompanied by 25–40 males in each cyme. Male flowers: pedicels slender, 1.3–3 mm; sepals 4, subequal, elliptic to suborbicular, 1.1–1.4 × 0.8–1.4 mm, entire, apex rounded or obtuse; stamens 4, filaments free. Female flowers: pedicels straight, terete and rather stout; sepals 4, subequal, triangular-ovate or elliptic, 1–1.4 × 1–1.3 mm, base thickened, apex obtuse or rounded, entire; staminodes sometimes persistent; ovaries pyriform, smooth, shallowly 3–4-lobed; styles very shortly connate into a column, deeply bilobed. Drupes depressed-globose, 2–2.5 cm in diam., 6–8-furrowed.

Locality: Cultivated. *HK sheet* 24288.

Distribution: Native to Brazil; cultivated or naturalized in tropical and subtropical areas.

Ecology: Flowering: Jan.–Jul.

Uses: Food (beverage base, fruit), ornamental.

#### 5. *Phyllanthus leptoclados* Benth. 細枝棠下珠 (幼枝棠下珠)

FHK 312. 1861; FKH 235. 1912; FRPS 44(1): 112, pl. 32: 6–8. 1994; FGD 5: 52. 2003.

*Epistylum leptocladon* Hance, Ann. Sci. Nat., Bot., ser. 4, 18: 229. 1862.

*Phyllanthus glabrocapsulus* Metcalf, Lingnan Sci. J. 10: 483. 1931.

Small shrub, 0.2–1 m tall, glabrous except for the branchlets. Branchlets slender and divaricate, the smallest almost filiform, with a line of glandular short hairs on one side. Leaves membranous; stipules lanceolate or linear lanceolate, inserted bilaterally at the base of petioles; petioles ca. 1 mm; leaf blade obliquely ovate or oblong, 6–13 × 4–7 mm, base broadly cuneate or obtuse, apex initially with a short (1.5–3 mm) tail, later the tails fallen off, and the apex becoming acute or obtuse, glaucous abaxially; lateral veins ca. 5 pairs. Flowers monoecious. Male flowers: solitary, axillary; pedicels to 1 cm; sepals 4, oblong-ovate, ca. 2 × 1 mm, apex acute, margins lacerate serrate; disk-glands 4, rotund, truncate at apex; stamens 2, on the top of a short central column. Female flowers: pedicels to 1.5 cm; sepals 6, lanceolate, margins lacerate serrate; disk annular, truncate, entire or lobed; ovaries globose, smooth, styles 3, free, spreading, divided into 2 slender lobes. Capsules oblate, ca. 5 mm in diam.; seeds minutely tuberculate.

Locality: New Territories, Lantau Island. *HK sheet* 5397.

Distribution: Guangdong, Fujian, Yunnan.

Ecology: Montane shrublands. Flowering: May–Sep.; fruiting: Jun.–Nov.

Notes: One of the two syntype specimens (*C. Wright* 479, GH) was collected by C. Wright from Hong Kong Island between 1853 to 1856.

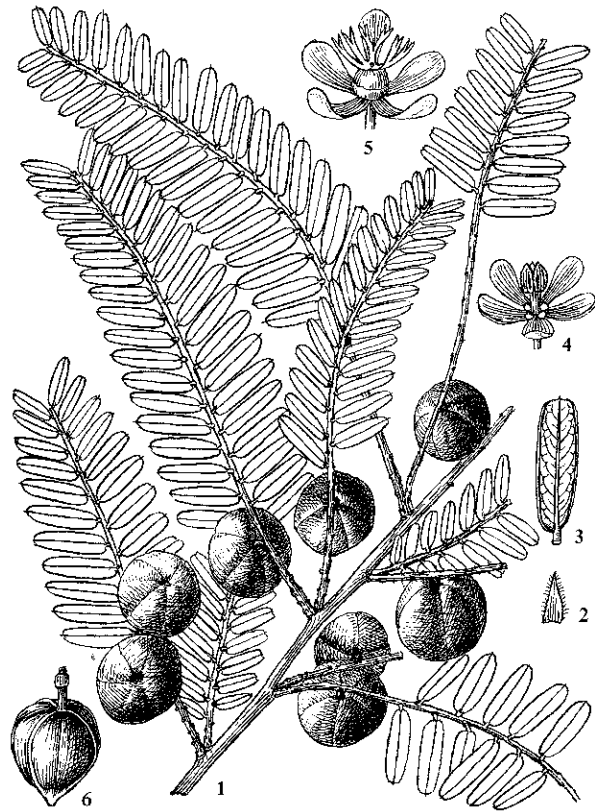


Figure 173. *Phyllanthus emblica* L.

1. fruiting branch; 2. stipule; 3. leaf; 4. male flower; 5. female flower; 6. endocarp. (drawn by H. P. Yu)

**6. *Phyllanthus myrtifolius* (Wight) Müll. Arg.** 癩腺葉下珠

Prodr. 15(2): 396. 1866; FRPS 44(1): 95. 1994; FGD 5: 50. 2003.

*Macraea myrtifolia* Wight, Icon. Pl. Ind. Orient. t. 1902, fig. 2. 1852.

Shrub, ca. 50 cm tall; branchlets puberulous. Leaves leathery, distichous; stipules small, ovate; petioles very short; ca. 1 mm; leaf blade oblanceolate, 12–16 × 3.5–4.5 mm, base shallowly cordate, apex acute or obtuse; lateral veins numerous, nearly parallel. Flowers minute, ca. 3 mm in diam., male and female together in axillary fascicles; pedicels filiform, 3–5 mm. Male flowers: sepals 5, oblong; stamens 3, filaments connate up to middle; anthers 2-celled; disk-glands 5, tubercular. Female flowers: sepals 6, larger than in male flower; disk cup-shaped, entire; ovary globose, 3-locular; styles 3, shortly bilobed, lobes recurved. Capsules oblate, 2 × 3 mm, glabrous.

Locality: Cultivated. *HK sheet 34796*.

Distribution: Native to Sri Lanka; cultivated in Taiwan, Hainan, SE Asia.

Ecology: Flowering: May–Aug.; fruiting: Aug.–Nov.

Uses: Ornamental.

**7. *Phyllanthus maderaspatensis* L.** 麻德拉斯葉下珠

Sp. Pl. 982. 1753; FHK 311. 1861; FKH 234. 1912; FRPS 44(1): 89. 1994.

Shrub up to 1.5 m tall, much branched, glabrous throughout; branches slender, ± quadrangular, glaucous when young. Leaves papery; stipules membranous, linear-lanceolate; petioles 1–1.5 mm; leaf blade obovate, or cuneate-oblong, 2 × 0.4–0.5 cm, base cuneate, apex mucronate. Flowers nearly sessile, in axillary fascicles, with one male and 2–3 female flowers in each fascicle. Male flowers: 1.2 mm in diam.; sepals 5, obovate; disk-glands 5, rotund, free; stamens 3, nearly sessile on an almost globular column. Female flowers: 2.5 mm in diam.; sepals 5, obovate; disk-glands 5, oblong, free; ovary globose, 3-locular; styles 3, free bifid at apex. Capsules globose, ca. 5 mm in diam., smooth; seeds very minutely tuberculate or almost smooth.

Locality: Cultivated. *J. G. Champion s.n. (K)*.

Distribution: S Guangdong; India, Sri Lanka, Indonesia, Australia, Africa.

Ecology: Montane shrublands. Flowering: May–Jul.; fruiting: Aug.–Nov.

**8. *Phyllanthus cochinchinensis* (Lour.) Spreng.** 越南葉下珠(鐵包金)

Syst. Veg. 3: 21. 1826; FRPS 44(1): 96, pl. 28: 7–11. 1994; FGD 5: 50. 2003.

*Cathetus cochinchinensis* Lour., Fl. Cochinch. 608. 1790.*Phyllanthus cinerascens* Hook. & Arn., Bot. Beechey Voy. 211. 1837; FHK 311. 1861; FKH 235. 1912.

Shrub up to 3 m tall, much branched; branchlets slender, yellowish-brown-pubescent when young, glabrous in age. Leaves leathery, distichous or 3–5-fasciculate on short branches; stipules ovate-triangular, ca. 2 mm, ciliate; petioles 1–2 mm; leaf blade obovate, oblong-obovate or spatulate, 1–2 × 0.6–1.3 cm, base attenuate, apex obtuse or rounded, rarely retuse; lateral veins obscure. Flowers dioecious or monoecious, solitary or 2–3 in axillary fascicles, with many bracts; bracts membranous, yellow-brown, margin fimbriate. Male flowers: usually solitary, pedicels ca. 3 mm; sepals 6, obovate or spatulate, ca. 1.3 × 1–1.2 mm, margin membranous, thicker at base; anthers 3, oblong, diverging from a thick central column; disk-glands 6, obconical. Female flowers: 1–2 together, pedicels 2–3 mm; sepals 6, ovate or ovate-rhombic, 1.5–1.8 × 1.5 mm, margin membranous, thicker at base; disk thick, annular, truncate; ovary globose, ca. 1.2 mm in diam., 3-locular, styles 3, 1.1 mm, united to middle, each with 2 recurved lobes. Capsules globose, ca. 5 mm in diam.; seeds minutely tuberculate.

Locality: Common in Hong Kong. *H. C. Tang 1784; L. T. Lo 145; S. P. Lau 163*.

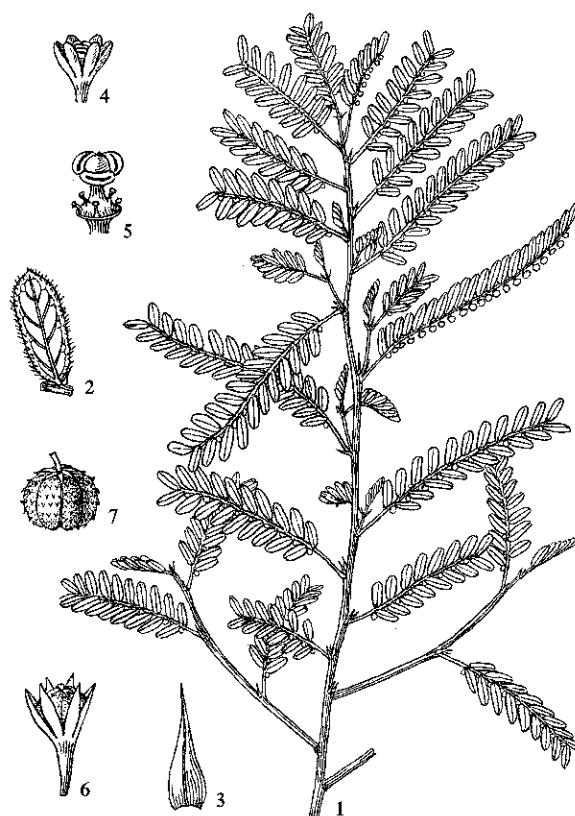
Distribution: Hainan, Fujian, Guangdong, Guangxi, Sichuan, Yunnan, Xizang; Vietnam, Laos, Cambodia, India.

Ecology: Thin forests, shrublands, wastelands. Flowering & fruiting: Jun.–Dec.

**9. *Phyllanthus urinaria* L.** 葉下珠(珍珠草) (Fig. 174)

Sp. Pl. 2: 982. 1753; FHK 310. 1861; FKH 234. 1912; FRPS 44(1): 93, pl. 26: 6–8. 1994; FGD 5: 46. 2003.

*Phyllanthus cantoniensis* Hornem., Enum. Pl. Hort. Hafn. (Revised ed.) 29. 1807.

Figure 174. *Phyllanthus urinaria* L.

1. upper part of plant; 2. leaf; 3. stipule; 4. male flower; 5. stamen axis and gland; 6. female flower; 7. capsule. (drawn by H. P. Yu)

(Photo 334)

Annual herb; stems slightly compressed, erect or decumbent at base, up to 80 cm tall; branchlets puberulous. Leaves thin papery, distichous; stipules ovate-lanceolate, ca. 1.5 mm, conspicuously auriculate at base; petioles very short; leaf blade oblong to oblong-obovate or nearly linear, sometimes slightly falcate, 4–10 × 2–5 mm, base mostly obtuse and sometimes conspicuously asymmetrical, apex rounded, obtuse or acute, mucronulate, hispidulous near the margin on abaxial surface; lateral veins 4–5 pairs, conspicuous. Flowers minute, almost sessile, 2–4 in axillary fascicles; the females solitary, the males 2 or 3 together; sepals 6, yellowish-white, ovate in the males, narrower in the females; stamens 3, anthers on a central column; styles 3, free, bilobed, lobes revolute. Capsules depressed-globose, 2–2.5 mm in diam., with reddish blotches and scurfy-tuberculate; seeds triangular, 1–1.2 × 0.9–1 mm, light greyish-brown, with 12–15 sharp-transverse ridges on the back and sides.

Locality: Happy Valley, Harlech Rd., Pok Fu Lam Reservoir Rd., Stubbs Rd., Ling Nam San Tsuen, Kowloon Reservoir, Fanling, Sha Tin, Lantau Island. *Y. S. Lau 121, 1920; L. T. Lo 320; S. Y. Hu 10694* (CUHK).

Distribution: Area S of Qingling; widely spread over tropical regions of the world.

Ecology: Sunny places, roadsides, wastelands. Flowering: Apr.–Jun.; fruiting: Jul.–Nov.

Uses: Medicinal (folklore).

#### 10. *Phyllanthus niruri* L. 珠子草

Sp. Pl. 981. 1753; FHK 311. 1861; FKH 234. 1912; FRPS 44(1): 101, pl. 26: 1–5. 1994; FGD 5: 47. 2003.

Annual herb, much branched, up to 50 cm tall, glabrous throughout. Leaves thin papery, distichous; stipules lanceolate or triangular; petioles ca. 0.5 mm; leaf blade oblong or elliptic-oblong, 3–10 × 2–5 mm, base rounded, apex obtuse or rounded and often apiculate; lateral veins 4–7 pairs, obscure adaxially, slightly conspicuous abaxially. Flowers solitary or in axillary pairs, often the female flowers on the upper part and the males on the lower part of the branchlets. Male flowers: pedicels 0.5–1 mm; sepals 5, obovate, broadly ovate, 1.2–1.5 × 1–1.5 mm, base reddish, apex obtuse or rounded, yellow-green; disk-glands 5, obovate; stamens 3, anthers nearly globose, on a central column. Female flowers: pedicels 1.5–4 mm; sepals 5, inaequilateral, broadly elliptic or obovate, 1.5–2.3 × 1.2–1.8 mm, apex obtuse or rounded, green, margin membranous and yellow-white; disk discoid; ovary globose, smooth, 3-locular; styles 3, free, bilobed, lobes revolute. Capsules oblate, ca. 3 mm in diam., brown-red, smooth; seeds 1–1.5 × 0.8–1.2 mm, marked with longitudinal striae.

Locality: New Territories, Lantau Island. *HK sheet 27028*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; a common weed in tropical and subtropical Asia and Africa and some parts of tropical America.

Ecology: Sunny places, roadsides, wastelands. Flowering & fruiting: Jan.–Oct.

Uses: Medicinal (folklore).

#### 11. *Phyllanthus virgatus* G. Forst. 黄珠子草

Fl. Ins. Austr. 65. 1786; FRPS 44(1): 91, pl. 25: 5–9. 1994; FGD 5: 47, fig. 28. 2003.

*Phyllanthus simplex* Retz., Obs. Bot. 5: 29. 1789; FKH 234. 1912.

*Phyllanthus anceps* auct. non Willd.: FHK 311. 1861; FKH 234. 1912.

Annual herb, glabrous throughout; stems erect or decumbent, 15–60(–100) cm tall, much branched; branchlets ± flat, with acute angles. Leaves papery to sub-leathery, distichous; stipules membranous; petioles very short, ca. 1 mm; leaf blade linear-lanceolate, oblong or narrow-elliptic, 5–25 × 2–7 mm, base rounded and slightly oblique, apex obtuse or acute; midvein flattened adaxially, raised abaxially, lateral veins obscure on both surfaces. Flowers in axillary fascicles, usually 2–4 male flowers and one female flower per fascicle. Male flowers: pedicels ca. 2 mm; sepals 6, broad-ovate or rotund, ca. 0.5 mm; stamens 3, filaments free; disk-glands 6, oblong. Female flowers: pedicels ca. 5 mm; sepals 6, ovate-oblong, ca. 1 mm; disk orbicular; ovary globose, 3-locular, with elevated scales, rarely smooth; styles 3, bilobed nearly to base. Capsules oblate, 2–3 mm in diam., purple, with smooth or glandular; fruiting pedicels 5–12 mm; seeds small, 0.5 mm in diam., finely warty.

Locality: Wong Nai Hang, Sha Tin, Tuen Mun, Ping Chau. *L. T. Lo 321; P. S. Choi 373; Y. W. Lam 997*.

Distribution: Hebei, Shaanxi, Shanxi and E, C, S & SW China; India, Indochina and throughout Malaysia to Polynesia.

Ecology: Grassy slopes, mixed forests. Flowering: Apr.–May; fruiting: Jun.–Nov.

Uses: Medicinal (folklore).

#### 12. *Phyllanthus ussuriensis* Rupr. & Maxim. 蜜甘草

Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg Ser. 3, 15: 222. 1857; FRPS 44(1): 107, pl. 25: 10–12. 1994.

*Phyllanthus simplex* Retz. var. *chinensis* Müll. Arg., Linnæa 32: 33. 1863.

Annual herb, glabrous throughout; stems erect, up to 60 cm tall, usually branched at base; branchlets slender, angular. Leaves papery; stipules ovate-lanceolate; petioles very short; leaf blade elliptic to oblong, 5–15 × 3–6 mm, base rotund, apex acute to obtuse, white-green abaxially; lateral veins 5–6 pairs. Flowers solitary or several in axillary fascicles. Male flowers: sepals 4, broad-ovate; disk-glands 4, free, alternating with sepals; stamens 2, filaments free. Female flowers: sepals 6, oblong-elliptic, reflexed in fruit; disk-glands 6, oblong; vary ovoid, 3-locular; styles 3, bifid. Capsules oblate, ca. 2.5 mm in diam., smooth; fruiting pedicels short; seeds ca. 1.2 mm in diam., brown-tuberculate.

Locality: Deep Water Bay, Fanling, Sha Tin. *Y. W. Lam 672; W. J. Tutcher 9959; HK sheet 5380; S. Y. Hu 7839* (CUHK); *Hu & But 20943, 22308, 22732* (CUHK).

Distribution: Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Shandong, Liaoning, Jilin, Heilongjiang, Zhejiang, Fujian, Taiwan; SE. Russia, Mongolia, Korea, Japan.

Ecology: Grassy slopes, wastelands or roadsides. Flowering: Apr.–Jul.; fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

### 13. *Drypetes* Vahl 核果木屬

Trees or shrubs. Leaves simple, alternate, margins entire or serrate, base often asymmetrical, pinnately-veined; petioles short; stipules 2. Flowers dioecious, pedicellate or sessile, apetalous. Male flowers axillary, fasciculate or grouped into glomerules, racemes or panicles; sepals 4–6, distinct, usually unequal, imbricate; stamens 1–25, in 1–several whorls, surrounding the disk or outer ones inserted at margin or sinus of disk, inner ones inserted at the disk, filaments free, anthers 2-celled, usually introrse, rarely extrorse, longitudinally dehiscent; disk flattened or concave, margins shallowly or deeply lobed; rudimentary ovary rather small or absent. Female flowers: solitary, axillary or inserted at lateral older branches; sepals as in male; disk annular; ovary 1–2(–3)-locular; ovules 2 in each cell; styles short, stigmatiform; stigmas 1–2(–3), usually dilating into a peltate or reniform. Drupes or capsules ovoid or subglobose, 1–2(–3)-locular, 1-seeded in each locule; epicarps coriaceous or nearly so; mesocarps fleshy or woody; endocarps woody, papery or crustaceous; seeds without caruncle; endosperm fleshy, cotyledons larger and flattened.

About 200 species in tropical and subtropical Asia, Africa and America; 13 species in China; one species in Hong Kong.

#### 1. *Drypetes arcuatineria* Merr. & Chun

拱網核果木 (拱弧脈核果木)

(Fig. 175)

Sunyatsenia 5: 95. 1940; FRPS 44(1): 47, pl. 12: 1–2. 1994; FGD 5: 36. 2003.

*Drypetes arcuatineria* Merr. & Chun var. *elongata* Merr. & Chun, Sunyatsenia 5: 96. 1940.

Shrub, 1–5 m tall; branches densely lenticellate; branchlets glabrous. Leaves papery or thin-leathery; stipules small, triangular, caducous; petioles 2–5 mm; leaf blade oblong, oblong-lanceolate or lanceolate, rarely elliptic, 6–15 × 2–6 cm, base obtuse, apex acuminate, margin sparsely serrulate; lateral veins 7–8 on each side of midvein. Flowers in axillary clusters or borne on leafless spurs. Male flowers: pedicels ca. 2 mm; sepals 4–5(–6), elliptic or rotund, margin erose-lacerate; disk 4–6-fid; stamens 4–6, inserted at sinus of disk, filaments short and slightly flattened; anthers rotund. Female flowers: sepals and disk as in male flowers; ovary ovoid, 1-locular. Drupes ovoid, ca. 1 cm in diam., apex acute, sometimes rostrate, 1-seeded.

Locality: Po Toi Island.

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Shrublands. Flowering: Apr.–Oct.; fruiting: Aug.–Apr. of the following year.

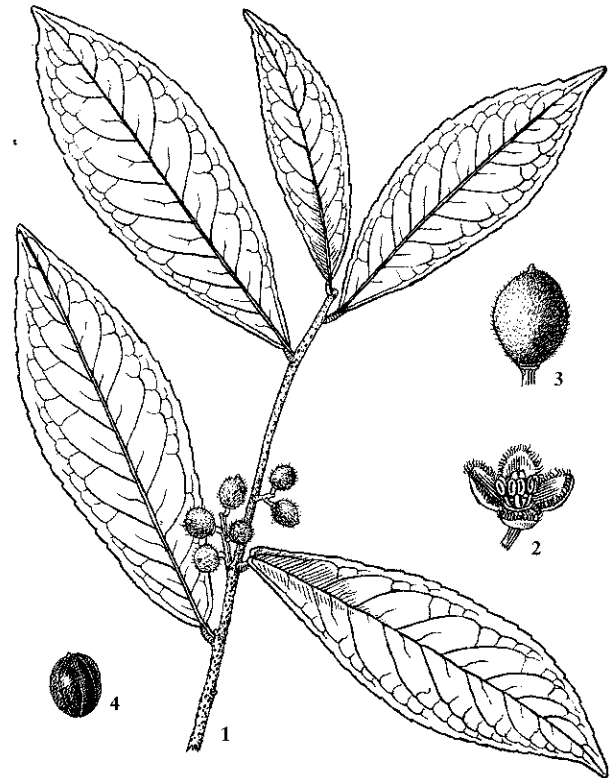


Figure 175. *Drypetes arcuatineria* Merr. & Chun

1. fruiting branch; 2. male flower; 3. drupe; 4. seed. (drawn by H. P. Yu)

### 14. *Antidesma* L. 五月茶屬

Trees or shrubs. Leaves simple, alternate, pinnately-veined, entire; petioles short; stipules 2, small. Flowers small (plant dioecious), in terminal or axillary spikes or racemes, sometimes paniculate, apetalous. Male flowers very small; calyx cup-shaped, 3–8-lobed, lobes imbricate; disk annular or cushion-shaped, entire or lobed; stamens (1–)3–5(–6), filaments free, longer than sepals; anthers 2-celled, connectives short, thickened; rudimentary ovary minute or absent. Female flowers: calyx as in male flowers; ovary 1-locular, with 2 pendulous ovules; styles 2–4, very short and divergent, united at the base. Drupes ovoid, usually somewhat flattened and oblique.

About 200 species distributed primarily in tropics and subtropics, especially in the E hemisphere; 17 species in China; seven species in Hong Kong.

#### 1a. Male flowers in spikes; ovary pubescent.

2a. Leaves usually cordate at base, rounded, obtuse or acute at apex; stipules linear; stamens 4–7, inserted at disk-lobes; fruits subglobose ..... 1. *A. ghaesembilla*

2b. Leaves not cordate at base, short- or caudate-acuminate at apex; stipules ovate-lanceolate; stamens 5, inserted at the inner side of disk; fruits fusiform ..... 2. *A. fordii*

- 1b. Male flowers in racemes; ovary glabrous.
- 3a. Stipules conspicuous, persistent; calyx-lobes of male flowers with irregular teeth ..... 3. *A. montanum*
- 3b. Stipules caducous; calyx-lobes of male flowers entire.
- 4a. Shrubs; leaves pubescent abaxially; stamens inserted at sinus or between disk-lobes ..... 4. *A. venosum*
- 4b. Trees or treelets; leaves glabrous or only pubescent on midvein; stamens inserted at inner side of disk.
- 5a. Leaves linear or linear-lanceolate; lateral veins nearly parallel ..... 5. *A. pseudomicrophyllum*
- 5b. Leaves elliptic, long-elliptic to obovate; lateral veins arcuate-ascending.
- 6a. Branchlets pubescent when young; leaves usually caudate-acuminate at apex, not shining adaxially; disk cushion-shaped; fruits 5–6 mm ..... 6. *A. japonicum*
- 6b. Branchlets glabrous; leaves acute to rounded at apex, usually shining adaxially; disk cup-shaped; fruits 8–9 mm ..... 7. *A. bunius*

### 1. *Antidesma ghaesembilla* Gaertn.

方藥五月茶 (Fig. 176; Photo 335)

Fruct. Sem. Pl. 1: 89, pl. 39. 1788; FKH. 10: 237. 1912; FRPS 44(1): 56, pl. 15: 1–5. 1994; FGD 5: 28. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 65. 2005.

*Antidesma paniculatum* Roxb. ex Willd., Sp. Pl. 4: 764. 1806; FHK 318. 1861.

Tree up to 20 m tall; branchlets densely yellow-pubescent. Leaves papery; stipules linear, caducous. Petioles 5–20 mm, pubescent; leaf blade oblong, ovate, obovate or rotund, 3–9.5 × 2–5 cm, base shallowly cordate or rounded, apex rounded, obtuse or acute, sometimes mucronate or retuse, margin slightly revolute, pubescent on veins abaxially; lateral veins 5–7 pairs. Inflorescence spicate (male) or racemose (female), 3–8 cm, yellow-pubescent. Male flowers: calyx usually 5-lobed, lobes obovate; stamens 4–5(–7), 2–2.5 mm, filaments free; disk 4- to 6-lobed; rudimentary ovary obconical, 0.7 mm. Female flowers: pedicels very short; calyx as in male flowers; disk annular; ovary ovoid, ca. 1 mm in diam.; styles 3, terminal. Drupes depressed globose, ca. 4.5 mm in diam.

Locality: Aberdeen, Mount Davis, Pok Fu Lam Rd., Hok Tau, Sai Kung, So Kwun Wat, Tai Po Tsai, Tai Mo Shan, Tai Mong Tsai, Central Island, Clear Water Bay, Ko Lau Wan, Chuen Lung, Lantau Island. *L. T. Lo 94; P. S. Choi 232; K. Y. Tam 133.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Australia, Bangladesh, Bhutan, India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Vietnam.

Ecology: Open shrublands, mixed dry forests. Flowering: Mar.–Sep.; fruiting: Jun.–Dec.

Uses: Medicinal (folklore), food (potential as fruit).

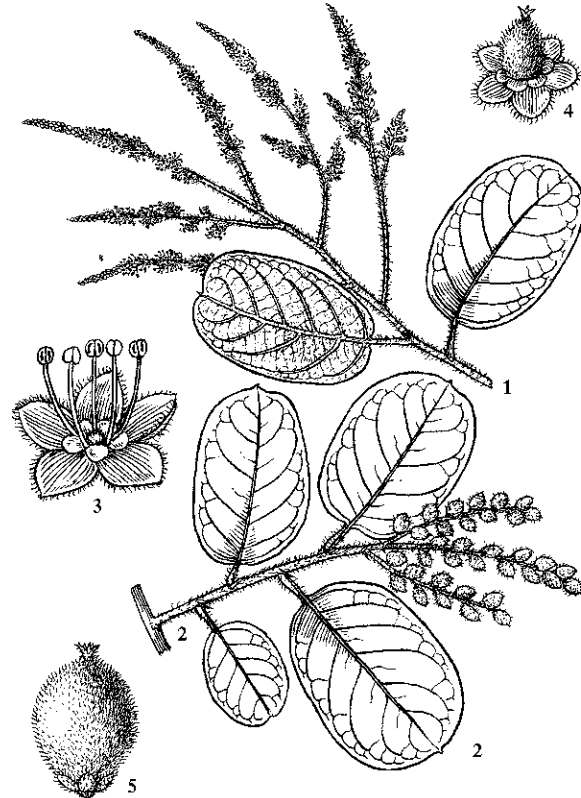


Figure 176. *Antidesma ghaesembilla* Gaertn.

1. male flowering branch; 2. fruiting branch; 3. male flower; 4. female flower; 5. fruit. (drawn by H. P. Yu)

### 2. *Antidesma fordii* Hemsl. 黄毛五月茶 (早禾樹)

(Photos 336–338)

J. Linn. Soc., Bot. 26: 430. 1894; FKH 237. 1912; FRPS 44(1): 54, pl. 14: 1–5. 1994; FGD 5: 38, fig. 23. 2003.

Small tree up to 7 m tall; branchlets, petioles, stipules and rachis of inflorescence yellow-tomentose; stipules ovate-lanceolate, to 1 cm; petioles 1–3 mm; leaf blade papery, oblong, elliptic or obovate, 7–25 × 3–10.5 cm, base rotund or obtuse, apex short- or caudate-acuminate, adaxially glabrous when full grown, densely pubescent on abaxial surface; lateral veins 7–11 pairs, elevated abaxially. Inflorescences spicate (male) or racemose (female), terminal or axillary, 8–13 cm; bracts linear, ca. 1 mm. Male flowers: calyx 5-lobed, lobes broadly ovate, ca. 1 × 1 mm; disk 5-lobed; stamens 5, inserted at inner side of disk. Female flowers: pedicels 1–3 mm; calyx as in male; disk cup-shaped, glabrous; ovary ellipsoidal, 3 mm; styles 3, terminal; stigma bipartite. Drupes fusiform, ca. 7 × 4 mm.

Locality: Lai Chi Wo, Sha Tau Kok, Ma On Shan, Ng Tung Chai, Sha Lo Tung, Lantau Peak. *Y. S. Lau 2516; HK sheet 24623; Hu & But 20637* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; Laos, Vietnam.

Ecology: Montane forests. Flowering: Mar.–Jul.; fruiting: Jul.–Jan. of the following year.

Uses: Medicinal (folklore).

### 3. *Antidesma montanum* Blume 山地五月茶

Bijdr. 1124. 1825; FRPS 44(1): 60, pl. 17. 1994; FGD 5: 41. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 70. 2005.

Small tree or shrub, 2–8(–15) m tall, branchlets pubescent when young, glabrescent in age. Leaves papery; stipules linear, 4–10 mm, persistent; petioles to 1 cm, pubescent; leaf blade elliptic, oblong, obovate-oblong, lanceolate or oblong-lanceolate, 7–25 × 2–10 cm, base acute or obtuse, apex long- or short-caudate, glabrous or sparsely pubescent on veins abaxially; lateral veins 7–9 pairs. Racemes terminal or axillary, 5–16 cm, simple or with 1–2 branches; rachis pubescent or puberulous. Male flowers: pedicels 0.5–1 mm; calyx deeply 3–5-lobed, lobes broadly ovate, apex obtuse, puberulous, margin with irregular teeth; stamens 3–5; disk fleshy, 3–5-lobed; rudimentary ovary obconical to subglobose, apex obtuse, sometimes obscurely lobed. Female flowers: calyx cup-shaped, 3–5-lobed, lobes oblong-triangular, puberulous; disk small, lobed; ovary ovoid, glabrous, styles terminal. Drupes ovoid, 5–8 mm; fruiting pedicels 3–4 mm.

Locality: Ha Wo Hang. *P. T. Li 2423, 2424, 2425* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang; Vietnam, Laos, Cambodia, Myanmar, Malaysia, Indonesia.

Ecology: Thin forests. Flowering: Apr.–Jul.; fruiting: Jul.–Nov.

**4. *Antidesma venosum* E. Mey. ex Tul. 小葉五月茶 (Photos 339–340)**

Ann. Sci. Nat., Bot., ser. 3, 15: 232. 1851; FRPS 44(1): 63, pl. 16: 4–7. 1994.

*Antidesma microphyllum* Hemsl., J. Linn. Soc. Bot. 26: 432. 1894; FKH 237. 1912; FGD 5: 41. 2003.

*Antidesma montanum* P. Hoffm. var. *microphyllum* (Hemsl.) P. Hoffm., Kew Bull. 54: 357. 1999; P. Hoffm., Fl. Thailand 8(1): 72. 2005, p.p. excl. syn. *A. pseudomicrophyllum* Croizat.

*Antidesma nerifolium* Pax & Hoffm., Pflanzenz. 81(IV. 147. XV): 130. 1921; FGD 41.2003.

Shrub, 1–3 m tall; branchlets densely yellow-pubescent, glabrescent. Leaves sub-leathery; stipules linear-lanceolate, 5–10 mm, puberulous; petioles 3–5 mm, sparsely pubescent; leaf blade narrowly lanceolate or narrowly oblong-elliptic, 3–10 × 0.4–2.5 cm, base broadly cuneate or obtuse, apex obtuse or acuminate, glabrous adaxially, sparsely pubescent abaxially; midvein and lateral veins elevated abaxially, pubescent on both surfaces; lateral veins 6–9 pairs. Racemes solitary or 2–3-clustered, pubescent; bracts ovate, 1 mm, puberulous. Male flowers: pedicels very short; calyx 4–5-lobed, lobes broadly ovate or rounded, ca. 2–3 mm in diam., apex usually glandular; disk annular; stamens 4–5, inserted at sinus of disk, anthers 0.5 mm wide; rudimentary ovary clavate, as high as the disk. Female flowers: pedicels 1–1.5 mm; calyx and disk as in male flowers; ovary ovoid, glabrous, styles 3–4, terminal. Drupes ovoid, ca. 5 × 3 mm, red to purple when mature; apex with a persistent style; fruiting pedicels 1.5–2 mm.

Locality: Aberdeen, Shek O, Mount Gough, Happy Valley, Hatton Rd., Pok Fu Lam, Ma On Shan, Lantau Island. *H. C. Tang 1325, 1806; Y. S. Lau 137; L. T. Lo 606.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan; E Africa, Laos, Thailand, Vietnam.

Ecology: Forests on montane slopes or in ravines. Flowering: May–Jun.; fruiting: Jun.–Nov.

Uses: Medicinal (folklore).

**5. *Antidesma pseudomicrophyllum* Croizat 柳葉五月茶**

J. Arnold Arb. 21: 496. 1940; FRPS 44(1): 58, pl. 16: 1–3. 1994.

*Antidesma nerifolium* Pax & Hoffm. var. *pseudomicrophyllum* (Croizat) H. S. Kiu, FGD 5: 42. 2003.

Tree up to 12 m tall; young branches, petioles, rachis of inflorescences and pedicels pubescent or puberulous. Leaves papery; petioles 2–4 mm; leaf blade linear or linear-lanceolate, 4–12 × 0.8–1 cm, base obtuse to rotund, apex acuminate, mucronulate; lateral veins 6–12, delicate, nearly parallel. Racemes axillary and terminal, 1–3 cm, rachis densely puberulous. Male flowers: pedicels ca. 0.8 mm; calyx-lobes 4, broad-ovate, ca. 1 mm; disk discoid; stamens 3, exceeding the calyx. Female flowers: pedicels ca. 0.5 mm; calyx cup-shaped, 4–6-lobed, lobes 0.5 mm; disk discoid; ovary ellipsoidal, ca. 1 mm, styles terminal, 2–3-fid. Drupes ellipsoidal, ca. 5 × 3–4 mm, red when mature.

Locality: Aberdeen Rd. *H. C. Tang 1325* (CUHK); *P. T. Li 2407, 2408, 2409* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Hunan.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Oct.

**6. *Antidesma japonicum* Siebold & Zucc. 日本五月茶(五味子木) (Photo 341)**

Abh. Bayr. Akad. Munch. 4: 212. 1846; FHK 318. 1861; FKH 237. 1912; FRPS 44(1): 65, pl. 18: 7–11. 1994; FGD 5: 39, fig. 24. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 66. 2005.

Shrub or small tree, 2–4 m tall, glabrous or the young parts very slightly pubescent. Leaves papery to sub-leathery; stipules linear, caducous; petioles 5–10 mm; leaf blade elliptic, oblong-elliptic to oblong-lanceolate, rarely obovate, 3.5–13 × 1.5–5 cm, base cuneate, obtuse or rounded, apex usually caudate-acuminate, mucronulate, glabrous or pubescent on veins abaxially; lateral veins 5–10 pairs. Racemes terminal, to 10 cm, laxly flowered; rachis slender, sparsely pubescent. Male flowers: pedicels 1–1.5 mm, base with lanceolate bracteoles; calyx campanulate, ca. 0.7 mm, 3–5-lobed, lobes ovate-triangular, sparsely pubescent to glabrous abaxially; stamens 2–5, exerted; disk cushion-shaped. Female flowers: pedicels much shorter, calyx and disk as in male flowers, but smaller; staminodes 1–2; ovary ovoid, 1–1.5 mm, glabrous, styles terminal, stigma 2–3-fid. Drupes ellipsoidal, ca. 5–6 mm in diam.

Locality: Bowen Rd., Deep Water Bay, Harlech Rd., Hatton Rd., Shing Mun. *Y. S. Lau 18; P. S. Choi 447; Y. W. Lam 95.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Qinghai, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Japan, Malaysia, Thailand, Vietnam.



Ecology: Thin forests on mountain slopes or in ravines.

Flowering: Apr.–Jun.; fruiting: Jun.–Sep.

Uses: Medicinal (folklore).

7. *Antidesma bunius* (L.) Spreng.

五月茶(五味子)

(Fig. 177; Photo 342)

Syst. Veg. 1: 826. 1825; FHK 318. 1861; FKH 237. 1912; FRPS 44(1): 63, pl. 16: 4–7. 1994; FGD 5: 39. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 61. 2005.

*Stilago bunius* L., Mant. 122. 1767.

Tree up to 10 m tall, branchlets glabrous except the buds. Leaves papery or leathery; stipules linear, caducous; petioles 3–10 mm; leaf blade oblong-elliptic, obovate or oblong-obovate, 8–16(–23) × 3–10 cm, base broadly cuneate or cuneate, apex acute to rounded, mucronate, dark-green and shining adaxially, glabrous or slightly pubescent on midvein abaxially; lateral veins 7–11 pairs. Male spikes 6–17 cm, glabrous or sparsely pubescent. Male flowers: calyx cup-shaped, 3–4-lobed, lobes ovate-triangular; stamens 3–4, ca. 2.5 mm; disk cup-shaped, entire or irregularly lobed; rudimentary ovary clavate. Female racemes 5–12(–18) cm. Female flowers: calyx and disk as in male flowers; pistils slightly longer than the sepals; ovary broad-ovoid, glabrous; styles terminal; stigma short and broad, retuse at the apex. Drupes subglobose, compressed-ovoid or ellipsoidal, 8–10 × 8 mm, red to black when mature; fruiting pedicels ca. 4 mm.

Locality: Common in Hong Kong. *H. C. Tang 172, 1017, 1275, 1867; Y. S. Lau 306; P. S. Choi 124.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Xizang, Jiangxi, Fujian; India, Indonesia, Malaysia, Myanmar, New Guinea, Queensland, Sri Lanka, Vietnam.

Ecology: Thin forests. Flowering: Mar.–May; fruiting: Jun.–Nov.

Uses: Food (fruit), material (wood).

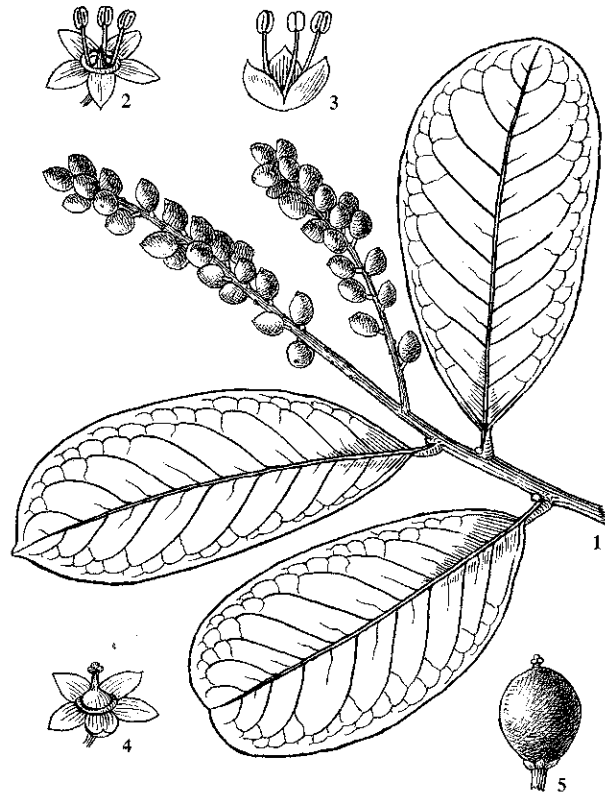


Figure 177. *Antidesma bunius* (L.) Spreng.

1. fruiting branch; 2–3. male flower; 4. female flower; 5. drupe. (drawn by H. P. Yu)

### 15. *Mallotus* Lour. 野桐屬

Trees or shrubs, dioecious or monoecious, usually with stellate hairs. Leaves alternate or opposite, entire, toothed or sometimes lobulate, sometimes peltate, often glandular abaxially and with 2 to several granular glands near base. Flowers small or minute, in axillary or terminal panicles, spikes or racemes, apetalous, without disk; males clustered, female solitary in the bracts. Disk often absent. Males flowers: clustered in bract; calyx globose or ovoid, 3–5-partite; stamens numerous; filaments free, anthers 2-celled, dorsifixed or nearly basifixed, longitudinally dehiscent, connectives truncate; pistillode absent or very minute. Female flowers: solitary in bract; calyx spathaceous or 3–5-lobed; ovary 2–4-locular, with a solitary in each locule; styles free or connate at base, spreading or recurved, entire, plumose or papillose. Capsule of 2–3(–4) bivalved cocci, smooth, tuberculate or echinate; seeds ovoid-oblong or globose, testa crustaceous.

About 150 species chiefly in tropical and subtropical Asia and Australia, few in Africa and Madagascar; 27 species and 12 varieties in China; seven species in Hong Kong.

- 1a. Leaves peltate or nearly so.
- 2a. Leaves narrowly peltate, 5–15 × 3–10 cm; capsules oblate, brown, stellate-tomentose and sparsely spiny; spines subulate, 4–5 mm.....1. *M. paniculatus*
- 2b. Leaves broadly peltate, 11–35 × 12–28 cm; capsules densely stellate-tomentose and spiny; spines purple, 6 mm.....2. *M. barbatus*
- 1b. Leaves not peltate.
- 3a. Leaves opposite, differing in shape and size, normally oblong-lanceolate but sometimes reduced and stipule-shaped .....3. *M. hookerianus*
- 3b. Leaves alternate or sometimes opposite, not differing in shape and size.
- 4a. Climbing shrubs; leaves tripliveined .....4. *M. repandus*
- 4b. Trees or erect shrubs; leaves with pinnate or basal veins.
- 5a. Leaves stellate-pubescent on midvein abaxially, pinnately-veined, lateral veins 8–10 pairs, with tuft of hairs in axils; capsules 1.4 cm in diam. ....5. *M. peltatus*
- 5b. Leaves stellate-tomentose abaxially; veins basal, without hair tufts in axil of veins; capsules 5–10 mm in diam.

- 6a. Leaves ca. as long as broad, stellate-tomentose abaxially, base truncate or slightly cordate, margin sparsely serrate; capsules subglobose, densely covered with stellate hairs and soft spines ..... 6. *M. apelta*
- 6b. Leaves longer than broad, sparsely covered with red glandular granules abaxially, base rounded or cuneate, margin subentire; capsules oblate, spineless, covered with crimson glandular granules and stellate hairs..... 7. *M. philippensis*

1. *Mallotus paniculatus* (Lam.) Müll. Arg.

白楸 (Fig. 178; Photo 343)

Linnaea 34: 189. 1865; FRPS 44(2): 35, pl. 9: 3–5. 1996; FGD 5: 78. 2003

*Croton paniculatus* Lam., Encycl. 2: 207. 1786.

*Mallotus cochinchinensis* Lour., Fl. Cochinch. 655. 1790; FKH 240. 1912.

*Rottlera paniculata* (Lam.) A. Juss., Euphorb. Gen. tab. 18: 33. 1824; FHK 307. 1861.

Tree or shrub, 3–15 m tall; branchlets, petioles and inflorescence brown-stellate-tomentose. Leaves alternate, slightly peltate; petioles 2–15 cm; leaf blade ovate, ovate-triangular or rhombic, 5–15 × 3–10 cm, base cuneate or broadly cuneate, apex long-acuminate, margin undulate or subentire, 2-lobed or sparsely toothed, grey-yellow- or white-tomentose on both surfaces when young, glabrous in age; veins 5, basal. Inflorescence terminal, racemose or paniculate, the male inflorescences 10–20 cm, the female 5–25 cm. Male flowers: 2–6 clustered in axil of bracts; pedicels ca. 2 mm; calyx-lobes 4–5, ovate, 2–2.5 mm, densely stellate-pubescent abaxially; stamens 50–60. Female flowers: 1–2 in axil of bracts; pedicels ca. 2 mm; calyx-lobes 4–5, oblong-ovate, 2–3 mm, densely stellate-pubescent abaxially; styles slightly connate at base, stigma 2–3 mm, plumose. Capsules oblate, 1–1.5 cm in diam., brown-stellate-tomentose and with sparsely spiny; spines soft, 4–5 mm, puberulous; seeds subglobose, brown, often rugose.

Locality: Common in Hong Kong. *Y. S. Lau 1280, 2026; P. S. Choi 396; S. Y. Hu 6325, 12728* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Fujian, Taiwan; SE. Asia.

Ecology: Thin forests, shrublands. Flowering: Jul.–Oct.; fruiting: Nov.–Dec.

2. *Mallotus barbatus* (Wall.) Müll. Arg. 毛桐

Linnaea 34: 184. 1865; FRPS 44 (2): 36, pl. 9: 6–8. 1996; FGD 5: 78. 2003.

*Rottlera barbata* Wall., Cat. 7822. 1828.

Treelet 3–6 m tall; young branches, petioles, abaxial surface of leaves and inflorescences densely stellate-floccose. Leaves alternate, broadly peltate; petioles 5–22 cm; leaf blade papery, ovate-triangular or ovate-rhombic, 13–35 × 12–28 cm, base rounded or truncate, apex acuminate, margins serrate or undulate, sometimes 2-lobed, sparsely dotted with yellow glandular granules abaxially; palmately 5–7-veined; lateral veins 4–6. Inflorescence terminal, racemose, the male 11–36 cm, the female 10–25 cm, multiramose at lower parts; bracts linear, 5–7 mm; bract-axils with 4–6 male flowers. Male flowers: 4–5 clustered in axil of bracts; pedicels ca. 4 mm; calyx-lobes 4–5, ovate, 2–3.5 mm, densely stellate-pubescent abaxially; stamens 75–85. Female flowers: 1–2 in axil of bracts; pedicels ca. 2.5 mm; calyx-lobes 3–5, ovate, 4–5 mm; styles 3–5, slightly connate at base, stigma ca. 3 mm, plumose. Capsules globose, 1.3–2 cm in diam., covered with soft prickles, densely stellate-tomentose; seeds ovoid, ca. 5 × 4 mm, black, smooth.

Locality: Cultivated. *HK sheet 6043*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan; SE Asia.

Ecology: Flowering: Apr.–Jul.; fruiting: Sep.–Oct.

3. *Mallotus hookerianus* (Seem.) Müll. Arg. 粗毛野桐

Linnaea 34: 193. 1865; FKH 239. 1912; FRPS 44(2): 17, pl. 5: 1–3. 1996; FGD 5: 74, fig. 42. 2005.

*Hancea hookeriana* Seem., Bot. Voy. Herald. 409, pl. 96. 1857; FKH 306. 1861.

Shrub or treelet, 1.5–6 m tall; young branches and petioles sparsely hispid with stiff spreading hairs. Leaves opposite, differing in size and shape, sometimes strongly reduced, stipuliform; stipules linear-lanceolate, ca. 1 cm, sparsely villose, persistent; petioles 1–1.5 cm; leaf blade normally oblong-lanceolate, 8–12 × 2–5 cm, base obtuse or rounded, apex acuminate, margin subentire or undulate,



Figure 178. *Mallotus paniculatus* (Lam.) Müll. Arg.

1. fruiting branch; 2. male flower; 3. female flower. (drawn by H. P. Yu)

(Photo 344)

adaxial surface glabrous, abaxial surface villose near base of midvein and pubescent in axils of lateral veins; lateral veins 8–9. Male racemes 4–10 cm, in axils of reduced leaves; bracts subulate or lanceolate, 1–5 mm, hairy. Male flowers: pedicels 3–4 mm, jointed at middle; calyx-lobes 4, elliptic or rotund, ca. 4 mm; stamens 60 or more. Female flowers solitary, sometimes several forming short racemes; pedicels 3–4 mm; calyx-lobes 5, lanceolate, ca. 5 mm, villose; ovary globose, echinate; styles connate at base; stigma 10–15 mm, plumose. Capsules triangular-globose, 1–1.4 cm, with numerous soft prickles; seeds globose, brown, smooth.

Locality: Happy Valley, Shek O, Wong Nai Chung, Nam Chung, Wu Kau Tang, Sha Lo Tung, Fo Tan, Lantau Island. *P. S. Choi 426, 427; Y. S. Lau 1801; S. Y. Hu 10472* (CUHK).

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Thin forests. Flowering: Mar.–May; fruiting: Aug.–Oct.

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

**4. *Mallotus repandus*** (Rottler) Müll. Arg. 石岩楓

(Photo 345)

*Linnaea* 34: 197. 1865; FKH 240. 1912; FRPS 44(2): 28. 1996; FGD 5: 74, fig. 42. 2003.

*Croton repandus* Rottler, Ges. Naturf. Freunde Berlin Neue Schriften 4: 206. 1803.

*Rottlera cordifolia* Benth., FHK 307. 1861.

Climbing shrub; young branches, leaves, petioles and inflorescences densely yellowish stellate-pubescent; older branches glabrous. Leaves alternate, papery or membranous; petioles 2–6 cm; leaf blade ovate or elliptic-ovate, 3.5–8 × 2.5–5 cm, base cuneate, rounded or cordate, apex shortly and obtusely acuminate, entire or slightly sinuate, adaxially glabrous or nearly so, abaxially in axils of veins, but sprinkled with glandular dots. basal veins 3, lateral veins 4–5. Inflorescence racemose, terminal, rarely axillary, the male 5–15 cm, sometimes branched at base, the female terminal, 5–8 cm. Male flowers: pedicels ca. 4 mm, calyx-lobes 3–4, ovate-oblong, ca. 3 mm, tomentose abaxially; stamens 40–75, filaments ca. 2 mm, anthers oblong. Female flowers: pedicels ca. 3 mm; calyx-lobes 5, ovate-lanceolate, ca. 3.5 mm, tomentose and glandular abaxially; styles 2–3; stigma ca. 3 mm, stellate-hairy, plumose. Capsules depressed globose, ca. 1 cm in diam., densely covered with powdery-hairs and glands; seeds ovoid, ca. 5 mm in diam., black, lustrous.

Locality: Cape D'Aguilar, Victoria Park Rd., Aberdeen, Pok Fu Lam Rd., Tai Hang Rd., Sai Kung, Lantau Island, Green Island, Hei Ling Chau, Cheung Chau. *H. C. Tang 1295; Y. S. Lau 565; P. S. Choi 356; S. Y. Hu 5227* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Taiwan; widely distributed in SE to S Asia.

Ecology: Thin forests, margins of forests. Flowering: Mar.–May; fruiting: Aug.–Sep.

Notes: The type specimen of *Rottlera cordifolia* was collected by C. Wright from Hong Kong Island in 1853.

**5. *Mallotus peltatus*** (Geiseler) Müll. Arg. 山苦茶(富列野桐)

(Photo 346)

*Linnaea* 34: 187. 1865.

*Aleurites peltata* Geiseler, Cronton. Monogr. 81. 1807.

*Hancea muricata* Benth., FHK 306. 1861.

*Mallotus oblongifolius* (Miq.) Müll. Arg., *Linnaea* 34: 192. 1865; FRPS 44(2): 23, pl. 6: 4–5. 1996; FGD 5: 73. 2003.

*Rottlera oblongifolia* Miq., Fl. Ned. Ind. 1(2): 396. 1859.

Shrub or treelet, 2–10 m tall, curry-scented when dry; branchlets stellate-pubescent or glabrous, glandular. Leaves alternate or sometimes nearly opposite, basifixed to peltate; stipules ovate-lanceolate, stellate-hairy, caducous; petioles 0.5–3.5 cm; leaf blade oblong-obovate, 5–15 × 2–6 cm, base rounded or slightly cordate, with 4–6 glands near the insertion of petioles; apex acute or caudate-acuminate, entire or slightly undulate, adaxial surface glabrous, abaxial surface stellate-pubescent on veins and with tufts of hairs in axil of lateral veins, sometimes sprinkled with orange glands; pinnately-veined, lateral veins 8–10. Male racemes terminal, 4–12 cm, the male with small clustered flowers; bracts ovate-lanceolate, 2–3 mm; pedicels ca. 3 mm. Male flowers: alabastrum ovoid, ca. 1.5 mm; calyx-lobes 3, broadly ovate, unequal, ca. 1.5 mm, glabrous; stamens 25–45; connectives broader. Female racemes terminal, 7–10 cm, with few distant flowers; bracts subulate, ca. 2 mm long, hairy; pedicels ca. 2.5 mm. Female flowers: calyx spatheous ca. 4.5 mm, unilateral-lobed, apex tridentate, abaxially stellate-hairy and sparsely sprinkled with yellow glandular dots; ovary globose, densely echinate and puberulous; styles connate below middle; stigma 4–5 mm, densely plumose. Capsules oblate, ca. 1.4 cm in diam., muricate with soft and usually recurved points, puberulous and sprinkled with orange-yellow glands; seeds globose, ca. 5 mm in diam., maculate-stripped.

Locality: Aberdeen, Nam Fung Rd., Deep Water Bay Rd., Lady Clementi's Ride, Kei Ling Ha Lo Wai, Tai Long Wan. *Y. W. Lam 749; HK sheet 38801, 40154.*

Distribution: Hainan, Guangdong; widely spread over S and SE Asia.

Ecology: Shrublands, margins of forests. Flowering: Feb.–Apr.; fruiting: Jan.–Nov.

**6. *Mallotus apelta*** (Lour.) Müll. Arg. 白背葉(白桐、楸桐)

(Fig. 179; Photo 347)

*Linnaea* 34: 189. 1865; FKH 240. 1912; FRPS 44(2): 39, pl. 10: 1–2. 1996; FGD 5: 79. 2003.

*Ricinus apelta* Lour., Fl. Cochinch. 589. 1790,

*Rottlera cantoniensis* Spreng., Syst. Veg. 3: 878. 1826.

*Rottlera chinensis* A. Juss., Euphorb. Gen. tab. 18: 33. 1824; FHK 306. 1861.

Shrub or treelet, usually 1–4 m tall; branchlets, petioles and inflorescences densely yellowish-stellate-pubescent and sparsely sprinkled with orange glands. Leaves alternate; petioles 5–15 cm; leaf blade ovate or broadly ovate, rarely cordate, 6–16(–25) cm in

diam., base truncate or slightly cordate, with 2 brown glands near the insertion of petioles, apex acute or acuminate, margin sparsely serrate, glabrous or sparsely hairy adaxially, white-stellate-tomentose and sprinkled with orange glands abaxially; basal veins 5, lateral veins 6–7. Inflorescence terminal or lateral, spicate or paniculate, the male 15–30 cm, the female sometimes shorter, 5–30 cm. Male flowers: 2–8 clustered in bract; pedicels 1–2.5 mm; alabastrum ovoid or globose, ca. 2.5 mm; calyx-lobes 4, ovate or ovate-triangular, ca. 3 mm, densely yellowish stellate-pubescent abaxially, sparsely sprinkled with minute glands adaxially; stamens 50–75, ca. 5 mm. Female flowers: solitary in bract; pedicels very short; calyx-lobes 3–5, ovate or nearly triangular, 2.5–3 mm, densely white-stellate-hairy and glandular; styles 3–4, ca. 3 mm, connate at base; stigma plumose. Capsules subglobose, 1–1.3 cm in diam., densely stellate-hairy and softly echinate; prickles linear, yellowish, 5–10 mm; seeds subglobose, ca. 3.5 mm in diam., brown, rugose.

Locality: Common in Hong Kong. *Y. S. Lau* 331, 1933; *S. Y. Hu* 5411, 12333 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Thin forests, shrublands. Flowering: Jun.–Sep.; fruiting: Aug.–Nov.

#### 7. *Mallotus philipensis* (Lam.) Müll. Arg. 粗糠柴

(Photo 348)

Linnaea 34: 196. 1865; FKH 240. 1912; FRPS 44(2): 31, pl. 8: 7. 1996; FGD 5: 77. 2003.

*Croton philipensis* Lam., Encycl. 2: 206. 1786.

*Rottlera tinctoria* Roxb., Pl. Coromandel 2: 36, pl. 168. 1798; FHK 307. 1861.

Shrub or tree, 2–18 m tall; branchlets, young leaves and inflorescences densely tawny stellate-pubescent. Leaves alternate or sometimes opposite; petioles 2–5(–9) cm, brownish hairy, slightly thickened on both ends, stellate-hairy; leaf blade subcoriaceous, ovate, oblong or ovate-lanceolate, 5–23 × 3–6 cm, base rounded or truncate, with 2–4 brown glands near the insertion of petiole, apex acuminate, margin subentire, glabrous adaxially, stellate-tomentellous and sparsely sprinkled with red glands abaxially; basal veins 3, lateral veins 4–6. Inflorescence terminal or axillary, racemose, solitary or clustered, the male 5–10 cm, the female 3–8 cm, lengthened to 16 cm in fruit; bracts ovate, ca. 1 mm. Male flowers: 1–5 clustered in axil of bract; pedicels 1–2 mm; calyx-lobes 3–4, oblong, ca. 2 mm, densely stellate-hairy and sprinkled with red glands; stamens 15–30, connectives slightly broad; bracts ovate, ca. 1 mm. Female flowers: pedicels 1.2 mm; calyx-lobes 3–5, ovate-lanceolate, ca. 3 mm, densely stellate-hairy; ovary pubescent, styles 2–3, 3–4 mm, stigma densely plumose. Capsules oblate, 6–8 mm in diam., densely covered with red glands and mealy hairs; seeds ovate or globose, black.

Locality: Barker Rd., Findlay Rd., Mount Gough, Pok Fu Lam Reservoir, Stubbs Rd., Victoria Peak, Butterfly Hill, Lantau Island. *Y. S. Lau* 851; *N. H. Li* 128; *HK sheet* 39979; *S. Y. Hu* 10769 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; E to SE Asia.

Ecology: Thin forests, margins of forests. Flowering: Apr.–May; fruiting: May–Aug.

### 16. *Macaranga* Thouars 血桐屬

Trees or shrubs, young branches and leaves usually pubescent or tomentose. Leaves alternate, often peltate, entire or lobed, pinnately- or palmately-veined, with 2 depressed glands at the base on the adaxial surface; stipules, free or connate, caducous. Flowers unisexual (plant dioecious, rarely monoecious), without petals and disk, in axillary racemes or panicles. Male flowers many in clusters; calyx 2–4-lobed, lobes valvate; stamens 1–3 or 5–15, rarely 20–30, filaments free or connate at base, anthers 3–4-celled; pistillode absent. Female bracts 1 or few in a large or small often toothed bract; calyx urceolate or cup-shaped, lobed or shortly dentate; ovary 1–6-locular, with 1 ovule in each locule; styles short or slender, entire, free or rarely connate at base. Capsules of 1–5 bivalved cocci, naked or spiny, usually glandular or warty; seeds subglobose, testa crustaceous.

About 500 species in Africa, tropical and subtropical Asia; 16 species in China; three species in Hong Kong.

- 1a. Leaves not peltate, slightly auriculate-cordate at base, pinnately-veined; flowers in racemes ..... 1. *M. lowii*  
 1b. Leaves peltate, obtuse, rounded or broadly cuneate at base, palmately-veined; flowers in panicles.

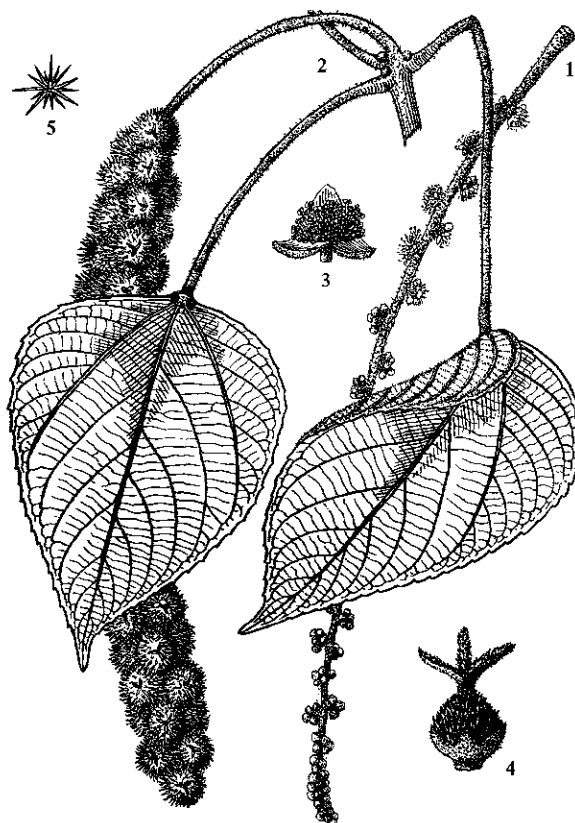


Figure 179. *Mallotus apelta* (Lour.) Müll. Arg.

1. male inflorescence; 2. fruiting branch; 3. male flower; 4. female flower; 5. stellate hair. (drawn by H. P. Yu)

- 2a. Young branches and leaves pubescent; stipules triangular, 1.5–3 × 0.7–2 cm; ovary and capsules soft-echinate.....  
 ..... 2. *M. tanarius* var. *tomentosa*
- 2b. Young branches and leaves tomentose; stipules lanceolate, 7–10 × 2–3 mm; ovary and capsules not echinate .....  
 ..... 3. *M. sampsonii*

1. *Macaranga lowii* King ex Hook. f. 刺果血桐

(Photo 349)

Fl. Brit. Ind. 5: 453. 1887.

*Macaranga auriculata* (Merr.) Airy Shaw, Kew Bull. 19(2): 325. 1965; FRPS 44(2): 61. 1996; FGD 5: 84. 2003.

*Macaranga poilanei* Gagnep., Bull. Soc. Bot. France 69: 703. 1923[1924].

*Mallotus auriculatus* Merr., Philipp. J. Sci. 7: 396. 1912.

Tree, 5–10 m tall; branchlets hairy when young. Leaves papery; stipules subulate, 2.5–3 mm, deciduous; petioles 2–3.5 cm, villose; leaf blade elliptic to broadly lanceolate, 8–16 × 3–6 cm, base slightly auriculate-cordate, apex long-acuminate, entire or shallowly undulate, abaxially glandular and hairy on midvein; lateral veins 8–10. Inflorescences racemose, rachis sparsely pubescent; the male 6–9 cm, with hairy, ovate to ovate-lanceolate bracts; the female 4–6 cm, with glabrous, lanceolate bracts. Male flowers: 5–7 clustered in axil of bract; pedicels 1.5 mm, pubescent; sepals 3–4, oblong, sparsely pubescent; stamens 12–16. Female flowers: pedicels 1–6 mm, pubescent; sepals 3–4, lanceolate, ca. 2 mm, hairy, persistent; ovary soft-echinate, 2-locular; styles 2, linear, 7–12 mm, connate at near base, papillose. Capsules biglobose, 6 × 12 mm, glandular and with soft prickles; seeds subglobose, 5 mm in diam., black-brown with maculate stripes.

Locality: Aberdeen, Wu Kau Tang, Tai Po Kau. *Y. W. Lam* 175, 203, 494.

Distribution: Hainan, Guangdong, Guangxi, Fujian; Vietnam, Thailand, Malaysia, Indonesia, Philippines.

Ecology: Forests. Flowering: Jan.–May; fruiting: May–Jun.

Uses: Ornamental.

2. *Macaranga tanarius* (L.) Müll. Arg. var. *tomentosa* (Blume) Müll. Arg. 血桐

(Fig. 180; Photo 350)

Bijdr. 9997. 1866.

*Mappa tomentosa* Blume, Bijdr. 624. 1826.

*Macaranga tanarius* auct. non (L.) Müll. Arg.: FKH 240. 1912; FRPS 44(2): 50. 1996; FGD 5: 82. 2003.

*Mappa tanarius* auct. non (L.) Blume: FHK 304. 1861.

Evergreen tree, 5–10 m tall; young branches and stipules pubescent, branchlets stout, smooth and glaucous. Leaves alternate at upper part of branchlets, peltate; petioles 14–30 cm; stipules membranous, triangular, 1.5–3 × 0.7–2 cm, deciduous; leaf blade subrotund or ovate, 17–30 × 14–24 cm, base obtuse, apex acuminate, entire or obscurely sinuate, glabrous adaxially, glandular and pubescent on veins abaxially; palmate veins 9–11. Inflorescences paniculate, 5–15 cm, rachis glabrous or pubescent. Male flowers: many clustered in axil of bract; pedicels less than 1 mm, subglabrous; sepals 3, ca. 1 mm, sparsely pubescent; stamens 4–10. Female flowers: sepals 2–3, ca. 2 mm, pubescent; ovary 2–3-locular; styles 2–3, ca. 6 mm, ± liguliform, sparsely papillose. Capsules subglobose, 0.5–1.5 × 1–1.2 cm, echinate and glandular; seeds subglobose, ca. 5 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang* 2487; *Y. S. Lau* 572; *L. T. Lo* 30; *S. Y. Hu* 6796 (CUHK).

Distribution: Guangdong, Taiwan; Japan, Vietnam, Thailand, Myanmar, Malaysia, Indonesia, Australia.

Ecology: Forests at lower altitudes. Flowering: Apr.–May; fruiting: Jun.–Aug.

3. *Macaranga sampsonii* Hance 鼎湖血桐 (Photo 351)

J. Bot. 9(101): 134. 1871; FRPS 44(2): 53, pl. 12: 1–5. 1996; FGD 5: 83. 2003.

Evergreen shrub or treelet, 2–7 m tall; young branches, leaves and inflorescences tawny tomentose; branchlets sometimes glaucous. Leaves thin-leathery, peltate; petioles 5–13 cm, pilose or subglabrous; stipules lanceolate, 7–10 × 2–3 mm, pubescent, caducous; leaf blade triangular-ovate or ovate, 12–17 × 11–15 cm, base subtruncate or broadly truncate, apex long-acuminate, margin sinuate or coarsely serrate, sprinkled with glandular dots abaxially; palmate veins 7–9. Inflorescences paniculate, 7–12 cm; bracts ovate-lanceolate, 4–12 mm, apex caudate, margin 1–3-toothed. Male flowers: 5–6 clustered in axil of bract; pedicels 1 mm; sepals

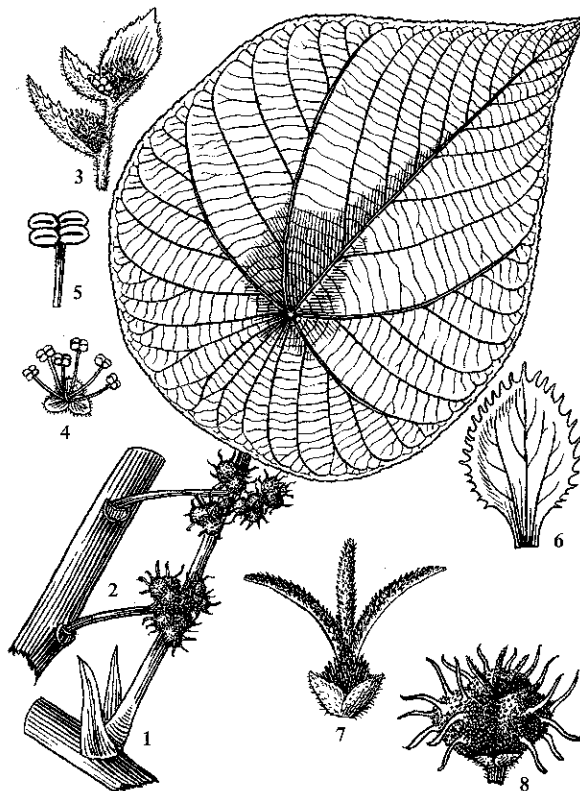


Figure 180. *Macaranga tanarius* var. *tomentosa* (Blume) Müll. Arg.

1. leafy branch; 2. infructescence; 3. male inflorescence; 4. male flower; 5. stamen; 6. bract of female flower; 7. female flower; 8. capsule. (drawn by H. P. Yu)

3, ca. 1 mm, puberulous; stamens 3–5. Female flowers: sepals 3–4, ovate, 1.5 mm, pubescent; ovary 2-locular; styles 2, ca. 2 mm. Capsules biglobose, 5 mm in diam., mealy glandular.

Locality: Sheung Wo Hang, Kwai Tau Leng, Tai Po, Ma On Shan. *P. S. Choi 368; Y. W. Lam 2035; S. C. Ng 3523.*

Distribution: Guangdong, Fujian, Guangxi; Vietnam.

Ecology: Thin forests. Flowering: Apr.–Jun.; fruiting: May–Aug.

### 17. *Cleidion* Blume 棒柄花屬

Trees or shrubs, dioecious, rarely monoecious. Leaves alternate, usually serrate-dentate, pinnately-veined; stipules small, caducous. Inflorescence spicate or racemose, axillary. Flowers unisexual, without petals and disk with very long, stout at apex pedicels. Male flowers: usually several (rarely solitary) in axil of bract; calyx 3–4-partite, lobes valvate in bud; stamens 35–80; filaments free, anthers dorsifixed, introrse, 4-celled; rudimentary pistil none. Female flowers: solitary or paired in axil of bract; pedicels clavate, thickened after anthesis; calyx 3–5-partite, persistent, lobes imbricate in the bud; staminodes absent; ovary subglobose, longitudinally 4-grooved, 2–3-locular, with 1 ovule in each locule; styles elongate, usually connate at base, 2-partite, lobes linear; stigma densely papillose. Capsules of 2–3 bivalved cocci, smooth; seeds subglobose, maculate-striate.

About 25 species in tropical and subtropical regions; three species in China; one species in Hong Kong.

#### 1. *Cleidion brevipetiolatum* Pax & K. Hoffm.

棒柄花 (Fig. 181; Photo 352)

*Pflanzenr.* IV 63 (IV. 147. VII): 292. 1914; *FRPS* 44(2): 75, pl. 17: 1–5. 1996; *FGD* 5: 88, fig. 48. 2003; K. Chayamarit & P. C. van Welzen, *Fl. Thailand* 8(1): 166. 2005.

*Cleidion javanicum* auct. non Blume: *Tutcher, J. Linn. Soc. Bot.* 37: 67. 1905; *FKH* 240. 1912.

Tree up to 12 m tall, monoecious; branchlets glabrous. Leaves alternate or subopposite, thin-leathery, usually 3–5 crowded near apex of branchlets; petioles 0.3–3 cm; stipules lanceolate, ca. 3 mm, caducous; leaf blade obovate, obovate-lanceolate or lanceolate, 7–21 × 2.5–8 cm, base narrowed, obtuse, with several glands, apex shortly acuminate or obtuse, sparsely serrulate on the distal half; abaxially bearded in axil of veins and sprinkled with glands; lateral veins 5–9. Male inflorescences racemose, axillary, 5–20 cm, rachis puberulous. Male flowers: 3–7 clustered in axil of bract; pedicels 1–1.5 mm, articulate, pubescent; bracts broad-triangular, 1.5 mm; bracteoles triangular, 0.5 mm; sepals 3, elliptic, 2–2.5 mm, sparsely pubescent at base; stamens 40–65, filaments ca. 1 mm, anthers 4-celled, connectives produced, subulate. Female flowers solitary, axillary; sepals 5, unequal, lanceolate or triangular, 2–20 × 0.5–6 mm, enlarged to 9–30 × 4–10 mm in fruit; ovary globose, densely pubescent; styles 5, ca. 1 cm, connate at base, 2-partite to near base, lobes linear. Capsules of 3 bivalved cocci, oblate, 1.2–1.5 cm in diam.; seeds subglobose, 6–7 mm in diam., brown-maculate.

Locality: Hok Tsui, Shek O Gap, Ng Tung Chai, Castle Peak. *P. S. Choi 547; Y. W. Lam 269, 274.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan; Vietnam.

Ecology: Forests. Flowering & fruiting: Mar.–Oct.

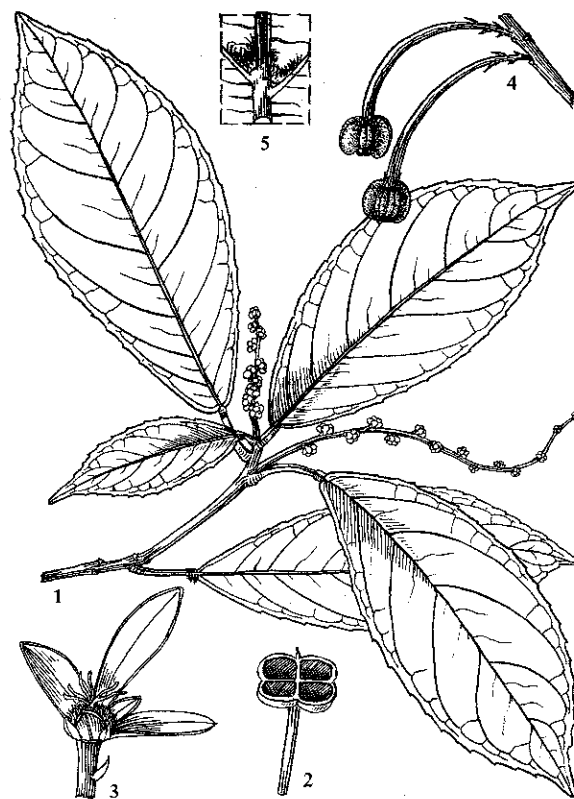


Figure 181. *Cleidion brevipetiolatum* Pax & Hoffm.

1. flowering branch; 2. stamen; 3. female flower; 4. fruit; 5. leaf in axils of veins viewing indumentum. (drawn by H. P. Yu)

### 18. *Alchornea* Sw. 山麻桿屬

Shrubs or trees. Leaves alternate, usually glandular at the base, and with two stipels at the insertion of petioles, pinnately- or palmately-veined. Flowers apetalous, unisexual (plant monoecious or dioecious) in spikes, racemes or panicles. Male flowers: several clustered in axil of bract; calyx 2–5-lobed, lobes valvate; stamens 4–8, filaments connate at base, discoid; anthers dorsifixed, 2-celled, opening by longitudinal slits, without pistillode. Female flowers: solitary in axil of bract; sepals 4–8, sometimes glandular at base; ovary 2–3-locular, with 1 ovule in each locule; styles 2–3, free or connate at base, usually linear, entire. Capsules of 2 or bivalved cocci, crustaceous, smooth or tuberculate; seeds subglobose.

About 50 species in the tropics and subtropics; seven species and two varieties in China; one species in Hong Kong.

1. *Alchornea trewioides* (Benth.) Müll. Arg.

紅背山麻桿

(Fig. 182; photo 353)

Linnaea 34: 168. 1865; FKH 239. 1912; FRPS 44(2): 70, pl. 16: 1–3. 1996; FGD 5: 86. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 47. 2005.

*Stipellaria trewioides* Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 3. 1854; FHK 305. 1861.

Shrub, 1–2 tall; branchlets initially grey-puberulous. Leaves thinly papery; stipules lanceolate, 2–3.5 mm; stipels subulate, 3–5 mm, hairy, deciduous; petioles 7–12 cm; leaf blade broad-ovate, 8–15 × 7–13 cm, base shallowly cordate or subtruncate, with 4 macular glands, apex acute or acuminate, margin sparsely glandular-serrulate, glabrous adaxially, reddish and puberulous along veins abaxially; basal veins 3. Male inflorescences spicate axillary, 7–15 cm, puberulous; bracts triangular, ca. 1 mm. Female inflorescences racemose, terminal, 5–6 cm, 5–12-flowered, puberulous; bracts narrowly triangular, ca. 4 mm, with 2 glands at base; bracteoles lanceolate, ca. 3 mm. Male flowers: 3–11 clustered in axil of bract; pedicels ca. 2 mm, glabrous, jointed at middle; sepals 4, oblong, glabrous; stamens 7–8. Female flowers: pedicels ca. 1 mm; sepals 5–6, lanceolate, 3–4 mm, pubescent, one of them with a gland at base; ovary globose, tomentellous; styles 3, linear, 12–15 mm, connate at base. Capsules globose, 8–10 mm in diam., 3-sulcate smooth, tomentellous.

Locality: Common in Hong Kong. *Y. S. Lau* 973; *K. Y. Tam* 116, 126; *S. Y. Hu* 7256 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian; Japan, Vietnam, Thailand.

Ecology: Thin forests and shrublands. Flowering: Mar.–May; fruiting: Jun.–Aug.

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

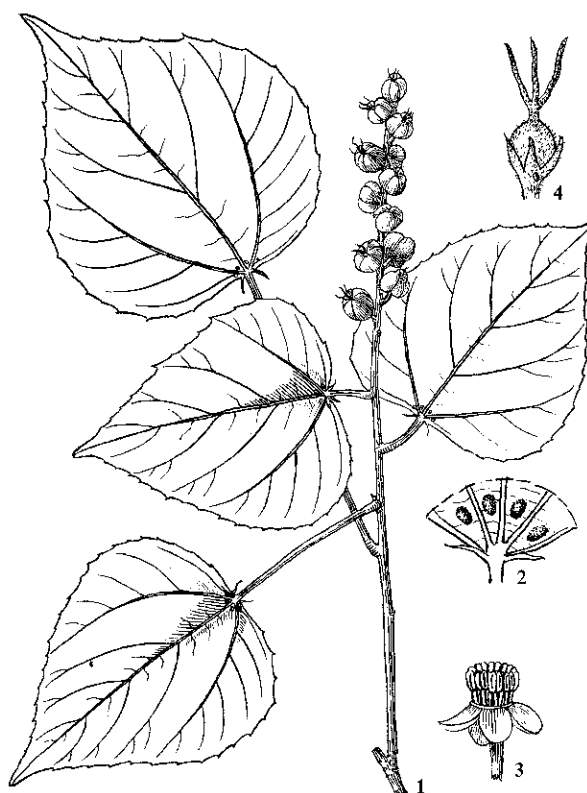


Figure 182. *Alchornea trewioides* (Benth.) Müll. Arg.

1. fruiting branch; 2. leaf base (stipels and glands); 3. male flower; 4. female flower. (drawn by H. P. Yu)

19. *Aporusa* Blume 銀柴屬

Trees or shrubs, dioecious, rarely monoecious. Leaves simple, alternate, entire or sparsely denticulate, pinnately-veined, petiolate, usually glandular at apex of petioles; stipules 2, caducous. Inflorescence spicate; the male spikes longer than the female ones, densely bracteate, with several flowers in the axil of each bract. Flowers apetalous, without disk. Male flowers: sepals 3–6, imbricate; stamens 2–3, rarely 5 or 8, filaments free, as long as or longer than sepals; anthers small, 2-celled; pistillode very small or absent. Female flowers: sepals 3–6, persistent; ovary usually 2(–4)-locular; ovules 2 per locule; styles usually 2(–4), bilobed, rarely papillate or fringed. Capsules drupaceous, irregularly dehiscent when mature, 1–2-seeded.

About 80 species in S and SE Asia; four species in China; one species in Hong Kong.

1. *Aporusa dioica* (Roxb.) Müll. Arg.

銀柴 (大沙葉)

(Fig. 183; Photo 354)

Prodr. 15(2): 472. 1866; FRPS 44(1): 126, pl. 37. 1994; FGD 5: 54, fig. 31. 2003.

*Alnus dioica* Roxb., Fl. Ind., ed. 1832, 3: 580. 1832.

*Aporusa chinensis* (Champ. & Benth.) Merr., Lingnan Sci. J. 13: 34. 1934.

*Aporusa frutescens* auct. non Blume: FHK 317. 1861.

*Aporusa leptostachya* Benth., FHK 317. 1861; FKH 236. 1912.



Figure 183. *Aporusa dioica* (Roxb.) Müll. Arg.

1. flowering branch; 2. fruiting branch; 3–4. males flowers; 5. female flower; 6. fruit. (drawn by H. P. Yu)

*Scepa chinensis* Champ. & Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 72. 1854.

Tree to 9 m tall, but usually shrubby in secondary forests and thickets, ca. 2 m tall, young parts rusty-pubescent. Leaves sub-leathery; stipules obliquely ovate-lanceolate, 4–6 mm; petioles 5–12 mm, with 2 glands at apex; leaf blade elliptic, narrowly ovate, oblong-elliptic, obovate or oblanceolate, 6–12 × 3.5–6 cm, base rounded or cuneate, apex rounded to acute, entire or sparsely and shallowly dentate, glabrous and shining adaxially, sparsely pubescent along veins abaxially. Male spikes ca. 2.5 cm, the flowers densely clustered; bracts ovate-triangular, ca. 1 mm, pubescent outside; sepals usually 4, oblong-ovate; stamens 2–4, longer than sepals. Female spikes cylindrical, shorter than the males; sepals 4–6, triangular, margins ciliate; ovary ovoid, densely pubescent, bilocular, with 2 ovules in each locule. Capsules ellipsoidal, 1–1.3 cm, pubescent, 2-seeded; seeds subovate, ca. 9 × 5.5 mm.

Locality: Common in Hong Kong. *HK sheet 32231, 38729, 40117.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; India, Myanmar, Vietnam, Malaysia.

Ecology: Shrublands and forests. Flowering & fruiting: Nearly all year round.

Uses: Medicinal (folklore).

## 20. *Claoxylon* A. Juss. 白桐樹屬

Trees or shrubs, dioecious, rarely monoecious. Leaves alternate, petiolate, serrate or subentire, pinnately-veined; stipules small, caducous. Flowers in axillary spikes or racemes; perianth calyx-like, without petals. Male flowers: 1–several in axil of bract; calyx 2–4-lobed, lobes valvate; stamens indefinite, mostly 20–30, filaments free, anthers 2-celled, basifixed; anther-cells nearly free, erect, with many small glands between them; rudimentary pistil absent. Female flowers: mostly solitary in axil of bract; calyx-lobes 2–4, usually 3, with glands alternating the lobes; ovary 2–3(–4)-locular, with a solitary ovule in each locule; styles short, free or connate at base. Capsules of 2–4 bivalved cocci; seeds subglobose, fleshy.

About 75 species in paleotropical regions; five species in China; one species in Hong Kong.

### 1. *Claoxylon indicum* (Reinw. ex Blume) Hassk.

白桐樹(丢了棒) (Fig. 184; Photo 355)

Cat. Hort. Bot. Bogor. 235. 1844; FKH 238. 1912; FRPS. 44(2): 79, pl. 18: 1–4. 1996; FGD 5: 89, fig. 49. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 160. 2005.

*Claoxylon parviflorum* Hook. & Arn., Bot. Beech. Voy. 212. 1841, non A. Juss. 1824; FHK 305. 1861.

*Erythrochilus indicus* Reinw. ex Blume, Bijdr. Fl. Ned. Ind. 615. 1825.

Shrub or tree, 3–12 m tall, softly tomentose in the young parts; branchlets stout, grey-white, sparsely lenticellate. Leaves papery; petioles 5–15 cm, with 2 glands at apex; stipules small, caducous; leaf blade usually ovate or broadly ovate, 10–22 × 6–13 cm, base cuneate or obtuse, slightly oblique, apex obtuse or acute, margin irregularly serrate, sparsely pilose on both surfaces. Racemes spicate, tomentose, the male slender, 10–23 cm, the female 5–20 cm. Male flowers: 3–7 clustered in axil of bract; pedicels ca. 4 mm; calyx-lobes 3–4, 3 mm, hairy; stamens 15–25, filaments ca. 2 mm, with narrowly ovate glands alternating the filaments. Female flowers: solitary in axil of bract; pedicels very short; sepals 3, sub-triangular, 1.5 mm, tomentose; disk 3-lobed or shallowly undulate; ovary ovoid, tomentose; styles 3, ca. 3 mm. Capsules 8 mm in diam., softly tomentose, often reddish.

Locality: Cape D'Aguiar, Causeway Bay, Shek O Gap, Lam Tsuen, Tai Long Wan, Tai Po, Yuen Long, Castle Peak, Green Island, Ta Mon Island. *K. Wong 1150; H. C. Tang 1946; Y. S. Lau 575.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; SE Asia.

Ecology: Thin forests. Flowering & fruiting: Mar.–Dec.

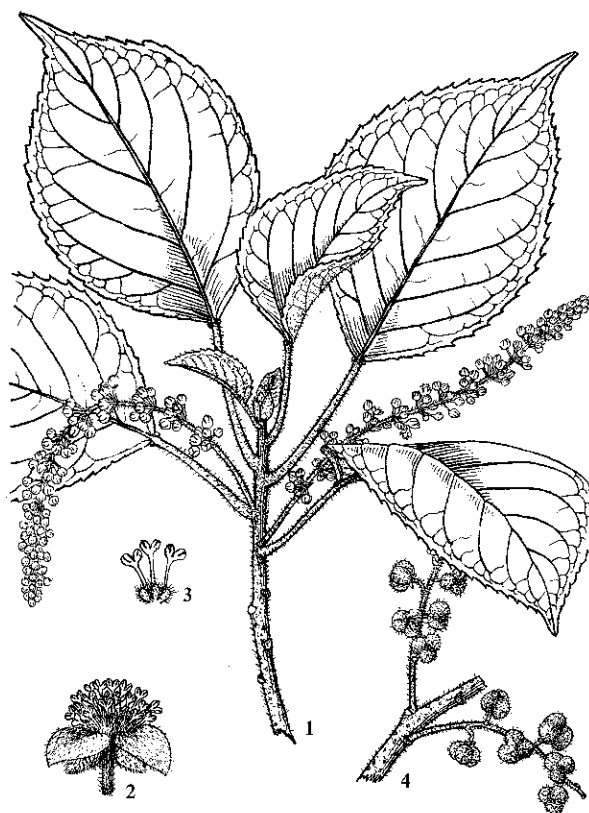


Figure 184. *Claoxylon indicum* (Reinw. ex Blume) Hassk.

1. male flowering branch; 2. male flower; 3. stamens and glands; 4. part of infructescence. (drawn by H. P. Yu)

## 21. *Codiaeum* Rumph. ex A. Juss. 變葉木屬

Shrubs or treelets, with clear latex. Leaves alternate, entire, rarely lobed, petiolate, pinnately-veined; stipules small, caducous, sometimes obsolete. Flowers monoecious, rarely dioecious, in axillary racemes. Male flowers: several clustered in axils of bracts; calyx (3–)5(–6)-lobed, lobes imbricate; petals small, 5–6, rarely absent; disk divided into 5–15 free glands; stamens 15–100, without pistillode. Female flowers: solitary in axils of bracts; calyx 5-lobed, petal absent; disk subentire or divided; ovary 3-locular, with 1 ovule in each locule; styles 3,



unlobed, rarely bifid. Capsules smooth, columella usually persistent; seeds carunculate, cotyledon broad and flattened.

About 15 species distributed from Indonesia and Philippines to New Guinea, tropical Australia, New Caledonia, and Pacific Islands; one species cultivated in China and Hong Kong.

1. *Codiaeum variegatum* (L.) A. Juss.

變葉木(灑金榕)

(Fig. 185; Photo 356)

Euphorb. Gen. 80, 111, pl. 9, fig. 30. 1824; FRPS 44(2): 149, pl. 36: 1–4. 1996; FGD 5: 112, fig. 65. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 188. 2005.

*Croton variegatum* L., Sp. Pl. ed. 3, 1424. 1764.

Shrub up to 3 m tall, glabrous throughout. Leaves thinly leathery, very variable in shape and size, linear, linear-lanceolate, oblong, elliptic, lanceolate, ovate, spatulate, fiddle-shaped to obovate, entire or lobed, 5–30 × 0.3–8 cm, base cuneate, acute to obtuse, apex acute, acuminate to rounded, usually marked with white, yellow or red. Flowers in axillary racemes of 8–30 cm. Male flowers: pedicels slender; calyx-lobes 5, ca. 3 mm; petals 5, white, smaller than calyx-lobes; disk-glands 5; stamens 20–30. Female flowers: pedicels ca. 1 mm; calyx-lobes ca. 1 mm, yellowish; petals absent; disk annular; ovary 3-locular; styles recurved. Capsules subglobose, slightly flattened, glabrous, ca. 9 mm in diam.

Locality: Cultivated. S. Y. Hu 7058 (CUHK); Hu & But 28 (CUHK).

Distribution: Native to Malay Peninsula to Pacific; widely cultivated in tropic regions.

Ecology: Flowering: Sep.–Oct.; fruiting: Oct.–Dec.

Uses: Ornamental.

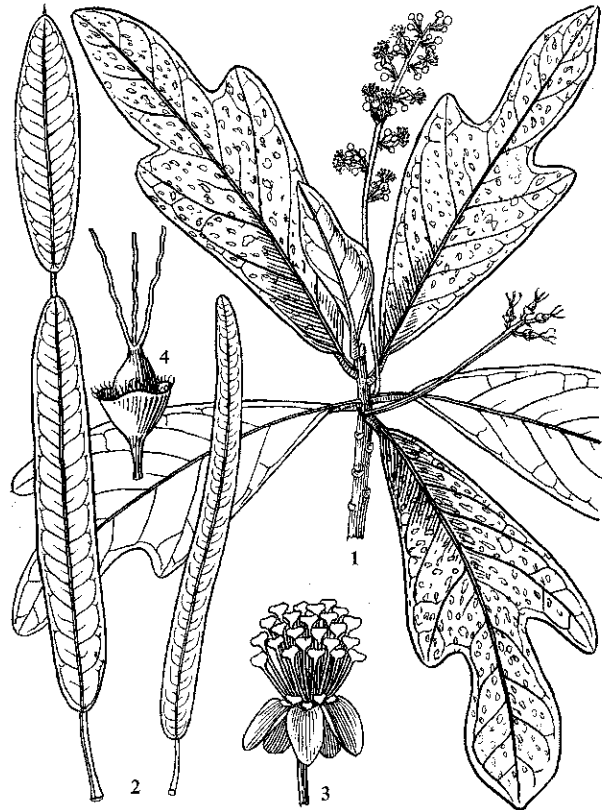


Figure 185. *Codiaeum variegatum* (L.) A. Juss.

1. flowering branch; 2. leaves (various shapes); 3. male flower; 4. female flower. (drawn by H. P. Yu)

## 22. Euphorbia L. 大戟屬

Herbs or shrubs, with milky juice, rarely succulent leafless cactoid shrubs. Stem-leaves alternate, without stipules, the flowering branches, umbellate, dichotomous, with usually opposite leaves; or all the leaves opposite and often stipulate. Flowers unisexual, in cyathia subtended by calyx-like, cup-shaped involucre, within including 10–15 male flowers, and a single female flower in the centre; involucre with 4–5 entire or lacinate lobes, regular or nearly so, with glands between the lobe, sometime bearing petal-like appendages. Male flowers consisting each of a single stamen with an articulated filament; anther-cells 2, globose. Female flowers reduced to a stipitate 3-locular ovary protruding from the involucre, with 1 pendulous ovule in each locule; style 3, free or connate, simple or bifid. Capsules divided into 3 bivalved cocci.

On a broad concept applied here, the genus *Euphorbia* contains about 2000 species dispersed over nearly the whole world; over 80 species in China; 11 species in Hong Kong.

1a. Plants succulent.

2a. Stems and branches terete, spineless, with caducous leaves or leafless..... 1. *E. tirucalli*

2b. Stems and branches angled, spiny, leafy.

3a. Diffuse shrubs; spines 1–2 cm..... 2. *E. milii*

3b. Treelets; spines 2–3 mm..... 3. *E. antiquorum*

1b. Plants not succulent.

4a. Leaves alternate; involucre glands without petaloid appendages.

5a. Shrubs; petioles 3–7 cm; bracteal leaves red..... 4. *E. pulcherrima*

5b. Herbs; leaves sessile; bracteal leaves yellowish green..... 5. *E. helioscopia*

4b. Leaves opposite; involucre glands with petaloid appendages.

6a. Subshrubs; stems woody at base; stipules lacerate..... 6. *E. atoto*

6b. Annual or perennial herbs.

7a. Stems erect or ascending; flower-clusters numerous, in dense pedunculate head-like cymes; leaves 1–5 cm.

8a. Involucres, ovaries and capsules hairy..... 7. *E. hirta*

8b. Involucres, ovaries and capsules glabrous.

9a. Stem annular at nodes; leaves narrowly elliptic to broadly linear, apex acuminate..... 8. *E. bifida*

9b. Stem not annular at nodes; leaves narrowly oblong or obovate, apex obtuse or rounded.....

..... 9. *E. hypericifolia*

- 7b. Stems decumbent or prostrate; flower-clusters very small, few, in sessile axillary cymes; leaves 0.3–1.2 cm.  
 10a. Stems, ribs of ovaries and capsules tomentose ..... 10. *E. prostrata*  
 10b. Stems, ovaries and capsules pubescent ..... 11. *E. thymifolia*

**1. *Euphorbia tirucalli* L. 綠玉樹(光棍樹)**

(Photo 357)

Sp. Pl. 452. 1753; FHK 301. 1861; FKH 232. 1912; FTW ed. 2, 3: 469. 1993; FRPS 44(3): 58, pl. 14: 5–6. 1997; FGD 5: 133. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 291. 2005.

An erect unarmed shrub or small tree, 1–3(–6) m tall; branches cylindrical, scattered or clustered, very divergent, ca. 6 mm in diam., ± succulent, smooth, bright shining green. Leaves none or very few and small, linear-oblong, 7–15 × 0.7–1.5 mm, caducous. Cyathia clustered on a very short stalk in the forks of some of the smaller branches; involucre turbinate, ca. 2 mm; glands 5, ovate or subrotund, peltate. Male flowers several, exceeding involucre. Female flower solitary; ovary glabrous; styles 3, connate at the base, apex 2-lobed. Capsules rhomboid-triangular, ca. 8 × 8 mm, smooth, slightly puberulent or glabrous.

Locality: Cultivated in gardens. *Gibson 6783*; *Y. W. Lam 1035*; *HK sheet 32230*; *S. Y. Hu 5023* (CUHK).

Distribution: Native to E Africa (Angola); widely cultivated in tropical and subtropical regions.

Ecology: Flowering & fruiting: Jul.–Oct.

Uses: Ornamental.

**2. *Euphorbia milii* Des Moul. 鐵海棠**

(Photo 358)

Bull. Hist. Nat. Soc. Linn. Bordeaux 1(1): 27, pl. 1. 1826; FRPS 44(3): 58, pl. 14: 1–4. 1997.

*Euphorbia splendens* Bojer ex Hook., Bot. Mag. 56: pl. 2902. 1829.

Diffuse shrub, somewhat climbing; stems much branched, dark brown, obtusely angulate, to 1 m or longer, armed with stout spines. Leaves obovate or oblong-spathulate, 1.5–5 × 0.8–1.8 cm, base attenuate, apex rotund and mucronulate, entire, sessile or nearly so. Cyathia in long-pedunculate dichotomous cymes, each cyathium closely subtended by 2 broadly ovate bright red bracts about 1.3 cm in diam.; peduncles 4–7 cm; pedicels 6–10 mm, with a membranous bract; glands 5, kidney-shaped, ca. 1 × 2 mm, yellowish. Male flowers several; bract lacerate, pubescent at apex. Female flower solitary; ovaries smooth, glabrous; styles 3, connate up to middle, apex 2-lobed.

Locality: Cultivated. *K. Y. Chan 1323* (CUHK).

Distribution: Native to Madagascar; widely cultivated

Ecology: Flowering & fruiting: Almost all year round.

Uses: Ornamental.

**3. *Euphorbia antiqorum* L. 火殃箭** (Photo 359)

Sp. Pl. 450. 1753; FKH 232. 1912; FRPS 44(3): 62, pl. 25: 4–7. 1997; FGD 5: 133. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 266. 2005.

*Euphorbia trigona* Haw., Syn. Pl. Succ. 127. 1812.

Small tree, 1–3 m tall; stems 3–5-angled, much branched; branchlets succulent, green, sharply 3–5-angled. Leaves succulent, subsessile, borne on the ridge of angles and at apex of young branches, caducous; leaf blade obovate or obovate-oblong, 2–5 × 1–2 cm, base attenuate, apex rounded, entire, glabrous; stipules in pairs, spiny, 2–5 mm. Cyathia usually 3 forming a cyme borne on leaf scar; peduncles 2–3 mm; involucre broadly campanulate, ca. 5 mm in diam., 5-lobed; lobes suborbicular, margin denticulate; glands 5, entire. Male flowers numerous; bracts lacerate. Female flower solitary, ovary glabrous; styles 3, free; apex 2-lobed. Capsules triangular-oblate, 3.4–4 × 4–5 mm.

Locality: Cultivated. *W. J. Tutcher 7132*; *S. Y. Hu 13161* (CUHK).

Distribution: Tropical Asia, cultivated and naturalized in tropical and subtropical regions.

Ecology: Flowering & fruiting: All year round.

Uses: Ornamental.

**4. *Euphorbia pulcherrima* Willd. ex Klotzsch**

一品紅(聖誕樹)

(Fig. 186; Photo 360)

Allg. Gartenzeitung 2(4): 27–28. 1834; FRPS 44(3): 63, pl. 16: 1–3. 1997; FGD 5: 133. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 281. 2005.

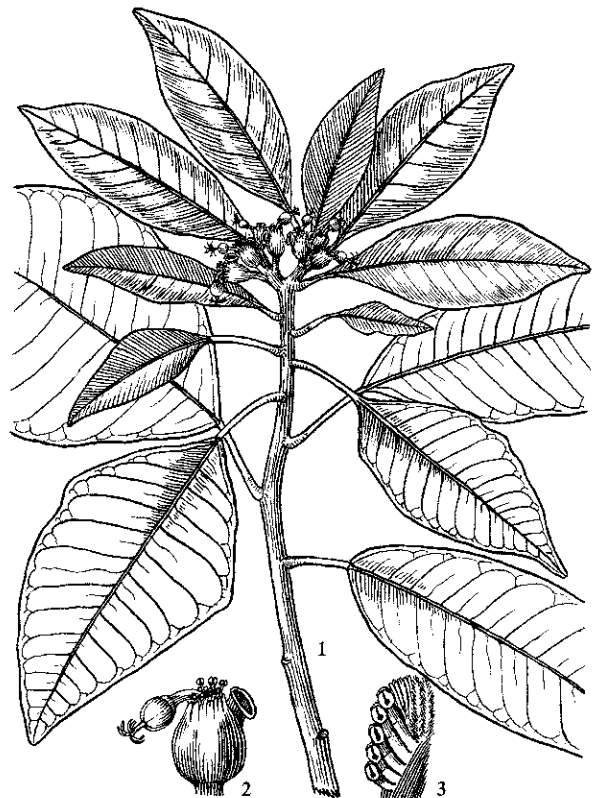


Figure 186. *Euphorbia pulcherrima* Willd. ex Klotzsch

1. flowering branch; 2. inflorescence; 3. androecium.  
(drawn by H. P. Yu)

*Poinsettia pulcherrima* (Willd. & Klotzsch) Graham, Edinburgh New Philos. J. 20: 412. 1836.

Shrub, 1–3 m tall; stems and branches glabrous. Leaves alternate; petioles 2–8 cm, reddish; stipules broadly triangular, ca. 1.5 mm; leaf blade ovate-elliptical to lanceolate, 6–25 × 4–10 cm, base cuneate or attenuate, apex acuminate or acute, entire or sinuate-toothed or lobed, pubescent abaxially; bracteal leaves 5–7, narrowly elliptic, 3–7 × 1–2 cm, usually entire, bright vermilion-red. Cyathia in terminal cymes; peduncles 3–4 mm; involucre greenish, 6–8 mm in diam., margin 5-lobed, bearing a large yellow gland on one side; lobes triangular, glabrous. Male flowers many; filaments red; bracts membranous, lacerate. Female flower solitary, ovary glabrous; styles 3 connate at the base, apex 2-lobed. Capsules triangular-globose, 1.5–2 × 1.5 cm, glabrous.

Locality: Cultivated. *Hu & K. H. Yung 194* (CUHK).

Distribution: Mexico, Mesoamerica, widely cultivated.

Ecology: Flowering: Oct.–Apr. of the following year.

Uses: Ornamental.

### 5. *Euphorbia helioscopia* L. 澤漆

Sp. Pl. 459. 1753; FHK 301. 1861; FKH 232. 1912; FRPS 44(3): 71. 1997; FGD 5: 134. 2003.

Annual herb, 10–50 cm tall; stems simple or with a few branches ascending from the base. Stem-leaves alternate, obovate or broadly oblong, 1–3.5 × 0.5–1.5 cm, apex rounded to subtruncate, serrulate, narrowed from middle into a short stalk; involucre leaf opposite, sessile, obovate-oblong, 3–4 × 0.8–1.4 cm, minutely toothed. Cyathia in umbel of 5 rays, each ray once or twice forked; the branches very short; glands of the involucre entire and rounded. Male flowers several, exceeding the involucre. Female flower solitary; ovary glabrous; styles short, 2-lobed. Capsules ca. 2.5–3 × 3–4.5 mm, smooth and glabrous; seeds pitted, with raised reticulate veins.

Locality: Cultivated. specimens

Distribution: Native to Europe, now a weed widely spread over temperate and subtropical regions of the Old World.

Ecology: Flowering & fruiting: Apr.–Oct.

Uses: Medicinal (folklore).

### 6. *Euphorbia atoto* G. Forst. 濱海大戟

Fl. Ins. Austr. 36. 1786; FKH 232. 1912; FRPS 44(3): 36, pl. 6: 1–3. 1997; FGD 5: 136. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 268. 2005.

*Chamaesyce atoto* (G. Forst.) Croizat, Fl. Hawaii. 190. 1936; FTW ed. 2, 3: 433, pl. 224. 1993.

Perennial herb or subshrub, glabrous, 20–40 cm tall; stems woody at base, prostrate or ascending, dichotomous branched; nodes inflated. Leaves opposite, thin-leathery; petioles 1–3 mm; stipules membranous, broadly triangular, margin fimbriate; leaf blade oblong-elliptic or ovate-oblong, 1–3 × 0.4–1.3 cm, base oblique, suborbicular or subcordate, apex obtuse, mucronulate, margin entire. Cyathia in compound cymes; peduncles 2–5 mm; involucre cupular, ca. 1.5 mm in diam., margin 4–5-lobed; lobes triangular-ovate, apex acute, margin lacerate; glands 4, thin-discoid, margins with white appendages. Male flowers several, slightly exceeding involucre; bracts lanceolate, margin lacerate. Female flower solitary, pedicels 2–4 mm, prominently exceeding involucre; ovary smooth, glabrous; styles 3, free, apex 2-lobed. Capsules trigonous, ca. 3.5 × 3.5 mm, glabrous.

Locality: Deep Water Bay, Lamma Island, Ping Chau. *Gibson 5132; HK sheet 5264; J. P. Woo & T. K. Woo 715* (CUHK).

Distribution: Hainan, Guangdong, Taiwan, Japan, Thailand, Sri Lanka, India, Indonesia, Pacific Islands to Australia.

Ecology: Sandy seashores. Flowering & fruiting: Jun.–Nov.

### 7. *Euphorbia hirta* L. 飛揚草 (Fig. 187; Photo 361)

Sp. Pl. 454. 1753; FRPS 44(3): 44, pl. 8: 5–8. 1997; FGD 5: 137. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 276. 2005.

*Euphorbia pilulifera* L., Sp. Pl. 454. 1753; FHK 302. 1861.

*Chamaesyce hirta* (L.) Millsp., Publ. Field Columbian Mus., Bot. Ser. 2(7): 303. 1909; FTW ed. 2, 3: 436, pl. 226. 1993.

Annual herb, to 70 cm tall; stems simple or with a few branches, more or less hirsute with spreading yellowish hairs. Leaves opposite; petioles 1–2 mm; stipules lanceolate or linear, 1.5–2 mm, free or nearly so, margin lacerate; leaf blade ovate to ovate-lanceolate or oblong, 1–5 × 0.5–1.3 cm, base oblique and usually narrowed, apex acuminate or obtuse, margin sparsely serrulate or entire,

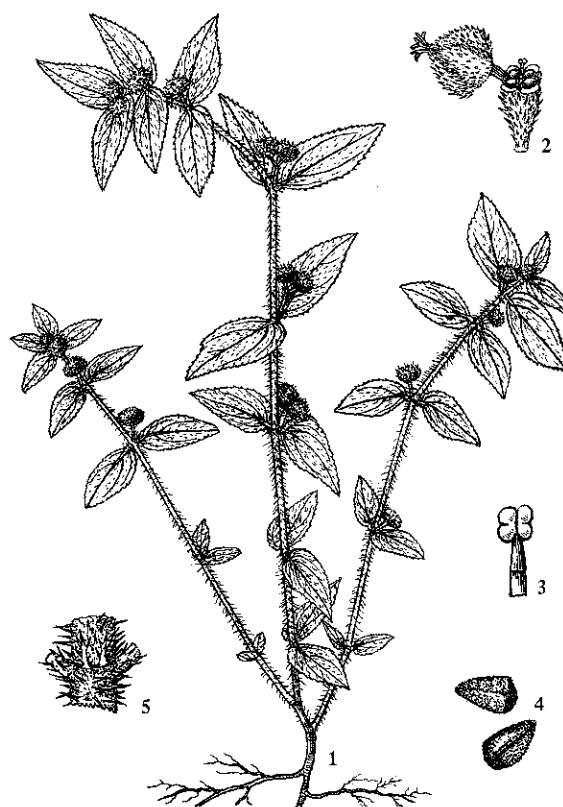


Figure 187. *Euphorbia hirta* L.

1. whole plant; 2. inflorescence; 3. male flower; 4. seed; 5. stipule. (drawn by H. P. Yu)

pubescent on both surfaces. Cyathia crowded in head-like cymes on short axillary peduncles; involucre campanulate, ca. 1 mm in diam., pubescent, 5-lobed; lobes triangular-ovate; glands 4, subcupular, with appendages. Male flowers several; female flower solitary; ovary slightly pubescent; styles 3, free, apex 2-lobed. Capsules 1–1.5 mm in diam., more or less hairy with appressed hairs; seeds ovoid, obtusely 4-angled, slightly wrinkled.

Locality: Naturalized. *H. C. Tang 875; Y. S. Lau 1420, 1656; S. Y. Hu 8641, 10047* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Fujian, Taiwan; a very common weed in tropical and subtropical countries, both in the New and Old World.

Ecology: Wastelands, roadsides. Flowering & fruiting: Jun.–Dec.

Uses: Medicinal (folklore).

**8. *Euphorbia bifida* Hook. & Arn. 細齒大戟**

**(Photo 362)**

Bot. Beechey Voy. 5: 213. 1837; FRPS 44(3): 42, pl. 8: 1–4. 1997; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 269. 2005.

*Euphorbia vachellii* Hook. & Arn., Bot. Beechey voy. 5: 213. 1837.

*Chamaesyce vachellii* (Hook. & Arn.) Hurus., J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 6(6): 283, fig. 34. 1954; FTW ed. 2, 3: 451, pl. 236. 1993.

Annual herb to 50 cm tall; stems woody at base; nodes annular. Leaves opposite; petioles very short, less than 3 mm; stipules membranous, subulate-triangular, caducous; leaf blade oblong-elliptic to broadly linear, 10–25 × 2.5 mm, base inaequilateral, subtruncate or slightly oblique, apex obtuse or acuminate, margin serrulate; midvein raised adaxially, depressed abaxially, lateral veins prominent. Cyathia clustered, rarely solitary; involucre cupular, ca. 1 × 1 mm, 5-lobed; lobes triangular, apex lacerate; glands 4, with reddish appendages. Male flowers several, slightly exceeding involucre. Female flower solitary; ovary smooth, glabrous; styles 3, free, apex 2-lobed. Capsules trigonous, ca. 2 × 2 mm, glabrescent.

Locality: Quarry Bay, Causeway Bay, Castle Peak, Long Ke, Lok Ma Chau, Luk Keng, Po Toi Island, Sha Lo Wan, Lantau Island. *P. S. Choi 440; Y. W. Lam 276, 335; S. Y. Hu 6006, 10125* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Jiangxi, Jiangsu, Zhejiang, Fujian, Taiwan; S and SE Asia to Australia.

Ecology: Wastelands, shrublands and margins of forests. Flowering & fruiting: Apr.–Oct.

**9. *Euphorbia hypericifolia* L. 通奶草**

**(Photo 363)**

Sp. Pl. 454. 1753; FHK 301. 1861; FKH 232. 1912; FRPS 44(3): 41. 1997; FGD 5: 138. 2003.

Annual herb to 30 cm tall; stems erect or ascending, glabrous or sparsely pubescent. Leaves opposite; petioles 1–2 mm; stipules triangular, free or connate; leaf blade narrowly oblong or obovate, 1–2.5 × 0.4–0.8 cm, base usually very oblique, apex obtuse, margin serrulate, sparsely pubescent on both surfaces or adaxially glabrescent; bracts leaves 2, homomorphous as the stems leaves. Cyathia in small, loosely dichotomous cymes, terminal or in the upper axils; involucre turbinate, ca. 1 mm in diam., 5-lobed; lobes ovate-triangular; glands 4, small and entire, with small orbicular white petal-like appendages. Male flowers several, slightly exceeding involucre. Female flower solitary; ovary glabrous; styles 3, free, apex 2-lobed. Capsules triangular-globose, ca. 1.5 × 2 mm, glabrous.

Locality: Tsim Sha Tsui, Kwai Chung Park, Fanling, Lok Ma Chau, Pok Wai, Sai Kung, Siu Lek Yuen Tsuen, Tung Chung, Lantau Island. *P. S. Choi 446; Y. W. Lam 866, 1257*.

Distribution: Hainan, Guangdong, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Taiwan; tropical and subtropical regions of the world.

Ecology: Wastelands, open fields, roadsides. Flowering & fruiting: Aug.–Dec.

Uses: Medicinal (folklore).

**10. *Euphorbia prostrata* Aiton 匍匐大戟(鋪地草)**

**(Photo 364)**

Hort. Kew 2: 139. 1789; FRPS 44(3): 51, pl. 10: 5–8. 1997; FGD 5: 138, fig. 81. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 281. 2005.

*Chamaesyce prostrata* (Aiton) Small, Fl. S. E. U. S. 713, 1333. 1903; FTW ed. 2, 3: 442, pl. 231. 1993.

Annual herb; stems much branched from the base, usually reddish, glabrous or glabrescent; branches prostrate, up to 20 cm. Leaves opposite; petioles very short or almost none; stipules narrowly triangular, caducous; leaf blade elliptic to obovate, 3–8 × 2–5 mm, base subrounded, oblique, apex obtuse to rounded, margin entire or irregularly serrate, green adaxially, sometimes red or reddish abaxially. Cyathia in small cymes, 1–3 in axil of leaves; involucre turbinate, ca. 1 mm in diam., usually glabrous, rarely pilosulose, 5-lobed; lobes triangular or suborbicular; glands 4, with small white appendages. Male flowers several, often included in involucre. Female flower solitary; ovary sparsely white-pubescent on ribs; styles 3, connate at base, apex 2-lobed. Capsule triangular-globose, ca. 1.5 × 1.5 mm, pilose on ribs.

Locality: Naturalized. *Y. S. Lau 1652, 1963; Y. W. Lam 765*.

Distribution: Hainan, Guangdong, Yunnan, Hubei, Jiangsu, Fujian, Taiwan; tropical and subtropical regions of the world.

Ecology: Wastelands, roadsides. Flowering & fruiting: Aug.–Dec.

**11. *Euphorbia thymifolia* L.** 千根草(小飛揚)

(Photo 365)

Sp. Pl. 454. 1753; FHK 302. 1861; FKH 232. 1912; FRPS 44(3): 52, pl. 11: 6–11. 1997; FGD 5: 139. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 286. 2005.

*Euphorbia sanguinea* auct. non Hochst. & Steud. ex Boiss.: Benth., FHK 302. 1861; FKH 232. 1912.

*Chamaesyce thymifolia* (L.) Millsp., Publ. Field Columbian Mus., Bot. Ser. 2(11): 412. 1916; FTW ed. 2, 3: 448, pl. 235. 1993.

Annual herb; stems prostrate, much branched, up to 20 cm, sparsely pilose. Leaves opposite; pedicels ca. 1 mm; stipules lanceolate or linear, 1–1.5 mm, caducous; leaf blade elliptic, oblong or obovate, 4–8 × 2–5 mm, base oblique, rounded or subcordate, apex rounded, margin serrulate, rarely entire, sparsely pilose on both surfaces, rarely glabrous. Cyathia in small compact almost sessile axillary cymes; involucre narrowly campanulate to turbinate, ca. 1 mm in diam., sparsely pilose abaxially, 5-lobed; lobes ovate; glands 4, with white appendages. Male flowers several, slightly exceeding involucre. Female flower solitary; ovary hairy; styles short, free, apex 2-lobed. Capsule ca. 1.5 mm in diam., sparsely pubescent with appressed hairs.

Locality: Stubbs Rd., Tai Hang Rd., Victoria Park, Sheung Pak Nai, Yuen Long, Tsing Yi. *Y. S. Lau* 1665, 2236; *Y. W. Lam* 377; *S. Y. Hu* 6875 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Jiaugsu, Zhejiang, Fujian, Taiwan; tropical and subtropical regions of the world.

Ecology: Wastelands, roadsides, open fields. Flowering & fruiting: Jun.–Nov.

Uses: Medicinal (folklore).

**23. *Endospermum* Benth.** 黄桐屬

Trees or shrubs, more or less scaly-tomentose. Leaves alternate, entire, pinnately-veined, sometimes peltate; stipules small, caducous; petioles usually biglandular at apex. Flowers unisexual (plant dioecious), apetalous. Male flowers almost sessile, in panicles; calyx cupular, shallowly (3–)5-lobed; stamens 5–12, 2–3-whorled, inserted in elevated receptacle, filaments short, free; anthers 2-celled; disk shallowly lobed; pistillode absent. Female flowers in racemes or sometimes shortly branched; calyx cupular, shallowly 3–5-lobed; disk annular; ovary 2–6-locular, with 1 ovule in each locule; styles very short, reduced to a subsessile disk-shaped stigma. Capsules drupaceous, pericarp slightly fleshy, the endocarp of two indehiscent cocci.

About ten species occurring from China through Malaysia, New Guinea to tropical Australia; one species in China and Hong Kong.

**1. *Endospermum chinense* Benth.** 黄桐

(Fig. 188; Photo 366)

FHK 304. 1861; FKH 240. 1912; FRPS 44(2): 183, pl. 48: 1–6. 1996; FGD 5: 123, fig. 75. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 256. 2005.

Tree up to 5 m tall; young branches, petioles, inflorescences and fruits covered with minute scaly tomentum. Leaves usually crowded towards apex of branchlets, thinly leathery; stipules triangular-ovate, 3–4 mm, hairy; petioles 4–9 cm; leaf blade elliptic, ovate, broadly ovate or subrotund, 8–20 × 4–14 cm, base broad-cuneate, truncate to shallowly cordate, with 2 large convex glands near the insertion of petiole, apex acute to obtuse, subglabrous or sparsely stellate-hairy abaxially, margins entire; lateral veins 5–7. Inflorescences paniculate, axillary, male 10–20 cm, female 6–10 cm, bracts ovate, 1–2 mm. Male flowers: calyx cupular, with 4–5 shallow crenulation; stamens 5–12, in 2–3 series, filaments ca. 1 mm. Female flowers: calyx cupular, ca. 2 mm, undulately 3–5-lobed, hairy, persistent; disk annular, 2–4-lobed; ovary subglobose, tomentulose, 2–3-locular. Fruits subglobose, ca. 1 cm in diam., pericarp slightly fleshy, tomentose.

Locality: Aberdeen, Stubbs Rd., Shing Mun, Tai Po, Ho Chung, Tolo Harbour. *C. P. Lau* 96; *H. C. Tang* 2490; *HK sheet* 24847.

Distribution: Hainan, Fujian, Guangdong, Guangxi, Yunnan; India, Myanmar, Thailand, Vietnam.

Ecology: Lowland forests. Flowering: May–Aug.; fruiting: Aug.–Nov.

Uses: Environmental, Material (timber), medicinal (folklore).

Notes: The syntype specimens were collected by J. G. Champion and H. F. Hance from Aberdeen, Hong Kong Island around 1850.

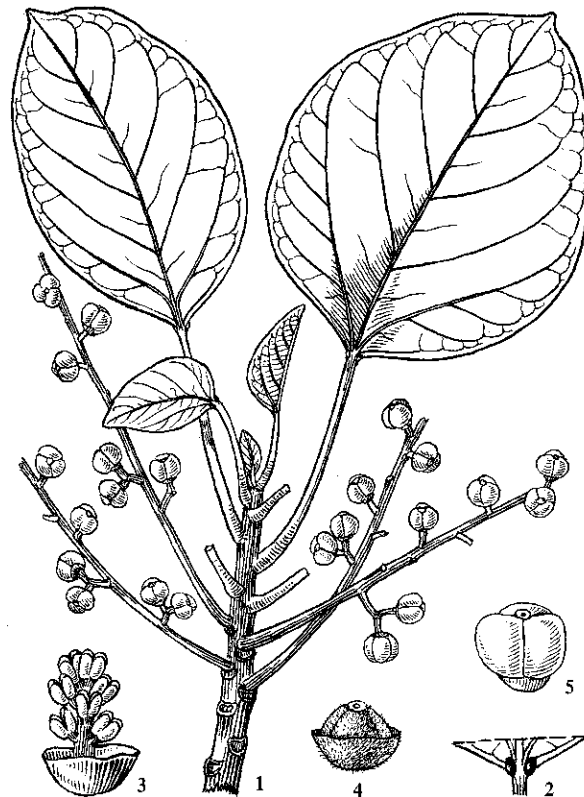


Figure 188. *Endospermum chinense* Benth.

1. fruiting branch; 2. leaf base and glands; 3. stamens; 4. pistil; 5. fruit. (drawn by H. P. Yu)

24. *Croton* L. 巴豆屬

Trees or shrubs, rarely subshrubs. Leaves alternate, entire or divided, pinnately-veined or basiveined. Stipules small, linear or subulate, caducous. Inflorescences terminal or axillary, racemose or spicate, rarely paniculate, usually androgynous. Male flowers: calyx-lobes mostly 5, imbricate to valvate in the bud; petals 5, convolute in the bud; disk glands usually 5, alternating with the petals; stamens 10–20, free; anthers-celled, adnate; pistillode absent. Female flowers: calyx-lobes 5, persistent; petals rudimentary or none; disk annular or dissected; ovary 3-locular, with 1 ovule in each locule; styles 3, 2-cleft or branched. Capsules of 3 bivalved cocci; seeds smooth, carunculate, the testa crustaceous.

About 800 species distributed in the tropics and subtropics of the world; 25 species in China; five species in Hong Kong.

- 1a. Leaves basiveined.  
 2a. Adult leaves glabrous on both surfaces, margin without gland in sinus of teeth ..... 1. *C. tiglium*  
 2b. Adult leaves hairy abaxially, margin with 1 gland in sinus of teeth.  
 3a. Young parts densely stellate-tomentose; bracts lanceolate, margin fimbriate ..... 2. *C. crassifolius*  
 3b. Young parts stellate-pubescent; bracts subulate, margin not fimbriate ..... 3. *C. lachnocarpus*  
 1b. Leaves glabrous; leaves pinnately-veined.  
 4a. Leaves and branches glabrous; petioles 2–5 mm ..... 4. *C. hancei*  
 4b. Leaves and branches stellate-lepidote; petioles 1.5–2 cm ..... 5. *C. moonii*

1. *Croton tiglium* L. 巴豆

(Photo 367)

Sp. Pl. 1004. 1753; FKH 238. 1912; FRPS 44(2): 133. 1996; FGD 5: 102. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 222. 2005.

Treelet, 3–7 m tall; young branches sparsely stellate-hairy, glabrous in age. Leaves papery, biglandular at the base; stipules subulate, 1.5–4 mm, caducous; petioles 2.5–6 cm, subglabrous; leaf blade ovate, ovate-elliptic or ovate-lanceolate, 5–15 × 2–7 cm, base cuneate to rotund, rarely slightly cordate, apex acute or acuminate, sometimes long-acuminate, margin serrulate or subentire, glabrous or glabrescent, yellowish to brownish when dry; basal veins 3–5. Racemes terminal, 8–20 cm; bracts subulate, ca. 2 mm. Male flowers: 1–several in axil of bract; pedicels slender, 5–9 mm; alabastrum subglobose, sparsely stellate-hairy or glabrescent; calyx-lobes ovate-triangular, 2–3 mm; petals oblong, slightly longer than calyx-lobes; stamens 16–17. Female flowers: 5–20, borne on the proximal part of the raceme; pedicels 3–4 mm; calyx-lobes oblong-lanceolate, ca. 2.5 mm, glabrescent; ovary densely stellate-hairy; styles biparted, lobes linear. Capsules ellipsoidal, oblong-ovoid or subglobose, 1–2 × 1–2 cm, sparsely stellate-hairy or glabrescent; seeds elliptic or oblong-ovate, 8–12 × 6–7 mm, grey-brown.

Locality: Aberdeen, Happy Valley, Kam Shan, Sha Tau Kok, Shing Mun, Tin Fu Tsai, Lamma Island, Lantau Island. *Y. S. Lau* 613; *N. H. Li* 104; *K. Y. Tam* 142; *S. Y. Hu* 10468 (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Jiangxi, Zhejiang, Fujian, Taiwan; Japan, Philippines, Cambodia, Thailand, Malaysia, India, Sri Lanka.

Ecology: Thin forests, stream banks. Flowering: Jan.–Jul.; fruiting: May–Sep.

Uses: Medicinal (folklore), pesticide, poison (fish, mammals).

2. *Croton crassifolius* Geiseler 雞骨香(金棉楓)

(Photos 368–369)

*Croton* Monogr. 19. 1807; FRPS 44(2): 130. 1996; FGD 5: 101. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 202. 2005.

*Croton chinense* Benth., FHK 309. 1861; FKH 238. 1912.

Shrub 20–50 cm tall; branches of the current year, leaves and inflorescences rather densely stellate-tomentose. Leaves papery, biglandular at the base or at the apex of petiole; stipules subulate, 2–3 mm, caducous; petioles 2–4 cm long; leaf blade ovate, ovate-elliptic to oblong, 4–10 × 2–6 cm, base rotund to slightly cordate, apex obtuse to short-acuminate, margin obscurely serrate or nearly entire, with small stipitate glands at the serratures, adaxially usually wrinkled and becoming glabrous; basal veins 3–5. Racemes terminal, 5–10 cm; bracts 2–4 mm, divided into subulate lobes, often tipped with a gland. Male flowers: calyx-lobes stellate-tomentose abaxially; petals oblong, about as long as calyx-lobes; disk glands very minute or none; stamens 14–20, intermixed with hairs. Female flowers: usually several at the base of the raceme; calyx as in male flowers; petals none; ovary densely yellow-tomentose; styles 4-parted, lobes linear. Capsule, subglobose, ca. 1 cm in diam., densely tawny tomentose.

Locality: Cape D'Aguilar, Black's Link, Pok Fu Lam, Fanling, Yuen Long, Lo Wu, Tai Long Wan. *Y. S. Lau* 285, 523; *H. C. Tang* 2475; *S. Y. Hu* 13123 (CUHK).

Distribution: Hainan Guangdong, Guangxi, Fujian; Vietnam, Laos, Thailand.

Ecology: Forests, thickets. Flowering: Nov.–Jun. of the following year; fruiting: Feb.–Sep.

Uses: Medicinal (folklore).

Notes: The syntype specimens of *C. chinense* Benth. were collected from Hong Kong.

3. *Croton lachnocarpus* Benth. 毛果巴豆

(Photo 370)

Hooker's J. Bot. Kew Gard. Misc. 6: 5. 1854; FHK 308. 1861, '*lachnocarpum*'; FKH 238. 1912; FRPS 44(2): 131, pl. 31: 1–5. 1996; FGD 5: 101. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand 8(1): 213. 2005.

Shrub, 1–3 m tall; branches of the current year, leaves and inflorescences more or less pubescent with stellate hairs. Leaves papery, biglandular at the base or at apex of petioles; petioles 1–6 cm, densely stellate-pubescent; stipules linear, 3–5 mm hairy; leaf blade oblong-elliptic to elliptic-ovate, rarely oblong-lanceolate, 4–13 × 1.5–5 cm, base rotund to slightly cordate, apex obtuse, acute to acuminate, margin obscurely serrulate, with small stipitate glands at the serratures; basal veins 3. Racemes terminal, 6–15 cm; bracts subulate, ca. 1 mm. Male flowers: pedicels 2–3 mm; calyx-lobes ovate-triangular, ca. 2 mm, stellate-pubescent; petals oblong, ca. 2 mm; stamens 10–12. Female flowers: calyx-lobes lanceolate, ca. 2.5 mm, stellate-pubescent; petals minute, subulate; ovary villose; styles 3, subulate, bifid. Capsules subglobose, 6–12 mm in diam., hairy; seeds ellipsoidal, dark-brown, smooth.

Locality: Cape Collinson Rd., Tai Tam Tuk Reservoir, Tai Tam, Kam Shan Country Park, Tai Mo Shan, Shing Mun, Tolo Harbour. *Y. S. Lau 335, 1407; L. T. Lo 338; S. Y. Hu 13807* (CUHK).

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi.

Ecology: Forests and thickets. Flowering: Apr.–May; fruiting: Jun.–Sep.

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

#### 4. *Croton hancei* Benth. 香港巴豆 (Fig. 189; Photo 371)

FHK 308. 1861; FKH 238. 1912; FRPS 44(2): 136. 1996; FGD 5: 105. 2003.

Shrub or treelet, 1–5 m tall, glabrous, except a minute stellate-lepidote on the young branches and inflorescences. Leaves papery, usually biglandular at the base; petioles 2–5 mm, puberulous; stipules subulate, 3–4 mm; leaf blade oblong-lanceolate, 8–18 × 2–5 cm, narrowed below the middle, but obtuse at the base, apex acuminate, margin entire or minutely serrate. Racemes terminal, ca. 3 cm; bracts small, ovate. Male flowers: several clustered in axil of bracts; pedicels very short; alabastrum globose, ca. 2 mm in diam.; calyx-lobes ovate; petals narrow and small; stamens 16, intermixed with a few hairs. Female flowers: usually solitary at the base; calyx-lobes 5, oblong, 4–5 mm; ovary globular, hairy; styles shortly columnar, with 3 short bifid lobes.

Locality: Tsing Yi Island. *K. Y. Tam 128; Y. W. Lam 144.*

Distribution: Endemic to Hong Kong.

Ecology: Forests. Flowering: Feb.–Apr.; fruiting: Apr.

Notes: The type specimen (*H. F. Hance Herb. No. 10163*, BM) was collected by H. F. Hance around 1850 in Hong Kong Island. Listed in *Rare and Precious Plants of Hong Kong*.

#### 5. *Croton moonii* Thwaites 月光巴豆 (Photo 372)

Enum. Pl. Zeyl. 276. 1864.

Treelet to 5 m tall; branches, petioles, inflorescences and abaxial surface of leaves stellate-lepidote. Leaves biglandular at the base; petioles 1.5–2 cm; leaf blade oblong, ovate-lanceolate or elliptic, 7–15 × 3–5 cm, base rounded or unequally cordate, apex acute to acuminate, margin obscurely serrulate; adaxially glabrous, olive-green, becoming greyish or glaucous when dry; lateral veins 7–12 on each side of midvein. Racemes terminal, tomentose and stellate-lepidote; calyx-lobes as many as and equaling the petals, ovate, obtuse, stellate-tomentose; disk of male obscure, of female small, annular; stamens 10–16; filaments pilose; ovary stellate-hispid; styles 3, biparted. Capsules depressed-globose, ca. 1 cm in diam., scurfy and tuberculate.

Locality: Cultivated. *Y. S. Lau 898, 2532; L. T. Lo 632.*

Distribution: Native to Sri Lanka; cultivated in S Guangdong.

Ecology: Flowering: Jun.–Aug.; fruiting: Oct.–Nov.

Uses: Medicinal (folklore), ornamental.

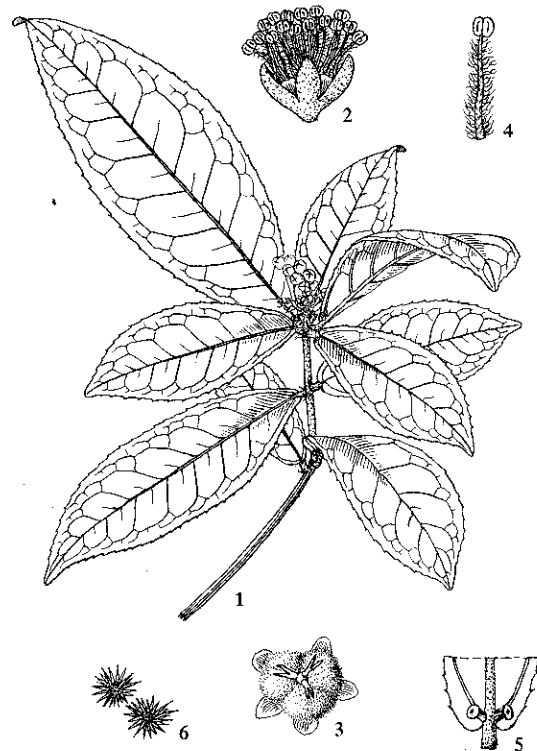


Figure 189. *Croton hancei* Benth.

1. flowering branch; 2. male flower; 3. female flower; 4. pistil; 5. abaxial surface of lower part of leaf; 6. stellate hairs. (drawn by H. P. Yu)

### 25. *Aleurites* J. R. Forst. & G. Forst. 石栗屬

Evergreen trees; young branches densely stellate-hairy. Leaves simple, alternate, entire or 3–5-lobed, palmately-veined; petioles biglandular at apex. Flowers monoecious in terminal panicles; alabastrum subglobose; calyx-lobes and petals 5, imbricate in the bud; disk-glands 5, alternating with petals. Male flowers: much more than female flowers; calyx 2–3-lobed; petals 5, free; disk-glands 5; stamens 15–20, 3–4-seriate, inserted at elevated receptacles; anthers 2-celled, introrse, connective broader. Female flowers: slightly larger than males; calyx initially entire, closed, afterwards irregularly 2–3-lobed; petals 5, free; disk-glands 5; ovary 2–3-locular, with 1-ovule in each locule; styles 2(–3), deeply 2-lobed. Fruit drupaceous, indehiscent; seeds 1–3, depressed globose.

Two species in tropical Asia and Oceania; one species in China; it is also cultivated in Hong Kong.

1. *Aleurites moluccana* (L.) Willd. 石粟 (Fig. 190; Photo 373)  
Sp. Pl. 4: 590. 1805; FRPS 44(2): 140, pl. 33: 1–4. 1996; FGD  
5: 107. 2003; K. Chayamarit & P. C. van Welzen, Fl. Thailand  
8(1): 49. 2005.

*Jatropha moluccana* L., Sp. Pl. 2: 1006. 1753.

*Aleurites triloba* J. R. Forst. & G. Forst., Char. Gen. Pl. (ed.  
2) 111, pl. 56. 1776.

Evergreen tree to 18 m tall; bark deep-grey; young parts stellate-hairy. Leaves papery; petioles 6–12 cm, densely stellate-puberulous, biglandular at apex; leaf blade ovate, ovate-oblong, ovate-lanceolate or ovate-triangular, 14–20 × 7–17 cm, entire or shallowly 1–5-lobed, base broad-cuneate or rounded, rarely shallowly cordate, apex acute to acuminate; basal veins 3–5. Panicles corymbiform, 15–20 cm. Male flowers: calyx 2–3 mm, deeply 2-lobed, densely puberulous; petals oblong or lanceolate, 6–10 mm, white, adaxially hairy at base; stamens 15–20, in 3–4 series. Female flowers: calyx ca. 6 mm, usually 3-lobed; petals slightly longer than calyx; ovary densely stellate-puberulous, 2-locular; styles 2, ca. 2 mm, 2-parted. Drupes subglobose or laterally compressed, ca. 5 × 5–6 cm, 2-seeded; seeds laterally flat; testa hard and tuberculate-ribbed.

Locality: Widely cultivated in Hong Kong. *L. T. Lo 489; Y. S. Lau 3112; HK sheet 32812; S. Y. Hu 5361, 10627* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; tropical and subtropical regions of Asia.

Ecology: Flowering: Apr.–Oct.; fruiting: Oct.–Dec.

Uses: Ornamental, material (lipids).

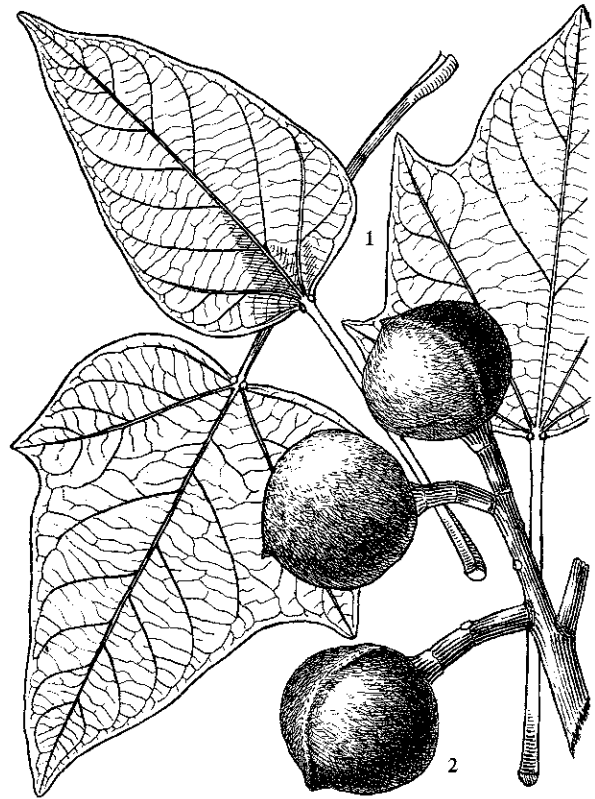


Figure 190. *Aleurites moluccana* (L.) Willd.

1. leaves (various shapes); 2. infructescence. (drawn by H. P. Yu)

## 26. *Sebastiania* Spreng. 地楊桃屬

Shrubs, rarely herbs. Leaves alternate, rarely opposite, petiolate, pinnately-veined; stipules small. Flowers apetalous, unisexual (plant usually monoecious), in terminal, axillary, leaf-opposed or extra-axillary racemes or spikes; bracts small, with 2 glands at base. Male flowers: 1–3 in axils of bracts; pedicels slender; sepals often 3, free or connate at base; stamens 2–3(–4), filaments free or connate at base; anthers 2-celled, longitudinally dehiscent pistillode absent. Female flowers: solitary in axils of bracts; pedicels short; sepals 3; ovary 3-locular, with 1 ovule in each locule; styles 3, free or connate at base. Capsules subglobose, smooth or echinate, divided into 3 bivalved cocci; seeds globose or oblong, carunculate, albumen fleshy.

About 100 species mainly distributed in tropical regions of the New World, but with outliers in temperate N America, Asia, and Australasia; one species in China; it also occurs in Hong Kong.

1. *Sebastiania chamaelea* (L.) Müll. Arg.

地楊桃 (色柏木) (Fig. 191; Photo 374)

Prodr. 15(2): 1175. 1866; FKH 241. 1912; FRPS 44(3): 4. 1997; FGD 5: 125, fig. 76. 2003.

*Tragia chamaelea* L., Sp. Pl. 981. 1753.

Perennial herb, 20–60 cm tall, with stout tap root; stems more or less woody at base, much branched, glabrous or pubescent when young. Leaves alternate, thick-papery; petioles short, ca. 2 mm, usually pubescent; stipules persistent, ovate, ca. 1 mm, ciliate; leaf blade linear or linear-lanceolate, 20–55 × 2–10 mm, base slightly attenuate, apex obtuse, margin serrulate, pubescent abaxially; midvein prominent on both surfaces, lateral veins obscure. Spikes 5–12 mm, terminal or leaf-opposed, usually with 1 or several female flowers at the base and numerous male flowers on the upper

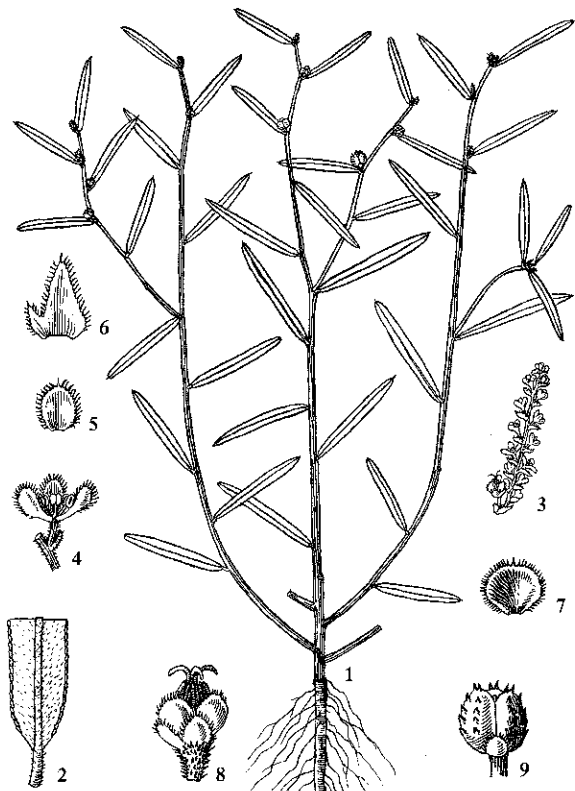


Figure 191. *Sebastiania chamaelea* (L.) Müll. Arg.

1. whole plant; 2. part of leaf viewing marginal glands; 3. inflorescence; 4. male flower; 5–6. sepal of male flower; 7. sepal of female flower; 8. female flower; 9. capsule. (drawn by H. P. Yu)



part. Male flowers: sepals 3, ovate, ca. 1 mm, margin serrulate; stamens 3, anthers globose, filaments shorter than anthers. Female flowers: sepals 3, slightly larger than in male flowers, broad-ovate, margin fimbriate, with 2 glands at base adaxially; ovary triangular-globose, 3-locular, glabrous, aculeate; styles 3, free. Capsules triangular-globose, 3–4 mm in diam., with 2 rows of prickles along the ridges.

Locality: Lung Kwu Chau, Lantau Island. *HK sheet 25102, 40212.*

Distribution: Hainan, Guangdong, Guangxi; S and SE Asia, Australia.

Ecology: Sandy fields near seashore, roadsides. Flowering & fruiting: Mar. – Nov.

## 27. Vernicia Lour. 油桐屬

Deciduous trees; young branches pubescent. Leaves alternate, entire or lobed; palmately-veined; petioles biglandular at the apex; stipules small, caducous. Flowers unisexual (plant monoecious or dioecious), in terminal or axillary corymbiform panicles. Male flowers: calyx initially entirely closed, afterwards spreading and spathe-like, split or irregularly 2–5-fid, caducous; petals 5, imbricate or contorted in bud, unguiculate at base; disk-glands 5, alternating with petals; stamens 7–12, in 2 series, outer filaments free, inner ones ± connate; anther introrse, 2-celled, connectives broad. Female flowers: calyx, petals and disk-glands as in male flowers; ovary 3–8-locular, with 1 ovule in each locule; styles 3–4, 2-lobed. Drupes large, subglobose, rostrate at apex, indehiscent or slightly dehiscent at base; pericarp crustaceous; seeds large, 3–8, testa woody, albumen thick, oily.

About three species in E Asia; two species in China and cultivated in Hong Kong.

- 1a. Leaves usually entire, rarely 1–3-lobed; petioles with 2 sessile and compressed-globose glands at apex; fruits smooth and without ribs..... 1. *V. fordii*  
 1b. Leaves usually 2–5-lobed, rarely entire; petioles with stipitate and cupular glands at apex; fruits 3-ribbed and wrinkled ..... 2. *V. montana*

### 1. *Vernicia fordii* (Hemsl.) Airy Shaw 油桐(三年桐)

Kew Bull. 20: 394. 1966; FRPS 44(2): 143, pl. 34: 5–6. 1996; FGD 5: 109, fig. 63. 2003.

*Aleurites fordii* Hemsl., Hooker's Icon. Pl. 29: pl. 2801–2802. 1906; FKH 237. 1912.

Tree up to 10 m tall; young branches and leaves tawny pubescent, glabrous in age. Leaves crowded towards apex of branchlets; petiole with 2 compressed and sessile glands at apex; stipules oblong to lanceolate (3–)6–8 mm; leaf blade ovate, 5–20 × 3–20 cm, base truncate to shallowly cordate, apex acute, usually entire, rarely 1–3-lobed; palmately 5–7-veined. Panicles 6–12 cm. Male flowers: calyx spathe-like, ca. 1 cm, usually 2-lobed, densely brown-puberulous abaxially; petals obovate, 2–3 × 1–1.5 cm, base unguiculate, apex rounded, white, with reddish nerviform stripes; stamens 8–12, in 2 series; staminodes 5, linear ca. 5 mm. Female flowers: calyx 8–10 mm, hairy, 2–3-lobed; petals as in male flowers; disk-glands 5, linear; ovary pubescent, 3–8-locular; styles 3–8, bilobed. Drupes subglobose, 4–8 cm in diam., pericarp leathery, smooth.

Locality: Cultivated. *Y. S. Lau 1590, 2693; HK sheet 24715; K. Y. Chan 1164 (CUHK).*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian; Vietnam, widely cultivated.

Ecology: Flowering: Mar. – Apr.; fruiting: Aug. – Nov.

Uses: Material (lipids).

### 2. *Vernicia montana* Lour.

木油樹(千年桐)

(Fig. 192; Photo 375)

Fl. Cochinch. 586. 1790; FRPS 44(2): 143, pl. 34: 1–4. 1996; FGD 5: 108. 2003.

*Aleurites montana* (Lour.) E. H. Wilson, Bull. Imp. Inst. Gr. Brit. 11: 460. 1913.

*Aleurites cordata* auct. non (Thunb.) R. Br. ex Steud.: FKH 237. 1912.

Tree up to 20 m tall; young branches and leaves yellowish pubescent, glabrous in age; petioles 7–17 cm, with 2 stipitate cupular glands at apex; stipules lanceolate, 2–4 mm; leaf blade broad-ovate, 8–20 × 5–18 cm, base cordate to truncate, apex acute to acuminate, 2–5-lobed or entire, usually with cupular glands at the sinus. Panicles corymbiform, usually terminal. Male flowers: calyx spathe-like, ca. 1 cm, apex shallowly 2–3-lobed, glabrous; petals obovate, 2–3 cm, unguiculate at base, white or purple-red at base and with purple-red nerviform stripes; stamens 8–10, in 2 series, filaments hairy. Female flowers: calyx spathe-like,

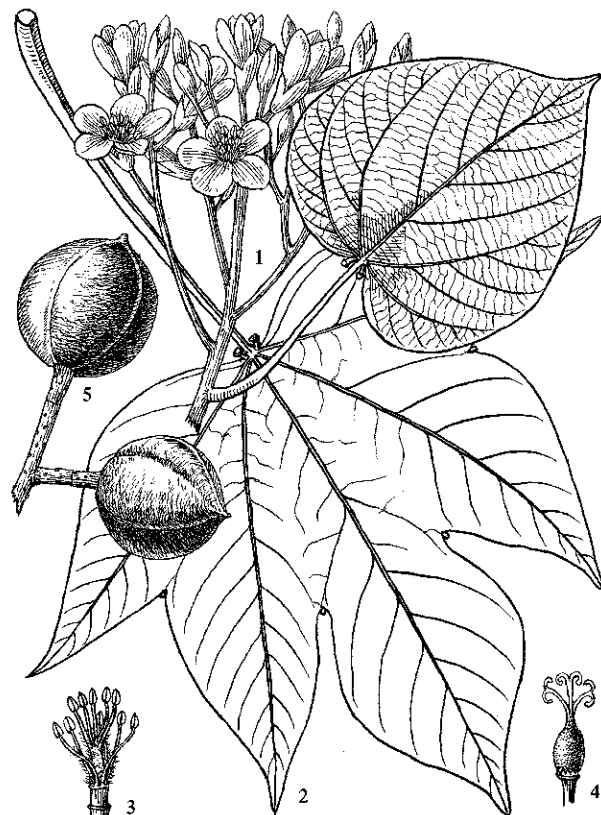


Figure 192. *Vernicia montana* Lour.

1. male flowering branch; 2. irregular leaf; 3. stamens; 4. pistil; 5. drupes. (drawn by H. P. Yu)

1.4–1.7 cm, caducous; petals as in male flowers; ovary densely brown-pubescent, 3-locular; styles 3, biparted. Drupes ovoid, 3–5 cm in diam., 3-ribbed; pericarp leathery, wrinkled; seeds compressed-globose, verrucose.

Locality: Cultivated. *K. L. Tso 20238*; *Y. S. Lau 357, 2378*; *S. Y. Hu 10435* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Vietnam, Myanmar, Thailand, cultivated in Japan.

Ecology: Flowering: Apr.–Jun.; fruiting: Jul.–Oct.

Uses: Material (lipids).

## 28. *Trigonostemon* Blume 三寶木屬

Trees or shrubs. Leaves simple, alternate, rarely opposite to nearly whorled, unlobed, pinnately-veined; with a pair of glands at apex of petiole; stipules small, persistent or deciduous. Inflorescences terminal or axillary, racemose or thyrsoid. Flowers unisexual (plant monoecious). Male flowers: sepals 5, free, imbricate; petals 5, exceeding the calyx; disk cupular or annular, sometimes divided into 5 glands; stamens 3–5, filaments connate into a column or the upper half free; anther 2-celled, extrorse, connectives enlarged. Female flowers: sepals and petals as in male flowers; disk annular or cupular, usually unlobed; ovary 3-locular, with 1 ovule in each locule; styles 3, free or connate at base, bifid at apex. Capsules 3-valved; smooth or ± tuberculate.

About 50 species in tropical Asia, extending from India and Sri Lanka to New Guinea; ten species in China; one species in Hong Kong.

### 1. *Trigonostemon chinensis* Merr. 三寶木

Philipp. J. Sci. 21(5): 498–499. 1922; FRPS 44(2): 167, pl. 43: 1–5. 1996.

Shrub, 2–4 m tall; young branches densely tawny pubescent, glabrescent. Petioles 1–2 cm, hispidulous to glabrescent, with 2 conical glands at apex; leaf blade thin-papery, obovate-elliptic to oblong, 8–18 × 3–5.5 cm, base cuneate to rounded, apex acute, usually attenuate into caudate, hirtose or villose on both surfaces when young, glabrous or glabrescent in age, usually densely tuberculate adaxially, margin entire or obscurely serrulate on upper part; lateral veins 6–8. Racemes terminal, 9–18 cm, pilose or hispidulous to glabrescent. Male flowers: pedicels slender, 2–5 mm; sepals 5, oblong, ca. 1.2 mm, pilose; petals obovate, 5–6.5 mm, yellow; disk annular; stamens 3, filaments connate up to middle, upper half free. Female flowers: pedicels clavate, 1–15 cm; sepals 5, lanceolate, unequal, 5–6 mm, pilose abaxially; petals obovate, 12 mm, yellow; ovary glabrous; styles 3, short, stigmas subcapitate. Capsules subglobose, ca. 1.2 cm in diam., glabrous, with 3 longitudinal grooves.

Locality: Lantau Peak. *F. W. Xing 9655* (HKU, HK).

Distribution: Hainan, Guangxi.

Ecology: Forests, very rare. Flowering: Jan.–Sep.; fruiting: May–Nov.

## 29. *Excoecaria* L. 海漆屬

Trees or shrubs, with milky juice. Leaves alternate or opposite, petiolate, pinnately-veined. Flowers apetalous, unisexual (plant dioecious, rarely monoecious), in axillary or terminal racemes or spikes. Male flowers: 1–2 in axils of bracts; sepals (2–)3, small, imbricate; stamens 3, filaments free, anthers 2-celled, longitudinally dehiscent; pistillode absent. Female flowers: calyx 3-lobed or 3-partite; ovary 3-locular, with 1 ovule in each locule; styles slightly connate at base. Capsules subglobose, obtusely 3-angled, divided into 2-valved cocci; column persistent; seeds globose, testa crustaceous; albumen fleshy.

About 40 species in Asia, Africa and Oceania; six species in China; two species in Hong Kong.

- 1a. Leaves mostly opposite, purple or dark red abaxially, margin sparsely serrulate..... 1. *E. cochinchinensis*  
 1b. Leaves alternate, greenish abaxially, margin entire or crenulate ..... 2. *E. agallocha*

### 1. *Excoecaria cochinchinensis* Lour. 紅背桂

(Photo 376)

Fl. Cochinch. 612. 1790; FRPS 44(3): 7. 1997; FGD 5: 129, fig. 78. 2003; K. Chayamarit & P.C. van Welzen, Fl. Thailand 8(1): 295. 2005.

*Antidesma bicolor* Hassk., Cat. Hort. Bot. Bogor. 81. 1884.

*Excoecaria bicolor* (Hassk.) Zoll. ex Hassk., Retzia 1: 158. 1855.

Evergreen shrub, 1–2 m tall; branches slender, glabrous. Leaves opposite, rarely alternate or in whorls of 3; petioles 3–10 mm, eglandulose at apex; stipules ovate, ca. 1 mm; leaf blade narrowly elliptic or oblong, 6–14 × 2–4 cm, base attenuate, apex long-acuminate, margin serrulate, glabrous, dark green adaxially, purple or dark-red abaxially; lateral veins 8–12. Racemes axillary or terminal, the male 1–2 cm, the female 3–5-flowered, slightly shorter than the males. Male flowers: solitary in axils of bracts; pedicels ca. 1.5 mm; bracts broad-ovate, ca. 1.7 × 1.7 mm, with 2 glands at base; sepals 3, lanceolate, ca. 1.2 mm, serrulate at apex; stamens 3; anthers globose. Female flowers: pedicels 1.5–2 mm; bracts as in male flowers; sepals 3, ovate, 1.8 × ca. 1.2 mm, slightly connate at base; ovary globose, glabrous; styles 3, free or more or less connate at base. Capsules globose, ca. 8 mm in diam., truncate at base, concave at apex; seeds nearly globose, ca. 2.5 mm in diam.

Locality: Cultivated. *P. S. Choi 60; HK sheet 25106, 25107; S. Y. Hu 6552 (CUHK).*

Distribution: Guangxi, cultivated in Hainan, Guangdong, Yunnan, Fujian, Taiwan; and in countries of SE Asia.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

**2. *Excoecaria agallocha* L. 海漆 (Fig. 193; Photo 377)**

*Syst. Nat.* (ed. 10) 1288. 1759; *FKH* 241. 1912; *FRPS* 44(3): 9, pl. 2: 3–5. 1997; *FGD* 5: 129. 2003; *K. Chayamarit & P. C. van Welzen, Fl. Thailand* 8(1): 293. 2005.

*Commia cochinchinensis* Lour., *Fl. Cochinch.* 606. 1790.

Evergreen tree, 2–5 m tall; branchlets stout, glabrous. Leaves alternate, papery to sub-leathery; petioles stout, 1.5–3 cm, glabrous, with 2 glands at apex; stipules ovate, 1.5–2 mm; leaf blade elliptic or broad-elliptic, rarely ovate-oblong, 4.5–10 × 3–5 cm, base obtuse or broad-cuneate, apex acute, tip blunt, margin entire or ± crenulate, glabrous on both surfaces; lateral veins slender, 10 on each side of midvein. Racemes axillary, the male 3–4.5 cm, the female shorter, 2–3 cm; bracts broad-ovate, fleshy, ca. 2 × 2 mm, with 2 glands at base. Male flowers: solitary in axils of bracts; sepals 3, lanceolate, ca. 1.2 mm; stamens 3, usually exceeding the sepals. Female flowers: sepals 3, broad-ovate or triangular, slightly connate at base, ca. 1.4 × 1 mm; ovary ovoid, styles 3, free. Capsules globose, 7–8 × ca. 10 mm, trisulcate, cocci ovoid, rostrate at apex.

Locality: Aberdeen, Tai Tam Reservoirs, Kiu Tsui Chau, Sha Tin, Tai Long Wan, Ting Kok. *H. C. Tang 1271; Y. S. Lau 231, 313; Hu & But 20904 (CUHK).*

Distribution: Hainan, Guangdong, Guangxi, Taiwan; Philippines, Vietnam, Cambodia, Thailand, India, Sri Lanka, Australia and Pacific Islands.

Ecology: Littoral muddy swamps and in mangrove forests. Flowering & fruiting: Jan.–Sep.

Uses: Environmental (erosion control, ornamental).

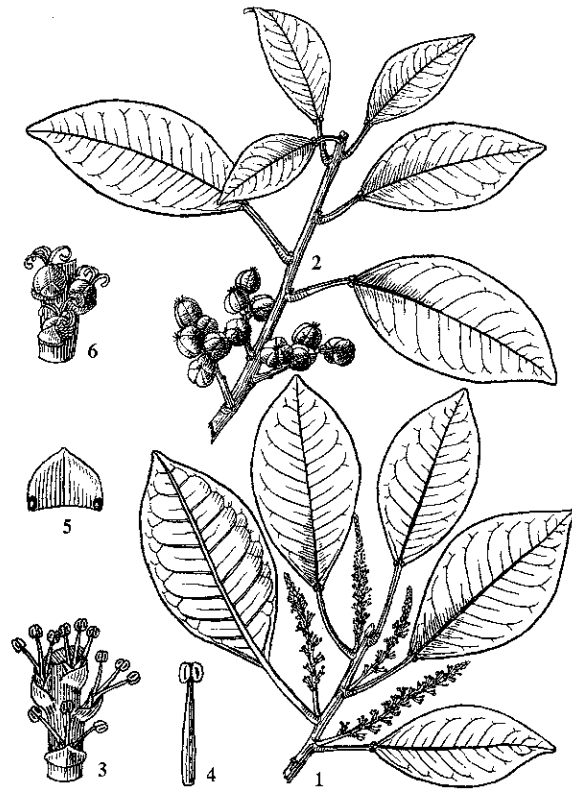


Figure 193. *Excoecaria agallocha* L.

1. male flowering branch; 2. fruiting branch; 3. part of male inflorescence; 4. stamen; 5. bract; 6. part of female inflorescence. (drawn by H. P. Yu)

**30. *Sapium* Jacq. 烏柏屬**

Trees or shrubs, with milky juice. Leaves alternate, entire or serrate, pinnately-veined; petioles apically biglandular; stipules caducous. Flowers apetalous, unisexual (plant monoecious or sometimes dioecious), in terminal or axillary spikes, racemes or spicate panicles; bracts bearing 2 large glands at base on abaxial surfaces. Male flowers small, yellow, several fascicled in axil of bracts, without pistillode; calyx membranous, cupular-shaped, shallowly 2–3-lobed or 2–3-toothed; stamens 2–3, filaments free; anthers 2-celled, longitudinally dehiscent. Female flowers larger than male ones, solitary in axil of bracts; calyx cup-shaped, 3-partite, or cylindric and 3-dentate; ovary 2–3-locular, with 1 ovule in each locule; styles usually 3, free or connate at base; stigma revolute, entire. Capsules globose, pyriform or 3-valved, rarely baccate, usually 3-locular, loculicidally dehiscent or indehiscent; seeds subglobose, sometimes covered with waxy aril, central column persistent, exocarp hard; albumen fleshy, cotyledon broad flattened.

About 120 species, all in the tropical regions, especially in S America; nine species in China; three species in Hong Kong.

- 1a. Leaves ± rhomboid, sharply acuminate, as broad as long..... 1. *S. sebiferum*  
 1b. Leaves shaped otherwise, at least twice as long as broad.  
 2a. Petioles with 2 glands at apex; seeds with waxy aril..... 2. *S. discolor*  
 2b. Petioles without glands at apex, seeds without waxy aril..... 3. *S. atrobadiomaculatum*

**1. *Sapium sebiferum* (L.) Roxb. 烏柏**

(Fig. 194; Photo 378)

*Hort. Bengal.* 69. 1814, & *Fl. Ind.* ed. 2, 3: 693. 1832; *FKH* 241. 1912; *FRPS* 44(3): 14, pl. 3: 1–4. 1997; *FGD* 5: 128. 2003.

*Croton sebiferum* L., *Sp. Pl.* 1004. 1753.

*Stillingia sebifera* (L.) Michx., *Fl. Bor.-Amer.* 2: 213. 1803; *FHK* 302. 1861.

*Triadica sinensis* Lour., *Fl. Cochinch.* 610. 1790.

Tree to 15 m tall, with milky juice; glabrous throughout. Leaves papery; petioles 2.5–6 cm, with 2 glands at apex; stipules ca. 1 mm; leaf blade rhomboid, rhomboid-ovate or rarely rhomboid-obovate, 3–8 × 3–9 cm, base broadly cuneate, apex sharply acuminate, margin entire; lateral veins 6–10 on each side of midvein. Racemes terminal, 6–15 cm, with 1–4 female flowers at the base and male flowers on the upper part; pedicels slender, 1–3 mm; bracts broad-ovate, ca. 2 × 2 mm, with 2 glands at the base. Male flowers: 6 or more in each cluster, very small and yellowish; calyx cup-shaped, shallowly 3-lobed, lobes obtuse, irregularly serrulate; stamens 2–3, exceeding the calyx, filaments free, nearly as long as the globose anthers. Female flowers: calyx 3-partite, lobes ovate or ovate-lanceolate; ovary ovoid-globose, smooth, 3-locular; styles 3, divided to the middle; stigmas recurved. Capsules pyriform-globose, black when mature, 1–1.5 cm in diam., 3-seeded; seeds oblate, ca. 8 × 6–7 mm, covered with white waxy aril.

Locality: Common in Hong Kong. Also planted. *Y. S. Lau* 2710, 2752; *S. P. Lau* 185; *S. Y. Hu* 5508, 12032 (CUHK).

Distribution: Area S of the Yellow River; Japan, Vietnam, India, cultivated in Europe, America, Africa.

Ecology: Banks of streams and ditches, sparse forests near villages. Flowering: Apr.–Aug.; fruiting: Aug.–Nov.

Uses: Material (wax), food (oil/fat), fuel (potential as petroleum substitute/alcohol), ornamental.

## 2. *Sapium discolor* (Champ. ex Benth.) Müll. Arg. 山烏柏

(Photo 379)

Linnaea 32: 121. 1863; FKH 241. 1912; FRPS 44(3): 18. 1997; FGD 5: 128. 2003.

*Stillingia discolor* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 1. 1856; FHK 303. 1861.

Small tree, 5–12 m tall, glabrous throughout. Leaves papery; petioles 2–7.5 cm, with 2 glands at apex; stipules small, subovate, ca. 1 mm.; leaf blade elliptic or oblong-ovate, 4–10 × 2.5–5 cm, base cuneate, apex obtuse or shortly acuminate, more or less glaucous abaxially; lateral veins 8–12 on each side of midvein. Racemes terminal, 4–9 cm, with several female flowers at base, and many male flowers on upper part. Male flowers: 5–7 in axil of bracts; pedicels 1–3 mm; bracts ovate, ca. 1.5 × 1 mm; calyx cup-shaped, irregular-serrulate; stamens 2–3, filaments short, anthers globose. Female flowers: solitary in axil of bracts; pedicels ca. 5 mm; bracts as in male flowers; calyx 3-partite to base, lobes triangular, ca. 2 mm; ovary ovoid, 3-locular; styles 3, divided to the middle. Capsules black, globose, 1–1.5 cm in diam.; seeds subglobose, 4–5 × 3–4 mm, covered with a very shiny layer of waxy aril.

Locality: Common in Hong Kong. Also planted. *H. C. Tang* 340, 2174; *Y. S. Lau* 2203; *S. Y. Hu* 5347, 12017 (CUHK).

Distribution: Area S of Changjiang; Vietnam, Laos, Myanmar, India, Malaysia, Indonesia.

Ecology: Forests and shrublands. Flowering: Apr.–Jun.; fruiting: Jul.–Oct.

Uses: Timber, medicinal (folklore).

## 3. *Sapium atrobadiomaculatum* F. P. Metcalf 斑籽烏柏

(Photo 380)

Lingnan Sci. J. 10: 490. 1931; FRPS 44(3): 23. 1997; FGD 5: 126, fig. 77. 2003.

Shrub, 1–3 m tall, glabrous throughout. Leaves papery; petioles narrowly winged, with 2 glands at apex; stipules membranous, linear-lanceolate, 5–12 mm; leaf blade narrowly elliptic or lanceolate, 3–9 × 5–3 cm, base broadly cuneate or obtuse, apex shortly acuminate, entire, abaxially with 2 glands at the base of the limb; lateral veins 6–7 on each side of midvein. Racemes terminal, 2–4 cm long, with 1–2 female flowers at the base and numerous male flowers on the upper part, or sometimes all male. Male flowers: 2–3 in axil of bracts; pedicels 1–2 mm; bracts ovate to lanceolate, 0.5–2 mm, sparsely serrulate, with 2 reniform glands at the base; calyx cup-shaped, 3-lobed, lobes broad-ovate, serrulate; stamens 2–3; anthers globose; filaments very short. Female flowers: pedicels 3–5 mm; bracts lanceolate, ca. 2 mm; calyx deeply 3-lobed; lobes ovate, ca. 1.5 × 1 mm; ovary subglobose, ca. 3 mm in diam.; styles 3, connate at base. Capsules globose, 3-angled, ca. 1 cm in diam.; seeds globose, ca. 5 mm in diam., dark-brown maculate without waxy aril.

Locality: Black's Link, Repulse Bay, Tai Tam Tuk, Beaufort Island, Lantau Island. *Y. S. Lau* 135, 263; *S. P. Lau* 167; *S. Y. Hu* 13779A (CUHK).

Distribution: Guangdong, Jiangxi, Hunan, Fujian.

Ecology: Thin forests, shrublands. Flowering: Mar.–May; fruiting: Jun.–Sep.

Notes: This species was reported as *Excoecaria japonica* Muell.-Arg. previously (FKH 241. 1912; Check List HK Plants 45. 1993).

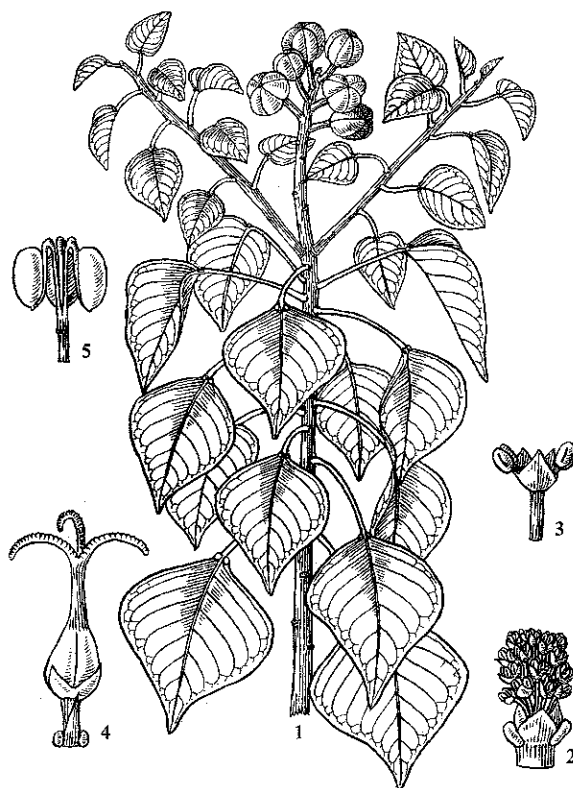


Figure 194. *Sapium sebiferum* (L.) Roxb.

1. fruiting branch; 2. part of male inflorescence (enlarged); 3. male flower; 4. female flower; 5. coccus caducous viewing axis and seeds. (drawn by H. P. Yu)

## 238. RHAMNACEAE 鼠李科

HU Qi-ming 胡敬明

Trees or shrubs, sometimes climbing, often thorny, rarely herbs. Leaves simple, alternate or rarely opposite; stipules minute, caducous or persistent. Flowers small, regular, bisexual or rarely unisexual, in cymes, fascicles or panicles. Calyx campanulate or tubular, 4–5-cleft; lobes valvate. Petals 4–5, often smaller than sepals, unguiculate, adnate to the base of calyx-lobes and alternating with them, or rarely wanting. Stamens as many as the petals and opposite to them; anthers 2-celled, opening by longitudinal slits. Ovary superior or inferior, free or embedded in a well-developed disk, 2–4-locular, with a single erect ovule in each locule; style simple or divided. Fruit mostly fleshy drupes or nuts, but some are dry, indehiscent and winged.

About 58 genera with more than 900 species widely spread over most parts of the world, especially in tropical and warm regions; ten genera and about 130 species in China; five genera and eight species in Hong Kong.

- 1a. Fruit dry, winged.  
 2a. Trees, leaves 3-veined ..... 1. *Paliurus*  
 2b. Woody climber, leaves pinnately-veined ..... 2. *Ventilago*  
 1b. Fruit fleshy, drupaceous.  
 3a. Flowers sessile; fruit globose, ca. 5 mm in diam. .... 3. *Sageretia*  
 3b. Flowers pedicellate; fruit ellipsoidal or cylindrical, usually much larger.  
 4a. Branches twining; flowers in terminal panicles ..... 4. *Berchemia*  
 4b. Branches not twining; flowers usually in axillary clusters or cymes ..... 5. *Rhamnus*

1. *Paliurus* Mill. 馬甲子屬

Trees or shrubs, usually spiny. Leaves alternate, 3-veined at base, entire or serrate; stipules usually converted into spines. Flowers small, bisexual, in axillary or sometimes terminal cymes. Calyx 5-lobed. Petals 5, spatulate or fan-shaped, laterally involute. Stamens 5, alternate with petals and slightly longer than them. Ovary half-immersed in the disk, 3-locular, with 3 oblong stigmas. Fruit dry, hemispherical, 2–3-celled, surrounded by a broad corky wing.

About six species distributed from S Europe to E Asia; five species in China; one species in Hong Kong.

1. *Paliurus ramosissimus* (Lour.) Poir.

馬甲子

(Fig. 195; Photo 381)

Encycl., Suppl. 4(1): 262–263. 1816; FKH 62. 1912; FRPS 48(1): 128. pl. 35: 4–5. 1982; FTW ed. 2, 3: 684, pl. 354. 1993; FGD 4: 266, fig. 158. 2000.

*Aubletia ramosissima* Lour., Fl. Cochinch. 283. 1790.

*Paliurus aubletia* Schult., Syst. Veg. 5: 343. 1819; FHK 66. 1861.

Deciduous small tree, sometimes shrubby, to 5 m tall. Young shoots and leaves ± tomentose, soon becoming glabrous. Leaves alternate; petioles 5–8 mm, initially tomentose, with a stipular spine on each side; leaf blade ovate to orbicular, 3–6 × 3–5 cm, base broadly cuneate or rounded, apex rounded or obtuse, margin crenately serrate, 3-veined at base. Cymes axillary; peduncle and rachis very short, yellow-tomentose. Flowers yellow, ca. 6 mm in diam. Calyx lobed to middle; lobes ovate-triangular, tomentose abaxially. Petals obovate-spathulate, 1–1.5 mm. Stamens slightly longer than petals. Ovary ellipsoidal, lower half immersed in the disk; style 3-cleft to base. Fruit cup-shaped, densely tomentose, surrounded by a 3-lobed horizontal wing.

Locality: Hong Kong Island, Sha Tin, Sai Kung, Mai Po, Lantau Island. *Y. S. Lau 311*; *L. T. Lo 102*; *P. S. Choi 154*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Indochina.

Ecology: Thickets, margins of forests and coastal habitats.

Uses: Ornamental, medicinal (folklore).

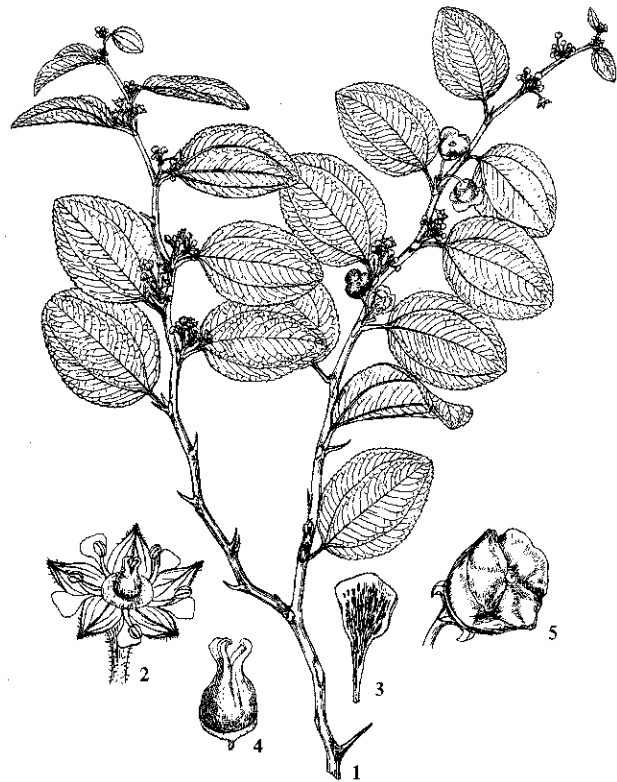


Figure 195. *Paliurus ramosissimus* (Lour.) Poir.

1. flowering branch; 2. flower; 3. petal; 4. pistil;  
 5. fruit. (drawn by H. P. Yu)

## 2. *Ventilago* Gaertn. 翼核果屬

Tall woody climbers. Leaves alternate, 2-ranked, pinnately-veined, elegantly marked with transverse veinlets between the pinnate veins. Flowers bisexual, regular, in small axillary cymes or terminal panicles. Calyx obconic, 5-lobed; lobes divaricate. Petals 5, subtriangular or cucullate. Stamens 5, adnate to the base of petals. Ovary immersed in the 5-lobed disk, 2-locular, ending in a short conical style or stigmas. Fruit a 1-seeded nut, base surrounded by the persistent calyx, apex with a long oblong flat wing.

About 35 species in tropical and subtropical regions of the Old World; six species in China; one species in Hong Kong.

**1. *Ventilago leiocarpa* Benth. 翼核果 (Fig. 196; Photo 382)**  
J. Linn. Soc. Bot. 5: 77. 1860 & FHK 67. 1861; FKH 62. 1912; FRPS 48(1): 147. 1982; FTW ed. 2, 3: 694. 1993; FGD 4: 259, fig. 153. 2000.

Woody climber. Young shoots yellowish puberulent, glabrescent. Leaves alternate,  $\pm$  2-ranked; petioles 3–7 mm; leaf blade leathery, ovate to ovate-oblong, 4–8  $\times$  2–4 cm, base subrounded, apex acuminate, margin entire or slightly wavy, glabrous or puberulent on midvein of abaxial surface; lateral veins 4–6 on each side of midvein, with distinct transverse veinlets between the veins. Flowers small, ca. 4 mm in diam., usually 4–8 in axillary clusters or cymes, the upper ones occasionally forming a short leafless simple panicle; pedicels 2–4 mm. Calyx-lobes triangular, ca. 1 mm. Petals obcordate, ca. 1 mm, apex bilobed. Stamens as long as or slightly shorter than petals. Ovary immersed in a thick, 5-angled disk. Nuts subglobose 4–6 mm in diam., the terminal wing oblong-lanceolate, 3–5  $\times$  0.7–0.8 cm.

Locality: Hong Kong Island, Tai Mo Shan, Lantau Island. *P. S. Choi* 263; *Y. S. Lau* 1250; *Y. W. Lam* 622.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Fujian, Taiwan.

Ecology: Thickets and margins of forests. Flowering: Mar.–May; fruiting: Apr.–Jul.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

## 3. *Sageretia* Brongn. 雀梅藤屬

Deciduous or evergreen shrubs, often  $\pm$  scandent, with spinescent side-branches. Leaves alternate or subopposite, pinnately-veined; stipules small, caducous. Flowers bisexual, sessile, in clusters along the branches, forming terminal or axillary spikes and often paniculate. Calyx hemispherical or campanulate, 5-lobed; lobes triangular, midvein raised adaxially. Petals 5, cucullate. Stamens 5, opposite to petals. Ovary surrounded by a thick, 5-lobed disk, 2–3-locular; style short, with a slightly 3-lobed stigma. Fruit a drupe, with fleshy or leathery exocarp and 2–3 indehiscent nutlets.

About 35 species distributed over E and S Asia and in N America; 19 species in China; one species in Hong Kong.

**1. *Sageretia thea* (Osbeck) Johnst.**

雀梅藤

(Fig. 197; Photo 383)

J. Arnold Arbor. 49: 377. 1968; FRPS 48(1): 12. 1982; FTW ed. 2, 3: 691. 1993; FGD 4: 257. 2000.

*Rhamnus thea* Osbeck, Dagb. Ostind. Resa 232. 1757.

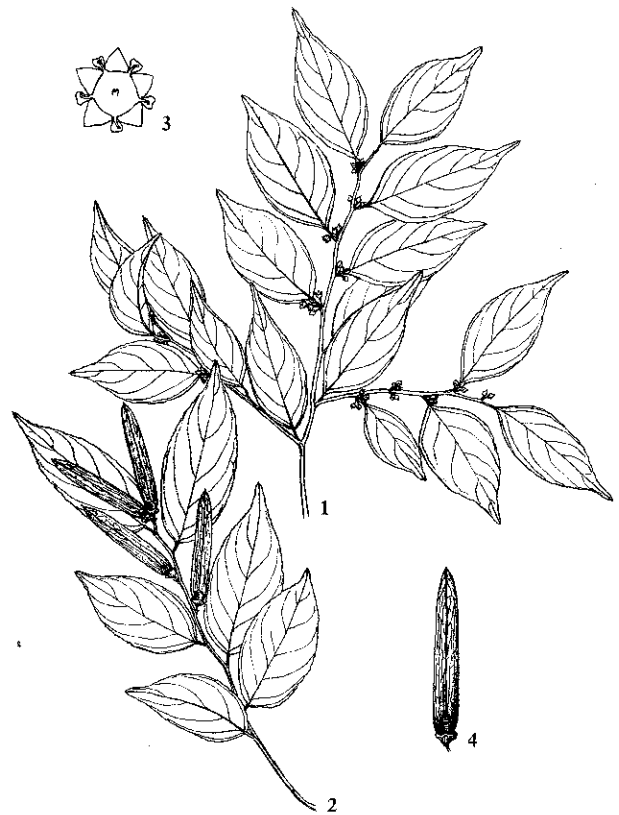


Figure 196. *Ventilago leiocarpa* Benth.

1. flowering branch; 2. fruiting branch; 3. flower;  
4. fruit. (drawn by H. P. Yu)

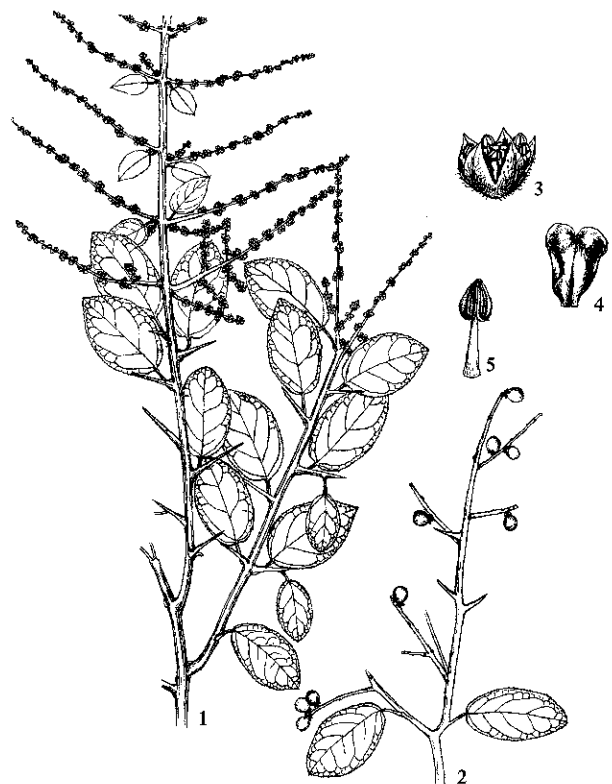


Figure 197. *Sageretia thea* (Osbeck) Johnst.

1. fruiting branch; 2. fruiting branch; 3. flower; 4. petal;  
5. stamen. (drawn by H. P. Yu)

*Rhamnus theezans* L., Mant. Pl. 207. 1771.

*Sageretia theezans* (L.) Brongn., Ann. Sci. Nat. (Paris), 10: 360. 1826; FHK 68. 1861; FKH 63. 1912.

Scandent or diffuse shrub, 1–2 m tall. Young shoots tawny tomentose, glabrescent in age; side-branches often converted into or ending in a thorn. Leaves alternate or subopposite; petioles 2–7 mm, tomentose; leaf blade ovate to elliptic or oblong, 1–4 × 0.7–2.5 cm, base rounded or slightly cordate, apex acute or rounded, margin serrulate, glabrous and shining adaxially, initially ± tomentose abaxially. Spikes paniculate; rachis up to 15 cm, branches 2–5 cm, both densely tomentose. Flowers sessile. Calyx campanulate, ca. 2 mm, deeply 5-lobed; lobes triangular. Petals white, spatulate, laterally involute, embracing the stamens. Ovary 3-locular; style short, entire or 3-cleft. Drupe subglobose, ca. 5 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang* 1224, 2337; *Y. S. Lau* 163.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Indochina to India.

Ecology: Thickets. Flowering: Jul.–Nov.; fruiting: Mar.–May.

Uses: Ornamental, beverage (substitute of tea).

#### 4. *Berchemia* Neck. ex DC. 勾兒茶屬

Shrubs or woody climbers. Leaves alternate, entire, pinnately-veined; stipules subulate. Flowers bisexual, regular, in small fascicles or cymes, usually forming terminal racemes or panicles. Calyx hemispherical or turbinate, apex 5-lobed; lobes triangular. Petals spatulate or cucullate, ± clawed. Stamens 5, equaling or shorter than petals. Ovary superior, half-immersed in the disk, 2-locular; style short, entire or 2-cleft. Fruit an oblong or cylindrical drupe with a 2-celled stone.

About 31 species in E Africa to E Asia and N America; 18 species in China; two species in Hong Kong.

Bentham (1861, FHK 68) described "*Berchemia* ? *sessiliflora*" based only on a single small fruiting specimen from Hong Kong Island collected by C. Wright (K, holotype; US, isotype) and stated that the genus could not be determined with certainty at that time.

- 1a. Branchlets glabrous; leaves 5–8 cm, lateral veins 9–11 pairs ..... 1. *B. floribunda*  
 1b. Branchlets hairy; leaves 1–2 cm, lateral veins 4–5 pairs ..... 2. *B. lineata*

##### 1. *Berchemia floribunda* (Wall.) Brongn. 多花勾兒茶

(Photo 384)

Ann. Sci. Nat., Bot. 10: 357, pl. 13: 1. 1826; FRPS 48(1): 125, pl. 33: 3–4. 1982; FGD 4: 260, fig. 154. 2000.

*Berchemia racemosa* Siebold & Zucc., Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4(2): 147. 1845; FHK 67. 1861; FKH 63. 1912.

*Berchemia giraldiana* C. K. Schneid., Ill. Handb. Laubholz. 2: 263, fig. 182: m–n, 183: k. 1909; FGZ 418. 1956.

Woody climber, 1–4 m tall; branchlets yellowish to brown, glabrous. Leaves papery; petioles 1–2 cm; leaf blade ovate to ovate-elliptic, 5–8 × 3–5 cm, base rounded or slightly cordate, apex acute, glabrous; lateral veins 9–11 on each side of midvein, raised on both surfaces. Flowers 2–3 clustered and racemously arranged, usually forming large (to 15 cm) terminal panicle; rachis glabrous or puberulent; pedicels 1–2 mm. Calyx broadly campanulate, 2–3 mm, 5-lobed to middle, lobes triangular. Petals obovate, ca. 1.5 mm, laterally involute, embracing the stamens. Stamens equaling petals or slightly exserted. Ovary half-immersed in the disk; style short, undivided. Drupe oblong or cylindrical, 7–10 × 4–5 mm.

Locality: Hong Kong Island, Tai Mo Shan, Ma On Shan, Sai Kung, Tai Long Sai Wan, Chek Keng, Kiu Tsui, Lantau Island. *H. C. Tang* 1161, 2324; *Y. S. Lau* 2114.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Gansu, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Indochina to Nepal and India.

Ecology: Thickets and margins of forests. Flowering: Aug.–Oct.; fruiting: Feb.–Mar. of the following year.

Uses: Medicinal (folklore).

##### 2. *Berchemia lineata* (L.) DC.

鐵包金(老鼠耳)

(Fig. 198; Photo 385)

Prodr. 2: 23. 1825; FHK 67. 1861; FKH 63. 1912; FRPS 48(1): 111, pl. 28: 5–6. 1982; FTW ed. 2, 3: 682, pl. 352. 1993; FGD 4: 260. 2000.

*Rhamnus lineata* L., Cent. Pl. 2: 11. 1756.

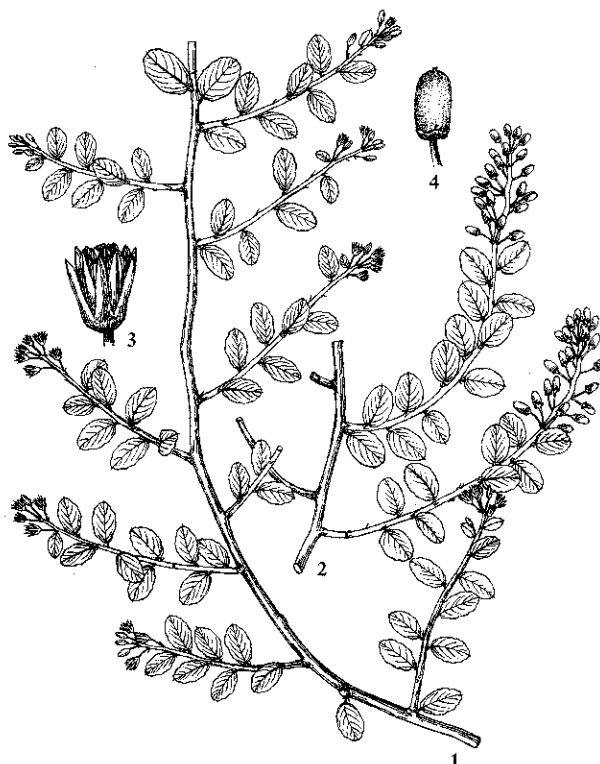


Figure 198. *Berchemia lineata* (L.) DC.

1. flowering branch; 2. fruiting branch; 3. flower;  
 4. drupe. (drawn by H. P. Yu)

Diffuse or half-climbing shrub, to 2 m tall. Young shoots puberulent, glabrescent. Leaves papery, 2-ranked; petioles 1–2 mm; leaf blade elliptic to oblong, 1–2 × 0.4–1.5 cm, base rounded, apex rounded or obtuse, glabrous; lateral veins 4–5 on each side of midvein. Flowers 2–4 clustered in axils of the leaves or a few clusters aggregated at the ends of the branches above the leaves; pedicels 3–6 mm. Calyx campanulate, ca. 4 mm, 5-lobed to the base; lobes narrowly lanceolate or linear. Petals spatulate, ca. 4 mm. Stamens slightly exerted. Ovary half-immersed in the disk; style clavate. Drupe ovate to ovate-oblong, 3–4 × 2–2.5 mm, black when mature.

Locality: Sha Tin, Sheung Shui, Tai Long Sai Wan, Ma Wan, Ping Chau. *W. J. Tutcher 8401*; *Y. S. Lau 762*.

Distribution: Guangdong, Guangxi, Jiangxi, Fujian, Taiwan.

Ecology: Thickets. Flowering: Jul.–Oct.; fruiting: Nov.

Uses: Medicinal (folklore).

### 5. *Rhamnus* L. 鼠李屬

Shrubs or small trees, often with spinescent branches. Leaves alternate or subopposite, pinnately-veined; stipules small, caducous. Flowers small, bisexual, polygamous or unisexual (plants dioecious), in axillary clusters, umbels or racemes. Calyx 4–5-lobed; lobes keeled adaxially. Petals 4–5, adnate to the top of the cup-shaped or hemispherical calyx-tube, or sometimes wanting. Stamens 4–5, opposite to the petals; filaments very short. Disk adnate to calyx-tube. Ovary free, usually shorter than the calyx-tube, 2–4-locular; style 2–4-cleft. Fruit a berry-like drupe, with 2–4 one-seeded kernels.

About 300 species mainly in the temperate regions of the N hemisphere; 57 species in China; three species in Hong Kong.

- 1a. Plants with spinescent branches; flowers 4-merous ..... 1. *R. brachypoda*  
 1b. Plants without spinescent branches; flowers 5-merous.  
   2a. Leaves papery; flowers bisexual ..... 2. *R. crenata*  
   2b. Leaves thickly leathery; flowers unisexual ..... 3. *R. napalensis*

#### 1. *Rhamnus brachypoda* C. Y. Wu ex Y. L. Chen 山綠柴

(Fig. 199; Photo 386)

Bull. Bot. Lab. N.-E. Forest. Inst., Harbin. 5: 85. 1979; FRPS 48(1): 85, pl. 23: 1–2. 1982.

*Rhamnus virgatus* auct. non Roxb.: FHK 68. 1861; FKH 64. 1912; FGD 4: 251. 2000.

Shrub, 1.5–3 m tall. Branchlets alternate, tawny pubescent when young, ending in a thorn. Stipules linear or lanceolate, deciduous. Leaves papery, alternate or clustered on abbreviated branchlets; petioles 4–9 mm, sparsely puberulent; leaf blade oblong, ovate-oblong or obovate, 3–10 × 1.5–4.5 cm, base cuneate or rounded, apex acuminate, acute or mucronate, margin serrulate, adaxial surface densely puberulent when young, glabrescent or only with hairs on the veins in age, abaxial surface initially puberulent on veins, glabrescent; lateral veins 3–5 on each side of midvein, raised abaxially. Flowers unisexual (plants dioecious), 4-merous, solitary, in pairs or 3–4 clustered in axils of lower leaves or at apex of abbreviated branchlets. Pedicels 2–6 mm. Male flowers: calyx funnel-shaped or campanulate, ca. 6 mm, 4-lobed to middle; lobes, ovate-lanceolate, sparsely puberulent on abaxial surface; petals cucullate or spatulate, ca. 2 mm, embracing the stamens. Female flowers: calyx campanulate, ca. 5 mm, 4-lobed to middle; lobes lanceolate, sparsely puberulent abaxially; ovary ovoid; style 3-parted to middle. Drupe obovate, 5–7 × 4–5 mm, black when mature.

Locality: Mount Parker, Tai Tam, Tai Mo Shan, Lantau Island, Beaufort Island. *Y. S. Lau 596*; *Y. W. Lam 210*; *S. P. Lau 173*.

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Thickets on hillslopes. Flowering: Apr.–May; fruiting: Jul.–Nov.

#### 2. *Rhamnus crenata* Siebold & Zucc. 長葉凍綠 (Photo 387)

Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4(2): 146. 1843; FKH 64. 1912; FRPS 48(1): 23, pl. 6: 1–2. 1982; FTW ed. 2, 3: 688. 1993; FGD 4: 254, fig. 150. 2000.

Deciduous spineless shrub, usually 1–2 m tall. Young shoots densely rusty pubescent. Stipules subulate, deciduous. Leaves papery, alternate; petioles 4–10 mm, rusty pubescent; leaf blade obovate, obovate-elliptic or oblong, 4–8 × 2–4 cm, base cuneate, apex acuminate or abruptly acuminate, margin crenate-serrulate, adaxial surface puberulent on veins, glabrescent, abaxial surface sparsely pubescent, especially on veins; lateral veins 7–12 on each side of midvein, raised abaxially. Flowers bisexual, 5-merous, in axillary



Figure 199. *Rhamnus brachypoda* C. Y. Wu ex Y. L. Chen  
 1. fruiting branch; 2. fruiting branch; 3. seed. (drawn by H. P. Yu)



cymes; peduncle 4–8 mm, densely puberulent; pedicels ca. 3 mm, puberulent. Calyx broadly campanulate, 2–3 mm, 5-lobed to middle; lobes ovate-triangular, sparsely puberulent abaxially. Petals suborbicular, ca. 0.5 mm, apex 2-lobed. Stamens equaling the petals. Ovary globose, 3-locular; style clavate, undivided. Drupe globose or obovate-globose, 5–6 × 0.6–0.7 mm, from red turning black when mature.

Locality: Mount Davis, Tai Mo Shan, Wu Kau Tang, Lai Chi Wo, Luk Keng, Lantau Island. *L. T. Lo* 52; *Y. S. Lau* 861; *K. L. Yip* 4406.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Indochina.

Ecology: Thickets by streams and roadsides. Flowering: Apr.–May; fruiting: Aug.–Oct.

Uses: Medicinal (folklore), material (dye).

### 3. *Rhamnus napalensis* (Wall.) Laws. 尼泊尔鼠李(半樹藤)

in Hook. f., *Fl. Brit. Ind.* 1: 640. 1875, “*nipalensis*”; FKH 63. 1912; FRPS 48(1): 46, pl. 11: 1–4. 1982; FGD 4: 253. 2000.

*Ceanothus napalensis* Wall., *Fl. Ind.* 2: 375. 1824.

Shrub, erect or half-climbing, 2–3 m tall, spineless. Young shoots puberulent, glabrescent. Leaves thickly leathery, turning black when dry, large ones and small ones alternately arranged; petioles 1–2 cm, sparsely puberulent or glabrescent. Large leaves oblong, 5–20 × 3–9 cm, base cuneate, apex mucronate or rounded, margin revolute, sparsely serrate, adaxial surface glabrous, abaxial surface pubescent at axils of veins; lateral veins 5–9 on each side of midvein, raised on both surfaces. Flowers unisexual (plants dioecious), 5-merous, in cymose clusters, racemously arranged or branched in panicles to 9 cm. Rachis tawny puberulent. Male flowers: calyx ca. 3 mm, 5-lobed to middle; lobes triangular, sparsely puberulent abaxially; petals ovate, adnate to the top of calyx-tube; stamens equaling to petals. Female flowers: calyx ca. 2 mm; petals caducous; staminodes 5; ovary globose, 3-locular; style 3-parted. Drupe obovate-globose, 5.5–6.5 × 4–5 mm, red when mature.

Locality: Lantau Peak. *H. C. Tang* 2181.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Hunan, Hubei, Jiangxi, Zhejiang, Fujian; India, Nepal, Bangladesh, Myanmar.

Ecology: Thickets and margins of forests. Flowering: Jul.–Aug.; fruiting: Dec.–Feb. of the following year.

## 240. VITACEAE 葡萄科

XIA Nian-he 夏念和 • YE Hua-gu 葉華谷

Woody or herbaceous vines, usually with tendrils opposite to leaves, rarely small succulent treelets or herbs, hermaphroditic or polygamo-monoecious to polygamo-dioecious. Stems terete or flattened, ridged or striate; nodes often swollen and articulated. Leaves simple or compound, alternate, stipulate or exstipulate. Inflorescences often leaf-opposite, pseudo-terminal, or axillary, in panicles, thyrses, corymbs, rarely in racemes or spikes. Flowers small, actinomorphic, 4–5(–7)-merous. Calyx small, ± reduced to lobes or a collar. Petals valvate, free or basally connate, or distally connate forming a calyptre. Stamens 4–5(–7), opposite to petals; anthers introrse, dehiscing longitudinally. Disk ring-shaped, cupular, or gland-shaped. Ovary superior, 2-locular; ovules 2 per locule, placentation axile; style simple; stigma discoid or capitate, rarely 4-lobed. Fruit a berry, 1–4-seeded. Seeds endotestal with a deep groove either side of raphe; embryo straight, small; endosperm oily, proteinaceous, copious, ruminant.

About 14 genera and 900 species distributed worldwide, but mostly in the tropical or subtropical regions; eight genera and 146 species in China; six genera and 16 species in Hong Kong.

- 1a. Petals united at apex and shed as a cap ..... 1. *Vitis*  
 1b. Petals free.  
 2a. Inflorescence leaf-opposite or terminal.  
 3a. Flowers usually 4-merous ..... 2. *Cissus*  
 3b. Flowers usually 5-merous.  
 4a. Tendril 4–12-branched, tips usually with suckers; disk inconspicuous ..... 3. *Parthenocissus*  
 4b. Tendril usually 2(or 3)-branched or unbranched, tips without suckers; disk well-developed ..... 4. *Ampelopsis*  
 2b. Inflorescence axillary or sometimes on nodes of old stems.  
 5a. Style conspicuous, stigma undivided, slightly expanded ..... 5. *Cayratia*  
 5b. Style inconspicuous or short; stigma usually 4-divided, rarely irregularly divided ..... 6. *Tetrastigma*

### 1. *Vitis* L. 葡萄屬

Woody vines, usually polygamo-dioecious, rarely hermaphroditic. Tendrils leaf-opposed, usually simple or bifurcate. Leaves usually simple, often lobed, sometimes palmately or pinnately compound; stipules usually caducous. Inflorescence a thyrs, leaf-opposite. Flowers 5-merous, small. Calyx saucer-shaped; sepals minute. Petals united at apex and shed as a cap (calyptre) at anthesis. Stamens opposite to petals, undeveloped and abortive in female flowers. Disk conspicuous, 5-lobed or ring-shaped, hypogynous. Ovary connate to disk at base; style short, slender; stigma slightly expanded. Berry globose, 2–4-seeded.

About 60 species mainly distributed in temperate regions extending to the subtropical regions; 37 species in China; seven species in Hong Kong.

- 1a. Leaves tomentose abaxially.  
 2a. Leaves 3–5-lobed.  
 3a. Leaves 3-lobed, margin with 5–9 teeth on each side..... 1. *V. sinocinerea*  
 3b. Leaves 3–5-lobed, margin with 9–16 coarsely incised teeth on each side ..... 2. *V. bryoniifolia*  
 2b. Leaves unlobed, with 19–40 sharp teeth on each side..... 3. *V. retordii*
- 1a. Leaves glabrous or pubescent abaxially.  
 4a. Leaves conspicuously 3–5-lobed or cleft ..... 4. *V. vinifera*  
 4b. Leaves unlobed.  
 5a. Tendrils unbranched ..... 5. *V. tsoii*  
 5b. Tendrils bifurcate.  
 6a. Leaf blade cordate-oval or broadly ovate, margin glandular-denticulate, glabrous on both surfaces .....  
 ..... 6. *V. balanseana*  
 6b. Leaf blade ovate, triangular-ovate, oval, or ovate-elliptic, margin with 5–12 slightly irregular teeth on each side,  
 glabrous adaxially, sparsely covered with arachnoid tomentum when young abaxially, glabrescent..... 7. *V. flexuosa*

### 1. *Vitis sinocinerea* W. T. Wang 小葉葡萄

Acta Phytotax. Sin. 17(3): 75. 1979; FFJ 3: 368, fig. 257. 1987; FRPS 48(2): 175. 1998.

*Vitis thunbergii* Siebold & Zucc. var. *cinerea* Gagnep., Pl. Wils. 1: 105. 1911.

*Vitis thunbergii* Siebold & Zucc. var. *taiwaniana* Lu, FTW 3: 679, pl. 773. 1977.

Branchlets sparsely pale brown or greyish white pubescent and cobwebby-tomentose, glabrescent; tendrils unbranched or bifurcate. Leaves simple, 3-lobed or inconspicuously divided; petioles 1–4 cm, densely pubescent; leaf blade thinly papery, ovate, 2.5–8 × 2.2–6 cm, base subcordate or subtruncate, apex acute, margin 5–9-toothed on each side, densely pubescent or glabrescent adaxially, densely cobwebby-tomentose abaxially. Panicles small, 2.5–7.5 cm, axes and branches rusty cobwebby-tomentose; peduncle 1.5–2 cm, pubescent. Flowers small, pale green, glabrous. Pedicels 1.5–2 mm, subglabrous. Calyx cupular, subentire. Filaments filiform, ca. 1 mm; anthers yellow, ellipsoidal, ca. 0.5 mm. Berry purple-black at maturity, 6–10 mm in diam.

Locality: Ping Chau. *Y. W. Lam* 276.

Distribution: Taiwan, Fujian, Zhejiang, Jiangsu, Jiangxi, Hunan, Hubei, Yunnan.

Ecology: Forests and thickets. Flowering: Apr.–Jun.; fruiting: Jul.–Oct.

### 2. *Vitis bryoniifolia* Bunge 嬰奧(野葡萄)

(Photo 388)

Enum. Pl. China Bor. 11. 1831; FRPS 48(2): 175. 1998, "*bryoniaefolia*".

*Vitis thunbergii* auct. non Siebold & Zucc.: FTW 3: 679.

1977.

Branchlets terete, striate, sparsely cobwebby-tomentose or pubescent when young, glabrescent; tendrils bifurcate. Leaves simple, 3–5-lobed, rarely not lobed; petioles 0.5–4.5 cm, densely pubescent; leaf blade thinly papery, oblong-ovate, 2.5–8 × 2–5 cm, base cordate to deeply cordate, apex acute to acuminate, margin incised-dentate, with 9–16 coarse teeth on each side, densely pubescent or glabrescent adaxially, densely cobwebby-tomentose and pubescent abaxially. Panicles 4–9 cm, initially rusty cobwebby-tomentose; peduncle 0.5–2.5 cm. Flowers small, pale green, glabrous. Pedicels 1.5–3 mm, glabrous. Calyx cupular, subentire. Filaments filiform, 1.5–1.8 mm; anthers yellow, ellipsoidal, ca. 0.5 mm. Berry purple at maturity, 5–8 mm in diam.

Locality: Shek O, Tap Mun. *F. W. Xing* 9075; *HK sheet* 40173.

Distribution: Guangdong, Guangxi, Yunnan, Sichuan, Shaanxi, Shanxi, Hebei, Hubei, Hunan, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Forests and thickets. Flowering: Apr.–Aug.; fruiting: Jun.–Oct.

### 3. *Vitis retordii* Rom. du Caill. ex Planch.

綿毛葡萄

(Fig. 200; Photo 389)

Monogr. Phan. 5: 613. 1887; FHN 3: 15. 1974; FRPS 48(2): 171. 1998.

*Vitis lanata* auct. non Roxb.: FHK 53. 1861; FKH 66. 1912.

Branchlets densely brown villous when young, later glabrescent; tendrils bifurcate. Leaves simple, unlobed; petioles 1.5–9 cm,

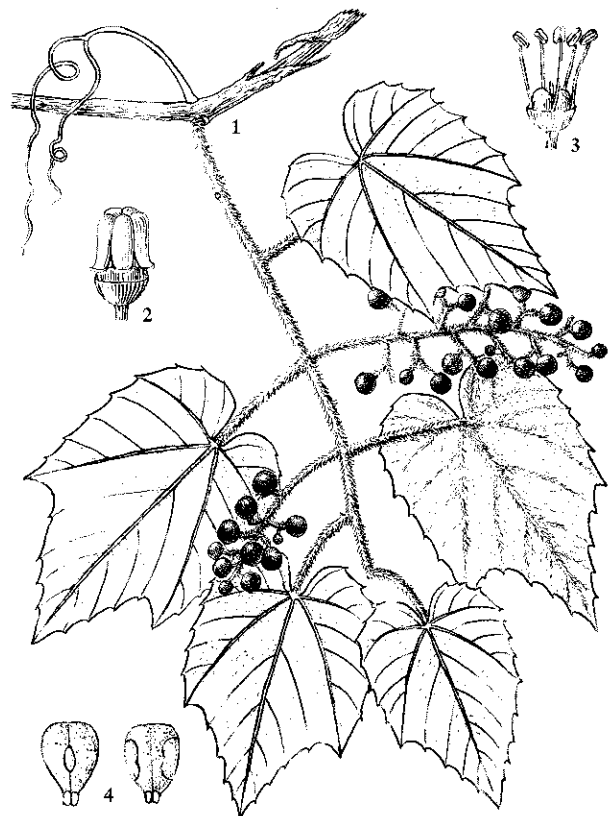


Figure 200. *Vitis retordii* Rom. du Caill. ex Planch.

1. fruiting branch; 2. flower; 3. flower with petals removed;  
 4. seeds. (drawn by H. P. Yu)

densely brown cobwebby-tomentose; leaf blade ovate or ovate-elliptic, 6–15 × 4–11 cm, base cordate, notch with an acute angle, the two sides rarely overlapping, margin 19–43-toothed on each side, teeth sharp, green and densely pubescent adaxially, tomentose abaxially. Panicle loose, 6–10 cm; peduncle 1.2–2.5 cm, usually brown tomentose. Pedicels 1–1.5 mm, glabrous. Calyx cupular, ca. 1.5 mm, glabrous, subtentire. Filaments filiform, 1–1.2 mm; anthers yellow, ellipsoidal, ca. 0.5 mm. Ovary ovoid. Berry globose, ca. 8 mm in diam.

Locality: Hong Kong Island, Tai Mo Shan, Ng Tung Chai, Ho Pui, Chek Keng, Tap Mun, Lantau Island. *L. T. Lo 467*; *Y. W. Lam 97*, 253.

Distribution: Hainan, Guangdong, Guangxi, Guizhou; Vietnam.

Ecology: Thin forests and thickets. Flowering: May, fruiting: Jun.–Jul.

#### 4. *Vitis vinifera* L. 葡萄

(Photo 390)

Sp. Pl. 1: 202. 1753; FGZ 421. 1956; FRPS 48(2): 166. 1998.

Branchlets glabrous or sparsely pilose; tendrils bifurcate. Leaves simple, conspicuously 3–5-lobed or cleft; leaf blade ovate, 7–18 × 6–16 cm, base deeply cordate, notch rounded, the two sides usually overlapping to nearly so, apex of central lobes acute, margin 22–27-toothed on each side, teeth large, irregular, and sharp, glabrous or sparsely pilose, basal veins 5, lateral veins 4 or 5 pairs, veinlets inconspicuously raised. Panicle sparse or dense, 10–20 cm; peduncle 2–4 cm, glabrous or sparsely cobwebby-tomentose. Pedicels 1.5–2.5 mm, glabrous. Calyx glabrous, undulate. Filaments filiform, 0.6–1 mm; anthers yellow, ovoid, 0.4–0.8 mm. Ovary ovoid. Berry globose or ellipsoidal, 1.5–2 cm in diam.

Locality: Cultivated. *Y. S. Lau 1542*.

Distribution: Widely cultivated in temperate and subtropical regions; native to W Asia.

Ecology: Flowering: Apr.–May; fruiting: Aug.–Sep.

Uses: Edible (fruit).

#### 5. *Vitis tsoii* Merr. 狭葉葡萄

(Photo 391)

Lingnan Sci. J. 11: 101. 1932; FFJ 3: 370. 1987; FRPS 48(2): 163, pl. 27: 10–12. 1998.

Branchlets densely pubescent; tendrils unbranched. Leaves simple, unlobed; petioles 1–2 cm, densely pubescent; leaf blade ovate-lanceolate or triangular-ovate, 3.5–9 × 1.5–4 cm, base subtruncate or rounded, apex acute, margin 10–15-toothed on each side, teeth sharp and fine, sparsely pubescent on veins adaxially, pubescent on veins abaxially, basal veins 5, lateral veins 5 or 6 pairs. Panicle 2–6 cm, narrow. Pedicels 1.5–2.5 mm, subglabrous. Calyx subtentire. Filaments filiform, ca. 0.8 mm; anthers yellow, ellipsoidal, ca. 0.5 mm. Ovary conical; style short. Berry purple-black at maturity, globose, 5–8 mm in diam.

Locality: Chek Keng. *Y. W. Lam 1212*.

Distribution: Fujian, Guangdong, Guangxi.

Ecology: Forests and thickets. Flowering: Apr.–May; fruiting: Jun.–Sep.

#### 6. *Vitis balanseana* Planch. 小果葡萄

Monogr. Phan. 5: 612. 1887; FGZ 422, fig. 223. 1956; FHN 3: 15. 1974, *excl.* fig. 538; FFJ 3: 367, fig. 256. 1987; FRPS 48(2): 144. 1998.

*Vitis flexuosa* Thunb. var. *gaudichaudii* Planch., Monogr. Phan. 5: 348. 1887.

Branchlets and petioles sparsely cobwebby-tomentose when young, later glabrescent; tendrils bifurcate. Leaves simple, unlobed; petioles 2–7 cm; leaf blade membranous, cordate-oval or broadly ovate, 3.5–14 × 3–10 cm, base cordate, notch obtuse, apex acute or mucronulate, margin glandular-denticulate, glabrous on both surfaces. Panicle leaf-opposed, 4–13 cm; axes slender, sparsely cobwebby-tomentose. Pedicels 1–1.5 mm, glabrous. Calyx cupular, entire, glabrous. Petals galeate. Berry purple-black at maturity, globose, 4–8 mm in diam.

Locality: Kam Tin, Tai O, Yi O, Peng Chau. *Y. W. Lam 1003, 1125, 1245*.

Distribution: Hainan, Guangdong, Guangxi, Fujian; Vietnam, Thailand.

Ecology: Shrublands in valleys. Flowering: Feb.–Aug.; fruiting: Jun.–Nov.

#### 7. *Vitis flexuosa* Thunb. 葛藟葡萄

Trans. Linn. Soc. Lond. 2: 103. 1794; FKH 65. 1912; FHN 3: 16. 1974; FTW 3: 677. 1977; FRPS 48(2): 163. 1998.

*Vitis flexuosa* Thunb. f. *parvifolia* (Roxb.) Planch., Monogr. Phan. 5: 347. 1887; FTW 3: 678. 1977.

*Vitis flexuosa* Thunb. var. *parvifolia* (Roxb.) Gagnep., Sarg. Pl. Wils. 1: 103. 1911; FFJ 3: 371. 1987.

*Vitis parvifolia* Roxb., Fl. Ind. (ed. 2.) 1: 662. 1832; FHK 53. 1861.

Branchlets and abaxial surface of leaves sparsely cobwebby-tomentose when young, later glabrescent; tendrils bifurcate. Leaves simple, unlobed; petioles 1.5–7 cm, sparsely cobwebby-tomentose or subglabrous; leaf blade ovate, triangular-ovate, oval, or ovate-elliptic, 2.5–12 × 2.3–10 cm, base shallowly cordate or subtruncate, often asymmetrical, apex acute or acuminate, margin with 5–12 slightly irregular teeth on each side, glabrous adaxially. Panicle loose, 4–12 cm; peduncle 2–5 cm, sparsely cobwebby-tomentose or nearly glabrous. Pedicels 1.1–2.5 mm, glabrous. Calyx glabrous, undulately lobed. Filaments filiform, 0.7–1.3 mm; anthers yellow, ovoid, 0.4–0.6 mm. Ovary ovoid. Berry globose, 8–10 mm in diam.

Locality: Wan Chai, Stubbs Rd., Kowloon Peak, Chek Keng. *Y. S. Lau 563, 586*; *Y. W. Lam 1418*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Gansu, Hubei, Hunan, Jiangxi, Anhui, Shandong,

Jiangsu, Zhejiang, Fujian; India, Japan, Laos, Philippines, Thailand, Vietnam.

Ecology: Forests and thickets. Flowering: Mar.–May; fruiting: Jul.–Nov.

## 2. *Cissus* L. 白粉藤屬

Vines, hermaphroditic or polygamo-monoecious. Branches and leaves ± fleshy, pith white. Tendrils unbranched or bifurcate, sometimes racemosely branched. Leaves simple or palmately compound, stipulate. Inflorescence a compound dichasium or an umbel, leaf-opposed. Flowers small, 4-merous. Calyx cupular. Petals spreading at anthesis. Stamens 4. Disk well developed, margin undulate or slightly 4-lobed, connate to the base of ovary. Style 1; stigma undivided or 2-divided. Berry obovoid or ellipsoidal, 1- or 2-seeded.

About 350 species widely distributed in tropical and subtropical regions of the world; 15 species in China; two species in Hong Kong.

- 1a. Branchlets with 4 wings ..... 1. *C. pteroclada*  
 1b. Branchlets not winged ..... 2. *C. repens*

### 1. *Cissus pteroclada* Hayata 翼莖白粉藤

Icon. Pl. Formosan. 2: 107. 1912; FTW 3: 671. 1977; FRPS 48(2): 62. 1998.

*Vitis pteroclada* (Hayata) Hayata, Gen. Ind. Fl. Form. 15. 1916.

*Cissus hastata* auct. non (Miq.) Planch.: FHN 3: 17. 1974; FFJ 3: 372. 1987.

Herbaceous vine. Branchlets with 4 wings and longitudinal ridges, glabrous; tendrils bifurcate. Leaves simple; petiole 2–7 cm, glabrous; leaf blade oval or narrowly oval, 5–12 × 4–9 cm, glabrous, base cordate or subtruncate, notch obtuse and angular, apex cuspidate or acute, margin with 6–9 fine teeth on each side. Inflorescence a thyse, arranged in umbelliform, terminal or leaf-opposed; peduncle 1–2 cm, pubescent. Pedicel 2–4 mm, glabrous. Calyx entire. Petals 4. Anthers oval. Lower part of ovary adnate to disk; style conical, short; stigma slightly expanded. Berry 1–1.5 × 0.8–1.4 cm, 1–2-seeded.

Locality: Tsz Mun Tin, Shui Long Wo. *Y. W. Lam* 159; *S. C. Ng* 2521.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; Indonesia, Malaysia, Myanmar, Thailand, Vietnam.

Ecology: Thin forests and thickets. Flowering: Jun.–Aug.; fruiting: Aug.–Dec.

### 2. *Cissus repens* Lam. 白粉藤

(Fig. 201)

Encycl. 1: 31. 1783; FGZ 423. 1956; FHN 3: 18. 1974; FTW 3: 671. 1977; FFJ 3: 373. 1988; FRPS 48(2): 49. 1998.

*Cissus cordata* Roxb., Fl. Ind. (ed. 2) 1: 407. 1832.

*Vitis cordata* [Wall., Cat. n. 6001] Voigt, Hort. Suburb. Calc. 28. 1845; FHK 54. 1861.

*Vitis repens* (Lam.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 125. 1834; FKH 65. 1912.

Herbaceous vine. Branchlets terete, with longitudinal ridges, usually glaucous, glabrous; tendrils bifurcate. Leaves simple; petioles 2.5–7 cm, glabrous; leaf blade cordate-oval, 5–13 × 4–9 cm, glabrous, base cordate, apex acute or acuminate, margin with 9–12 sharp teeth on each side. Inflorescence a thyse, arranged in umbelliform, terminal or leaf-opposed; peduncle 1–3 cm, glabrous. Pedicels 2–4 mm, nearly glabrous. Calyx entire or undulate. Petals triangular-ovate, ca. 3 mm, glabrous. Anthers ovoid-elliptic. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry 0.8–1.2 cm × 4–8 mm, 1-seeded.

Locality: Repulse Bay, Sai Kung, Tai Wai, Fanling, Sheung Shui, Tung Chung. *L. T. Lo* 143, 514; *HK sheet* 39785.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Taiwan; Vietnam, Philippines, Malaysia, Australia.

Ecology: Thin forests and thickets. Flowering: Jul.–Oct.; fruiting: Nov.–May of the following year.

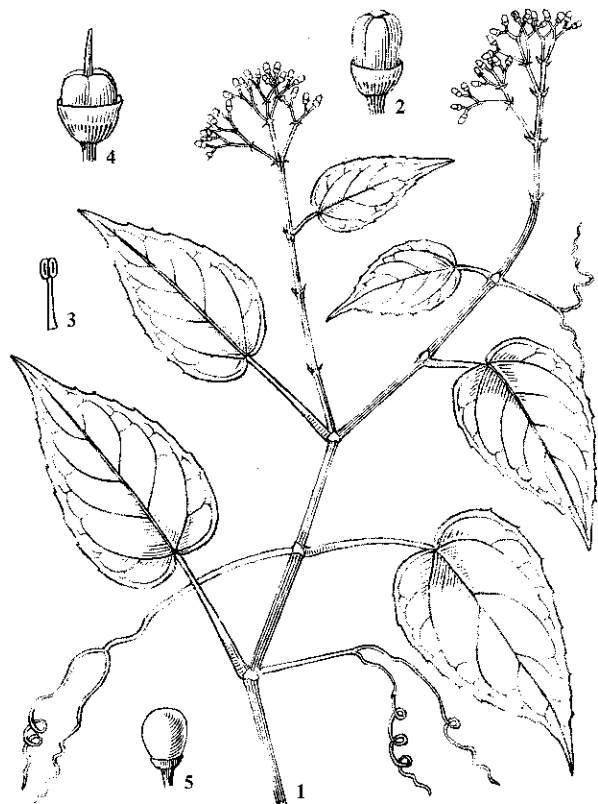


Figure 201. *Cissus repens* Lam.

1. flowering branch; 2. flower bud; 3. stamen; 4. pistil; 5. berry. (drawn by H. P. Yu)

## 3. *Parthenocissus* Planch. 地錦屬

Woody vines, hermaphroditic. Bark lenticellate, pith white. Tendrils racemosely 4–12-branched, apex expanded when young, later turning into suckers. Leaves simple, or palmately compound, long petiolate. Inflorescence in panicles or corymbose polychasium, leaf-opposed or pseudoterminal. Flowers 5-merous. Calyx small, cupular. Petals free. Stamens 5, opposite to petals. Disk inconspicuous.

Style short. Berry small, 1–4-seeded.

About 15 species distributed in Asia and N America; nine species in China; one species in Hong Kong.

According to FKH (65. 1912), *Vitis himalayana* Brandis [= *Parthenocissus semicordata* (Wall.) Planch.] was also cultivated previously.

**1. *Parthenocissus dalzielii* Gagnep.**

爬牆虎 (異葉爬山虎)

(Fig. 202; Photo 392)

Notul. Syst. (Paris) 2: 11. 1911; FRPS 48(2): 24. 1998.

*Parthenocissus heterophylla* auct. non (Blume) Merr.: FHN 3: 20. 1974; FFJ 3: 375, fig. 263. 1988.

Branchlets terete, glabrous throughout; tendrils slender, short and branched, apex enlarged and turning into sucker. Leaves dimorphic, thickly papery, deep green adaxially, pale green or glaucous abaxially; simple ones on long branches; petioles 5–20 cm; simple leaves oval, 2.5–7 × 2–5 cm, base cordate, apex acute or acuminate, margin sparsely toothed; trifoliolate on short branches; central leaflet long ovate, broadly lanceolate-ovate or obovate-oblong, 6–21 × 2.5–8 cm, base cuneate, apex acuminate, margin sparsely toothed; petiolules short, 0.3–1 cm; lateral leaflets sessile, ovate-elliptic, 5.5–19 × 2.5–7.5 cm, base conspicuously oblique, apex acuminate, margin irregularly sparsely toothed or subentire. Polychasium pseudoterminal or leaf-opposed, shorter than petiole; peduncles absent to 3 cm. Flowers small, pale green. Pedicels 1–2 mm. Calyx shallowly cupular, undulate or subentire. Petals obovate-elliptic, 1.5–2.7 mm. Anthers yellow, ellipsoidal, 0.7–1.5 mm. Stigma inconspicuously enlarged. Berry purplish black, 0.6–1 cm in diam.

Locality: Cultivated. *Y. S. Lau* 1834, 2221; *HK sheet* 34320.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan Hunan, Hubei, Jiangxi, Anhui, Henan, Zhejiang, Fujian, Taiwan.

Ecology: Climbing on walls. Flowering: May–Jul.; fruiting: Jul.–Nov.

Uses: Ornamental.



Figure 202. *Parthenocissus dalzielii* Gagnep.

1. flowering branch; 2. long branch with simple leaf; 3. tendril; 4. flower; 5. berry. (drawn by H. P. Yu)

**4. *Ampelopsis* Michx. 蛇葡萄屬**

Woody vines, hermaphroditic or polygamo-monoecious. Tendrils 2–3-branched, apex not enlarged nor forming suckers. Leaves simple, 1–2-pinnately or palmately compound, long petiolate. Inflorescence a dichasial cyme, leaf-opposed or pseudoterminal. Flowers small, 5-merous. Calyx saucer-shaped. Petals 5, free. Stamens 5. Disk well developed. Style conspicuous; stigma inconspicuously expanded. Fruit a berry, 1–4-seeded.

About 30 species distributed in Asia, N and C America; 17 species in China; two species in Hong Kong.

- 1a. Leaves 1–2-pinnately compound; leaflets glaucous abaxially ..... 1. *A. cantoniensis*  
 1b. Leaves simple, conspicuously 5-angled, pale green abaxially ..... 2. *A. heterophylla* var. *kulingensis*

**1. *Ampelopsis cantoniensis* (Hook. & Arn.) Planch. 廣東蛇葡萄**

(Fig. 203; Photo 393)

Monogr. Phan. 5: 460. 1887; FGZ 422. 1956; FRPS 48(2): 49. 1998.

*Cissus cantoniensis* Hook. & Arn., Bot. Beechey Voy. 175. 1833, p. p.

*Ampelopsis cantoniensis* K. Koch var. *lecoides* (Maxim.) F. Y. Lu, FTW 3: 667. 1977.

*Ampelopsis lecoides* (Maxim.) Planch., Monogr. Phan. 5: 462. 1887.

*Vitis cantoniensis* auct. non Seem.: FHK 54. 1861; FKH 65. 1912.

Branchlets terete, with longitudinal ridges, ± pubescent when young; tendrils bifurcate, to 12 cm. Leaves bipinnate, or pinnate on upper branches, basal pinnae of bipinnate leaves usually trifoliolate; petiole 2–8 cm, central petiolule 1–3 cm, lateral petiolules 0–2.5 cm, sparsely pubescent when young, glabrescent; leaflets ovate, ovate-elliptic, or oblong, 3–11 × 1.5–6 cm, base truncate, apex acute, acuminate, or cuspidate, abaxially glaucous, sparsely pubescent on veins, glabrescent. Inflorescence corymbose, terminal or leaf-opposed; rachis pubescent; peduncle 2–4 cm, ± sparsely pubescent. Pedicels 1–3 mm, nearly glabrous. Calyx glabrous. Petals ovate-elliptic, 1.7–2.7 mm, glabrous. Anthers ovoid-elliptic. Ovary at the lower part adnate to disk. Berry globose, 6–8 mm in diam., 2–4-seeded.

Locality: Common in Hong Kong. *Y. S. Lau* 1286; *HK sheet* 39082, 40120.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; India, Laos, Indonesia.

Ecology: Forests of valleys and thickets. Flowering: Apr. – Jul.; fruiting: Aug. – Nov.

Notes: According to FRPS, the type specimen was collected from Hong Kong. But in the protologue, the authors didn't mention any specimen from Hong Kong.

2. *Ampelopsis heterophylla* (Thunb.) Siebold & Zucc. var. *kulingensis* (Rehd.) C. L. Li 牯嶺蛇葡萄 (Photo 394)  
Chin. J. Appl. Environ. Biol. 2(1): 48. 1996; FRPS 48(2): 38. 1998.

*Ampelopsis brevipedunculata* (Maxim.) Trautv. var. *kulingensis* Rehd., Gent. Herb. 1: 36. 1920; FFF 4: 379. 1987.

*Vitis heterophylla* auct. non Thunb.: Benth., FHK 53. 1861.

Plant pubescent to nearly glabrous. Branchlets terete, with longitudinal ridges; tendrils 2- or 3-branched. Leaves simple; petiole 2–10 cm; leaf blade papery, conspicuously 5-angled, 5–16 × 4–16 cm, base cordate, rarely truncate, notches nearly obtuse, rarely rounded, 3-lobed at upper part; lobes caudate at apex, margin with acute teeth, abaxially pale green. Peduncle 2.5–3 cm. Pedicels 1–3 mm. Petals ovate-elliptic, 0.8–1.8 mm. Anthers narrowly elliptic. Ovary at the lower part adnate to disk; style slightly enlarged at base. Berry 5–8 mm in diam., reddish blue, 2–4-seeded.

Locality: Common in Hong Kong. Y. W. Lam 947, 1008, 1084.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang.

Ecology: Forests and thickets. Flowering: May–Jul.; fruiting: Aug.–Sep.

Notes: The species was reported as *Ampelopsis brevipedunculata* Koehne previously (Check List HK Plants 51. 1993).

### 5. *Cayratia* Juss., *nom. cons.* 烏藪莓屬

Woody or herbaceous vines, hermaphroditic or polygamo-monoecious. Tendrils usually 2- or 3-furcate, rarely racemously branched. Leaves palmately compound, 3–5(–9)-foliolate; stipules 2, small. Inflorescence a compound dichasium or corymbose polychasium, axillary. Flowers 4-merous. Calyx cupular. Petals 4, spreading at anthesis. Stamens 4, opposite to petals. Disk well developed, membranous, 4-lobed or undulately lobed, connate to ovary. Style short; stigma not lobed. Berry globose or subglobose, 1–4-seeded.

About 60 species distributed in Asia, Oceania and Africa; 17 species in China; two species in Hong Kong.

- 1a. Plants glabrous except petals; petals ovate-elliptic, sparsely papillose-hairy, corniculate at apex..... 1. *C. corniculata*  
1b. Young branches, leaves and pedicels ± hairy; petals triangular-ovate, not corniculate at apex..... 2. *C. japonica*

1. *Cayratia corniculata* (Benth.) Gagnep.

角花烏藪莓 (Fig. 204; Photo 395)

Notul. Syst. (Paris) 1: 347. 1911; FHN 3: 27. 1947; FFJ 3: 387, fig. 273. 1987; FRPS 48(2): 84. 1998.

*Vitis corniculata* Benth., FHK 54. 1861; FKH 65. 1912.

*Vitis angustifolia* Wall. ex Benth., FHK 54. 1861.

*Columella corniculata* (Benth.) Merr., Philip. J. Sci. Bot. 11: 133. 1916.

Herbaceous vine, glabrous except petals. Branchlets terete, with longitudinal ridges; tendrils bifurcate. Leaves 5-foliolate,

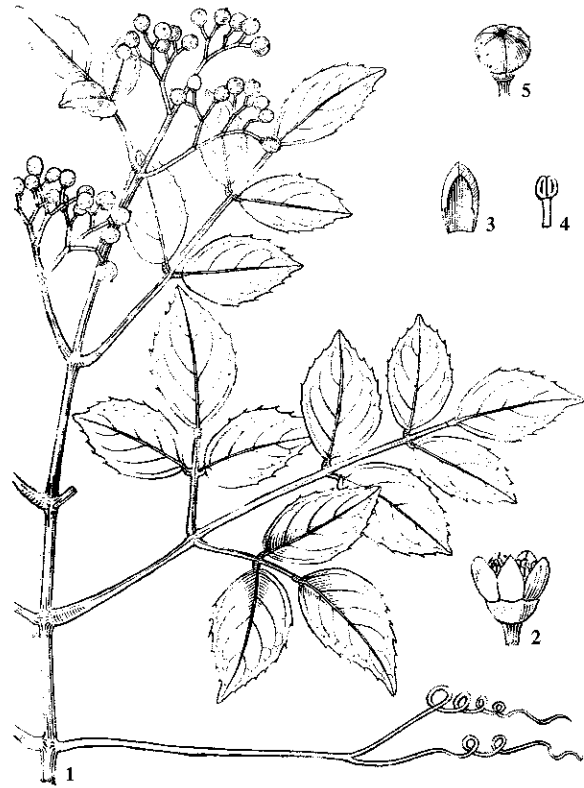


Figure 203. *Ampelopsis cantoniensis* (Hook. & Arn.) Planch.  
1. fruiting branch; 2. flower; 3. petal; 4. stamen; 5. fruit. (drawn by H. P. Yu)

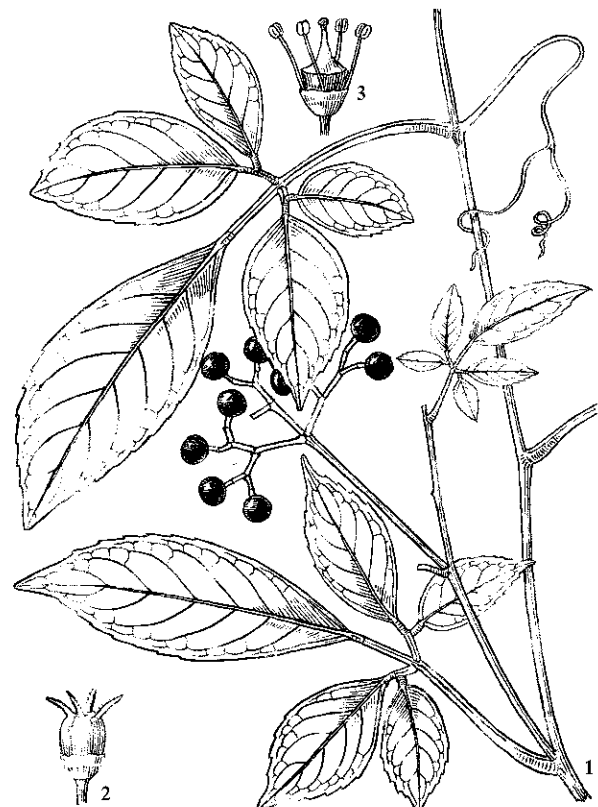


Figure 204. *Cayratia corniculata* (Benth.) Gagnep.  
1. fruiting branch; 2. flower bud; 3. flower with petals removed. (drawn by H. P. Yu)

membranous; petiole 2–4.5 cm. Central leaflet broadly lanceolate or narrowly elliptic, 4–9 × 1.5–3 cm, base cuneate, apex acuminate, margin with 5 or 6 teeth on each side; petiolules to 3 cm. Lateral leaflets smaller, ovate-elliptic, 2–5 × 1.5–2.5 cm, base usually oblique, cuneate or rounded, apex acute or obtuse, margin sparsely denticulate; petiolules 0.4–1.5 cm. Peduncle 3–3.5 cm. Pedicels 1.5–2.5 mm. Calyx shallowly cupular, margin membranous, apex truncate. Petals ovate-elliptic, 1.5–2.5 mm, sparsely papillose-hairy, corniculate at apex. Anthers ovoid. Berry globose, 8–10 mm in diam., black when matured, 2–4-seeded.

Locality: Common in Hong Kong. *Y. S. Lau 330, 2245; HK sheet 40004.*

Distribution: Hainan, Guangdong, Jiangxi, Fujian, Taiwan; Malaysia, Philippines, Vietnam.

Ecology: Thin forests and thickets. Flowering: Apr.–May; fruiting: Jul.–Sep.

Notes: The syntype specimens were collected from Victoria Peak, Hong Kong Island.

## 2. *Cayratia japonica* (Thunb. ex Murray) Gagnep. 烏薔莓

Notul. Syst. (Paris) 1: 349. 1911; FGZ 424. 1956; FHN 3: 28. 1974; FFJ 3: 387. 1987; FRPS 48(2): 78. 1998.

*Cayratia trifolia* (L.) Domin var. *quinquefolia* W. T. Wang, Acta Phytotax. Sin. 17(3): 8. 1979.

*Vitis japonica* Thunb. ex Murray, Syst. Veg., ed. 14: 244. 1784; FKH 65. 1912.

Herbaceous vine, stems, young leaves and petioles reddish. Branchlets terete, with longitudinal ridges, pubescent when young, glabrescent; tendrils 2–3-furcate. Leaves 5-foliolate, or sometimes trifoliolate, membranous; petioles 1.5–10 cm; central leaflet elliptic, oblong to narrowly ovate, 2.5–9(–14.5) × 1.5–4.5 cm, base cuneate, apex acute or acuminate, margin sparsely serrate, pubescent along veins on both surfaces or subglabrous, petiolule 0.5–2.5 cm; lateral leaflets smaller. Peduncle 1–13 cm. Pedicels 1–2 mm. Calyx cupular, papillose or nearly glabrous, margin entire or undulate. Petals triangular-ovate, 1–1.5 mm, not corniculate at apex. Anthers ovoid. Berry globose, ca. 1 cm in diam., 2–4-seeded.

Locality: Tsiu Hang, Tai Po, Shan Liu. *Y. W. Lam 325, 903; HK sheet 36084.*

Distribution: E, C, S & SW China; India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam, Australia.

Ecology: Forests or thickets. Flowering: Mar.–Aug.; fruiting: Aug.–Nov.

## 6. *Tetrastigma* (Miq.) Planch. 崖爬藤屬

Climbers, woody, rarely herbaceous, usually polygamo-dioecious. Stems and branches terete or flattened. Tendrils unbranched or bifurcate, sometimes palmately branched. Leaves usually palmately compound, 3–7-foliolate, rarely simple. Inflorescence a polychasium, an umbel, or a compound cyme, axillary. Flowers 4-merous. Calyx saucer-shaped, apex truncate or 4-dentate. Petals spreading, free, usually hooded or galeate, sometimes corniculate. Stamens short. Disk well developed in male flowers, inconspicuous in female flowers. Style short or inconspicuous. Stigma usually 4-divided, rarely irregularly divided. Berry globose, ellipsoidal, or obovoid, 1–4-seeded.

About 100 species distributed in Asia to Oceania; 44 species in China; two species in Hong Kong.

1a. Stem terete; leaves trifoliolate..... 1. *T. hemsleyanum*

1b. Stem flattened; leaves 5-foliolate..... 2. *T. planicaule*

### 1. *Tetrastigma hemsleyanum* Diels & Gilg 三葉崖爬藤(三葉青)

(Photo 396)

Bot. Jahrb. Syst. 29: 463. 1900; FHN 3: 23. 1974; FFJ 3: 384, fig. 271. 1987; FRPS 48(2): 122. 1998.

*Tetrastigma alatum* H. L. Li, Woody Fl. Taiwan 528. 1963; FTW 3: 674. 1977.

Herbaceous vine. Branchlets slender, glabrous or sparsely pilose; tendrils unbranched. Leaves trifoliolate, rarely 5-foliolate; petioles 1.5–7.5 cm, petiolules winged adaxially, glabrous or sparsely pilose; leaflets papery, lanceolate, elliptic-lanceolate, or ovate-lanceolate, 3–11 × 1–4 cm, glabrous, base cuneate or rounded, apex acuminate rarely acute, margin sparsely denticulate, glabrous on both surfaces; lateral leaflets smaller, base oblique. Inflorescence a dichasium composed of several to many umbels, 1–5 cm; peduncle 1.2–2.5 cm, pubescent. Pedicels 1–2.5 mm, pilose. Calyx dentate at apex, with fine, ovate-triangular teeth. Petals ovate, 1.3–1.8 mm, apex corniculate, glabrous. Anthers yellow. Disk conspicuous, 4-lobed. Ovary conical, base adnate to disk; style short; stigma 4-lobed. Berry globose, ca. 7 mm in diam., 1-seeded, black when mature.

Locality: Victoria Peak, Mount Davis, Ma On Shan, Tai Mo Shan, Lantau Island. *H. C. Tang 761, 842; HK sheet 40041.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Jiangsu, Zhejiang, Fujian, Taiwan; India.

Ecology: Thickets or forests. Flowering: Apr.–Jun.; fruiting: Aug.–Nov.

Uses: Medicinal (folklore).

### 2. *Tetrastigma planicaule* (Hook. f.) Gagnep. 扁擔藤(崖爬藤)

(Fig. 205; Photo 397)

Notul. Syst. (Paris) 1: 319. 1910; FHN 3: 25, t. 542. 1974; FFJ 3: 384. 1987; FRPS 48(2): 109. 1998.

*Vitis planicaulis* Hook. f., Bot. Mag. 94: t. 5685. 1868; FKH 65. 1912.

Woody vine, glabrous except petals. Stems flattened. Branchlets terete or slightly flat; tendrils unbranched. Leaves palmately 5-foliolate; petioles 3–11 cm; leaflets elliptic-lanceolate, or ovate-lanceolate, 6–20 × 2–7 cm, base cuneate, apex acuminate or acute, margin dentate; lateral leaflets smaller, base oblique. Inflorescence umbelliform, 15–17 cm; peduncle 3–6 cm. Pedicels 0.3–1 cm, glabrous or sparsely pilose. Calyx shallow and saucer-shaped, papillose, teeth inconspicuous. Petals ovate-triangular, 2–2.5 mm, apex

galeate, sparsely papillose. Anthers yellow. Disk well-developed, 4-lobed, or inconspicuous in female flowers. Ovary broadly conical; style inconspicuous; stigma 4-lobed. Berry globose, 2–3 cm in diam., usually 2-seeded.

Locality: Hong Kong Island, Tai Mo Shan, Ng Tung Chai, Ma On Shan, Lantau Island. *C. Ford 1196; Y. S. Lau 555; HK sheet 40379.*

Distribution: Fujian, Guangdong, Hainan, Guangxi, Guizhou, Yunnan, Xizang; Laos, Vietnam, Sri Lanka, India.

Ecology: Forests of valleys and crevices of rocks. Flowering: Apr. – Jun.; fruiting: Aug. – Dec.

## 243. IXONANTHACEAE 黏木科

XIA Nian-he 夏念和

Trees or shrubs. Leaves simple, alternate, pinnately-veined, stipulate or exstipulate. Inflorescence cymose, racemose or paniculate. Flowers bisexual, often 5-merous. Sepals imbricate, distinct or connate at base. Petals imbricate or convolute, distinct, persistent. Stamens 5–20, filaments free or connate at base, anthers 2-celled, dehiscing by longitudinal slits. Ovary superior, 2–5-loculed, or sometimes plurilocular, placentation axile, with 2 or 1 pendulous ovule per locule; style 1 or 5. Fruit a capsule, septicial, sometimes loculicidal. Seeds arillate or winged, endosperm little or wanting.

Four genera and 21 species distributed in tropical regions of the world; one genus and two species in China; one genus and one species in Hong Kong.

### 1. *Ixonanthes* Jack 黏木屬

Trees. Leaves entire; stipules small or wanting. Inflorescence a dichasium, axillary. Flowers small. Sepals 5, connate at base. Petals 5, convolute, persistent. Stamens 5–20, inserted outside and against disk. Disk bowl-shaped, entire or slightly lobed, free from ovary. Ovary 5-loculed, with 2 pendulous ovules per locule. Style 1; stigma capitate or mushroom-shaped. Capsule ellipsoidal or conical, leathery or woody, septicial, sometimes with a false septum at middle of each carpel. Seeds winged or crowned with a calyptriform aril; endosperm fleshy; embryo straight.

Three species distributed in tropical Asia; two species in China; one species in Hong Kong.

1. *Ixonanthes reticulata* Jack 黏木 (Fig. 206; Photo 398) *Malay Misc.* 2(7): 51. 1822; Hance, *J. Bot.* 14: 243. 1876.

*Ixonanthes chinensis* Champ., *Proc. Linn. Soc. Lond.* 2: 100. 1850; FKH 53. 1912; FHN 2: 110, fig. 350. 1965; FFJ 2: 347, fig. 265. 1985; FRPS 43(1): 113. 1998; FGD 4: 166, fig. 107. 2000.

Evergreen tree or shrub, 4–20 m tall. Bark brown. Stipules to 1 mm. Petiole 1–2 cm; leaf blade papery to leathery, elliptic or elliptic-oblong, 6–14 × 3–5.5 cm, base cuneate, apex to slightly obtuse, margin entire, glabrous on both surfaces; lateral veins 5–7 on each side of midvein. Inflorescences lax; peduncle 5–8 cm. Flowers ca. 6 mm in diam. Pedicel 5–8 mm. Sepals ovate-oblong, 4–5 mm. Petals white, broadly ovate, 4–5.5 mm. Stamens 10, exserted; filament up to 2 cm. Disk cupular, ca. 1 cm in diam., with 10 grooves. Ovary globose, ca. 3 × 2 mm, glabrous. Styles to 2 cm. Capsule long ellipsoidal, 2–3 × 1 cm, brownish black, striate, with persistent enlarged sepals and petals at base. Seeds oblong,



Figure 205. *Tetrastigma planicaule* (Hook. f.) Gagnep.  
1. flowering branch; 2. male flower; 3. bisexual flower; 4. fruit; 5. portion of stem. (drawn by H. P. Yu)

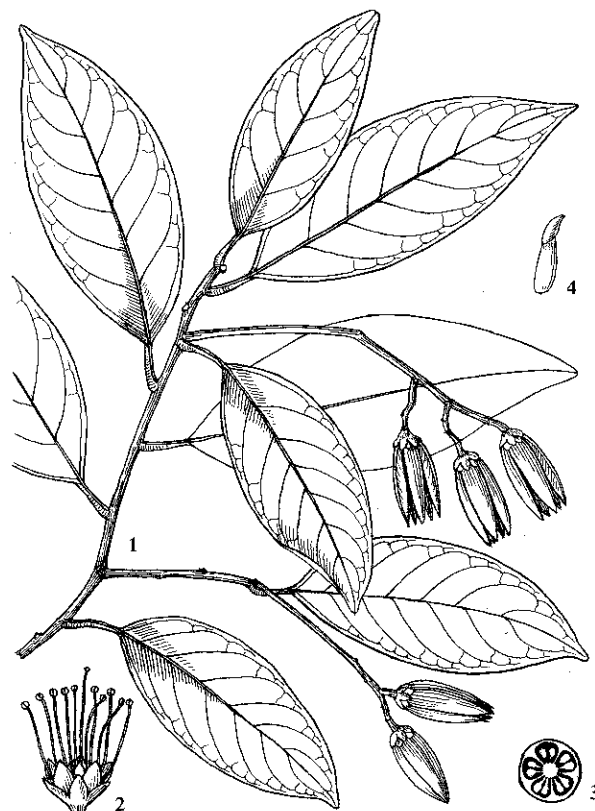


Figure 206. *Ixonanthes reticulata* Jack.  
1. fruiting branch; 2. flower; 3. cross section of ovary; 4. seed. (drawn by H. P. Yu)



0.8–1 cm; wing 1–1.5 cm, membranous.

Locality: Cape D'Aguilar, Happy Valley, Wong Nai Chung, Aberdeen, Repulse Bay, Ma On Shan. *H. C. Tang 1025*; *Y. S. Lau 3170*; *Y. W. Lam 785*.

Distribution: Areas S of Changjiang River; Vietnam.

Ecology: Thickets or thin forests. Flowering: May–Jun.; fruiting: Jun.–Oct.

Notes: The type specimen of *Ixonanthes chinensis* was collected by J. G. Champion from Hong Kong Island between 1847 and 1850. Listed in *Rare and Precious Plants of Hong Kong*.

## 246. MALPIGHIACEAE 金虎尾科

XIA Nian-he • 夏念和

Shrubs, trees or woody vines. Leaves simple, usually opposite, rarely alternate or whorled, entire, usually with two large glands on petiole or abaxial surface; stipules sometime large or united. Inflorescence a raceme or panicle, axillary or terminal. Flowers usually bisexual, actinomorphic or zygomorphic, 5-merous; pedicels articulated; bracteoles usually 2. Calyx lobes imbricate, rarely valvate, often with a pair of glands at base abaxially. Petals imbricate, base clawed, margin ciliate to fringed. Stamens (1–)2(–3) whorls; filaments usually connate at base; anthers 2-celled, dehiscing longitudinally. Disk obscure. Ovary superior, 3-locular; ovule 1 per locule, pendulous and semianatropous on axile placenta. Style 3, sometimes connate, persistent. Fruits often a schizocarp of winged to nut-like mericarps, rarely a nut or capsule; seed with large straight to curved embryo, endosperm wanting.

About 68 genera and 1280 species mainly distributed in tropical and warm regions, especially in America; four genera and 23 species in China; one genus and one species in Hong Kong.

In addition to the native species, *Malpighia coccigera* L., *M. glabra* L., *Thryallis gracilis* Kuntze and *Tristellateia australasiae* A. Rich. are occasionally found in cultivation for ornamental use.

### 1. Hiptage Gaertn. 風箏果屬

Woody vines or scandent shrubs. Leaves opposite, leathery or subleathery, entire, without glands or with a serial sparse glands near margin on abaxial surface; stipules absent or minute. Racemes axillary or terminal. Flower bisexual, zygomorphic, white, sometimes pinkish, fragrant; pedicels articulated above middle; bracteoles 2. Calyx 5-lobed, with a large gland at base or without glands. Petals 5, clawed at base, unequal, silky hairy. Stamen 10, all fertile, unequal, one of them larger, filament free or connate at lower part. Ovary shallowly 3-lobed; lobes with 3–5 appendages on abaxial surface; style single, rarely 2, apex curved. Fruit a schizocarp, each carpel developed into a samara, each samara with 3 wings, the middle wing longest, lateral wings shorter. Seed polygonal-globose.

About 25 species distributed in SE Asia, Fiji and Mauritius; ten species in China; one species in Hong Kong.

#### 1. *Hiptage benghalensis* (L.) Kurz

風箏果(風車藤)

(Fig. 207; Photo 399)

*J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43: 136. 1874; FGZ 256, fig. 127. 1956; FHN 2: 106, fig. 347. 1965; FFJ 2: 390, fig. 287. 1985; FGD 3: 221. 1995; FRPS 43(3): 119. 1998.*

*Banisteria benghalensis* L., *Sp. Pl. 427. 1753.*

*Hiptage madablota* Gaertn., *Fruct. Sem. Pl. 2: 169, pl. 116. 1791; FHK 49. 1861; FKH 53. 1912.*

Woody vines, up to 30 m or longer; young branches densely yellowish brown pubescent, glabrescent. Petioles 0.7–1 cm, blackish brown; leaf blade leathery, elliptic-oblong to ovate-lanceolate, 7–15 × 3–7 cm, base broadly cuneate or rotund, apex acuminate, often with 2 glands at base abaxially, young leaves light red, pubescent, old leaves green, glabrous; midvein and lateral veins elevated on both surfaces. Racemes 3–10 cm, yellowish brown pubescent. Flowers large, 1.5–2.5 cm in diam., fragrant. Sepals elliptic or ovate, 5–6 mm, densely yellow-brown pubescent abaxially, with a large gland at base abaxially. Petals white or pink, orbicular to broad-elliptic, 6–12 × 5–10 mm, base clawed, apex rounded, margin fimbriate, glabrous adaxially, pubescent abaxially. Longer filaments 8–12 mm, shorter ones 2–4 mm, glabrous; anthers 1–2 mm. Style terete. Samara subglabrous, middle wing elliptic or obovate, 3–5(–7) cm, apex entire, or retuse, lateral wings lanceolate-oblong, 1.5–3 cm.

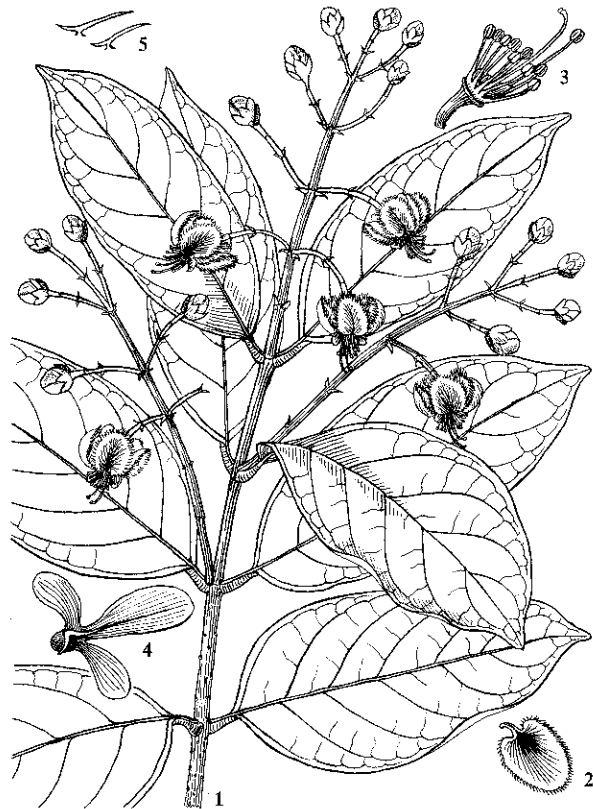


Figure 207. *Hiptage benghalensis* (L.) Kurz.

1. flowering branch; 2. petal; 3. flower with perianth removed; 4. samara; 5. indumentum. (drawn by H. P. Yu)

Locality: Victoria Peak, Shing Mun, Chuen Lung, Tai Mo Shan, Kat O, Lantau Island. Y. S. Lau 2941; HK sheet 39123, 40119.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Fujian, Taiwan; India, Sri Lanka, Malaysia, Philippines, Indonesia, Laos, N Vietnam.

Ecology: Thickets or forests. Flowering: Jan.–Apr.; fruiting: Apr.–May.

## 250. POLYGALACEAE 遠志科

XIA Nian-he 夏念和

Herbs or shrubs, rarely trees, sometimes parasitic (*Salomonina*). Leaves simple, alternate, opposite, or whorled, petiolate or sessile; stipules absent, sometimes a pair of glands or spines. Inflorescence a spike, raceme or panicle, axillary or terminal. Flowers bisexual, zygomorphic, bracteate and bracteolate. Sepals 5, distinct, rarely connate at base, outer 3 small, inner 2 large, petaloid, or all 5 nearly equal. Petals 3 or 5, often connate at base, central one boat-shaped, often with fimbriate or lamellate or papilionaceous apical appendages. Stamens usually 8 or 10, or 3–7; filaments often united and forming a sheath, rarely distinct; anthers basifixed, 1-celled, usually dehiscent by a single apical pore or longitudinal slits. Disk usually absent or, if present, annular or glandular. Ovary superior, 1–2-locular; ovule 1 per locule, anatropous, pendulous; placentation axile; style 1; stigmas 1 or 2, capitate. Fruit a loculicidal capsule, nut, samara or drupe. Seeds arillate or not, endosperm copious or wanting.

About 18 genera and 1000 species distributed worldwide, especially in tropical and subtropical regions; three genera and 54 species in China; three genera and ten species in Hong Kong.

- 1a. Scandent shrubs; fruit a samara.....1. *Securidaca*  
 1b. Herbs or shrubs; fruit a capsule.  
     2a. Stamens 4–5; sepals 5, subequal .....2. *Salomonina*  
     2b. Stamens 8; sepals 5, unequal, inner ones larger, petaloid .....3. *Polygala*

### 1. *Securidaca* L. 蟬翼藤屬

Scandent shrubs. Leaves alternate, stipulate or exstipulate. Inflorescence a raceme or panicle, terminal or axillary, bracteate. Flowers zygomorphic, small. Sepals 5, caducous, unequal; outer 3 small, inner 2 petaloid, large. Petals 3, lateral petals and keel connate or free, keel helmet-shaped, with cockscomb-shaped appendage at apex. Stamens 8, filaments united in lower part and forming a sheath, adnate to petals; anthers 2-celled, introrse, dehiscent by oblique pores. Disk reniform. Ovary 1-locular, with one pendulous ovule; style falcate; stigma short, lobed or not. Fruit usually a samara, 1-seeded. Seed subglobose, endosperm wanting, not arillate, seed coat membranous.

About 80 species mainly distributed in tropical America, a few distributed in the tropics of Asia and tropical Africa; two species in China; one species in Hong Kong.

#### 1. *Securidaca inappendiculata* Hassk.

蟬翼藤 (蟬翼木)

(Fig. 208; Photo 400)

Pl. Jav. Rar. 295. 1848; FHN 1: 368, fig. 188. 1964; FYN 3: 262, pl. 73: 1–6. 1983; FGD 2: 60. 1991; FRPS 43(3): 141. 1997; C. A. Pendry, Fl. Thailand 7(3): 524. 2001.

*Securidaca tavoyana* Wall. ex A. W. Benn., Fl. Brit. India 1: 208. 1872; FKH 39. 1912.

*Securidaca scandens* Buch.-Ham. in Wall. ex Benth., FHK 45. 1861, not Jacquin (1760) nor Poiret (1806).

Scandent shrub. Branchlets densely appressed pubescent. Petioles 0.5–1 cm, pubescent; leaf blade papery or subleathery, elliptic or obovate-oblong, 5–12 × 2.5–6 cm, base obtuse to subrounded, apex acute, margin entire, glabrous adaxially, densely white appressed pubescent abaxially; midvein prominent abaxially, impressed adaxially, lateral veins 10–12 pairs. Panicles 10–15 cm, pubescent; bracts caducous, minute, subulate, pubescent. Pedicels 0.8–1.2 cm, glabrous. Sepals 5, unequal, outer 3 oblong-ovate, subequal, small, ca. 2.5 mm, apex obtuse, ciliate; inner 2 petaloid, large, ca. 7 × 5 mm, base clawed, apex obtuse, ciliate. Petals 3, purplish red, connate at base; lateral petals obtriangular, ca. 5 × 2.5 mm, apex truncate, keel suborbicular, ca. 8 mm, apex with cockscomb-shaped appendage. Stamens 8 mm. Ovary subglobose, ca. 1 mm in diam.; style inclined to one side, curved. Samara compressed globose, 1–1.5 cm in diam.; wing woody, oblong, 7–8 × 1.5–2 cm, with strongly curved veins, base narrower, apex

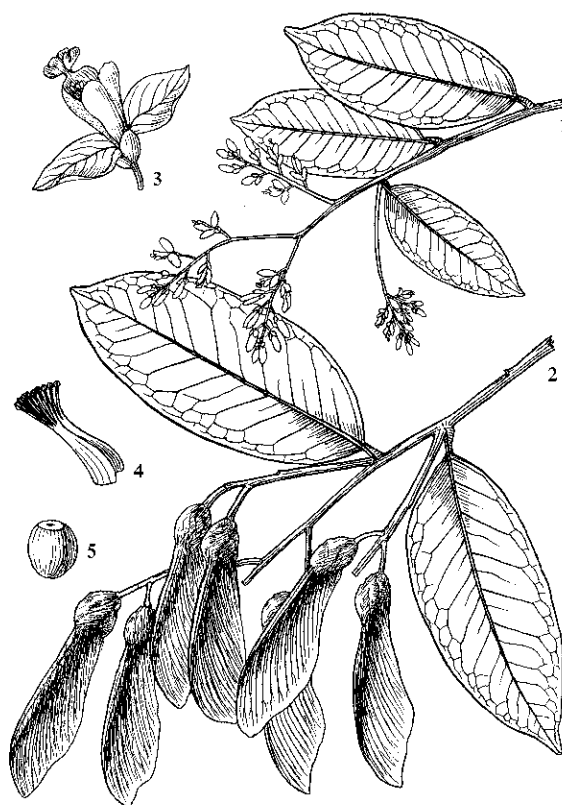


Figure 208. *Securidaca inappendiculata* Hassk.

1. flowering branch; 2. fruiting branch; 3. flower; 4. stamens; 5. seed. (drawn by H. P. Yu)

obtuse. Seed ovoid, ca. 7 mm in diam., brownish.

Locality: Aberdeen, Mount Parker, Tai Po Kau, Nam Chung, Lantau Island. *Y. S. Lau 1442; HK sheet 288, 289.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; SE Asia.

Ecology: Ravines. Flowering: Jul.–Aug.; fruiting: Oct.–Dec.

Uses: Fibre, medicinal (folklore).

## 2. *Salomonina* Lour. 齒果草屬

Annual herbs, sometimes parasitic. Leaves simple, alternate, petiolate or sessile, margin entire. Inflorescence a spike, terminal, bracts with a scarious margin, bracteoles absent. Flowers very small, zygomorphic. Sepals 5, persistent, nearly equal; inner 2 often slightly larger. Petals 3, usually pink-purple, keel cucullate, or arched, longer than lateral petals, without appendages. Stamens 4–5, filaments united and forming a sheath, adnate to the petal base; anthers connate, dehiscing by an apical pore. Disk absent. Ovary compressed, 2-locular; style curved, thickened toward apex; stigma capitate. Fruit a capsule, laterally compressed, loculicidal, margin denticulate. Seeds ovoid, glabrous, endosperm present, not arillate.

About 14 species distributed in tropical Asia and tropical Australia; three species in China; three species in Hong Kong.

- 1a. Parasitic herbs; leaves reduced to brown scales..... 1. *S. elongata*  
 1b. Herbs with elliptic to ovate green leaves.  
     2a. Stems not winged; leaves sessile, elliptic or elliptic-lanceolate..... 2. *S. ciliata*  
     2b. Stems winged; leaves short petiolate, ovate-cordate or suborbicular..... 3. *S. cantoniensis*

### 1. *Salomonina elongata* (Blume) Kurz ex Koord. 寄生鱗葉草

(Photo 401)

Exhursionsfl. Java 2: 453. 1912; FYN 3: 291, pl. 83: 5–7. 1983; FRPS 43(3): 202. 1997.

*Epirixanthes aphylla* (Griff.) Merr., Philipp. J. Sci. 13(3): 142. 1918.

*Epirixanthes elongata* Blume, Catalogus 82. 1823; FHN 1: 364. 1964; FGD 2: 51, fig. 35. 1991.

*Salomonina aphylla* Griff., Proc. Linn. Soc. Lond. 1: 221. 1844; FKH 38. 1912.

Annual parasitic herb, echlorophyllous, 5–16 cm tall. Stem simple or branched, pink, sulcate and ridged, subglabrous. Leaves scale-like, ca. 2 mm, pubescent. Spike unbranched, 5–25 mm. Flowers minute, 1–1.5 mm; bracts persistent, basal, linear-lanceolate, 1.5–2.5 mm. Sepals 5, distinct, imbricate, ovate-lanceolate, 0.5–1 mm. Petals 3, pink; central one larger, obovate, 1–1.5 mm, lateral ones smaller. Stamens 4–5; filaments united and forming a sheath, adnate to petals at base; anthers sessile, free. Capsule heart-shaped, ca. 1 mm wide, less than 1 mm long, margin without spines or denticulations. Seeds 2, black, ovoid, ca. 0.5 mm in diam., slightly rugose.

Locality: Mount Violet, Tai Mo Shan, Pat Sin Leng. *P. S. Choi 548; F. W. Xing 8077; HK sheet 33867.*

Distribution: Fujian, Hainan, Yunnan; India, Indonesia, Myanmar, Malaysia, Vietnam.

Ecology: Forests. Flowering & fruiting: Jun.–Aug.

### 2. *Salomonina ciliata* (L.) DC. 橢圓葉齒果草(睫毛齒果草)

Prodr. 1: 334. 1824; FHN 1: 365. 1964; C. A. Pendry, Fl. Thailand 7(3): 522. 2001.

*Salomonina oblongifolia* DC., Prodr. 1: 334. 1824; FHK 44. 1861; FKH 38. 1912; FTW 3: 560, fig. 728. 1977; FYN 3: 291, pl. 83: 5–7. 1983; FFJ 3: 164. 1987; FGD 2: 49, fig. 34: 1–3. 1991; FRPS 43(3): 200, pl. 47: 5–7. 1997.

*Polygala ciliata* L., Sp. Pl. 1: 705. 1753.

Annual erect herb, 8–30 cm tall. Stem slender, branched or not, subglabrous. Leaves sessile; leaf blade membranous, elliptic or ovate-lanceolate, 4–12 × 1–3 mm, base subrounded, apex acute or acuminate, margin entire, mucronate, glabrous, basally 3-veined. Spike 2–10 cm; bracts linear, ca. 1 mm, persistent. Flowers small, ca. 2.5 mm. Sepals 5, green, lanceolate-ovate, subequal, 1–1.2 mm, connate at base, apex acuminate, sparsely ciliate, persistent. Petals purplish red, lateral ones subelliptic, ca. 2 mm, proximal 1/2 connate; keel 3 mm, apex rounded. Filaments shorter than petals. Ovary subreniform; style linear, ca. 2 mm. Capsule compressed, reniform or obtriangular, ca. 2 mm in diam., apex retuse, margin 2-seriate filiform denticulate. Seeds 2, black, shiny, ovoid, slightly compressed, ca. 1 mm in diam.

Locality: Fanling. *W. J. Tutcher 9964.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Jiangsu, Fujian, Taiwan; Korea, Japan, Philippines, Vietnam, Cambodia, Thailand, Laos, Malaysia, Myanmar, Nepal, India, Sri Lanka, Indonesia, New Guinea, Australia.

Ecology: Grassy hillslopes. Flowering & fruiting: Aug.–Dec.

Notes: The species was reported as *Salomonina oblongifolia* DC. previously (Check List HK Plants 193. 2002; 69. 2004).

### 3. *Salomonina cantoniensis* Lour. 齒果草(莎蘿莽)

(Fig. 209; Photo 402)

Fl. Cochinch. 14. 1790; FHK 44. 1861; FKH 38. 1912; FHN 1: 363. 1964; FYN 3: 290, pl. 83: 1–4. 1983; FFJ 3: 163, fig. 118. 1987; FGD 2: 50. 1991; FRPS 43(3): 199. 1997; C. A. Pendry, Fl. Thailand 7(3): 521. 2001.

*Salomonina cantoniensis* Lour. var. *edentula* (DC.) C. Y. Wu, Fl. Yunnan. 3: 291. 1983.

*Salomonina edentula* DC., Prodr. 1: 334. 1824.

Annual erect herb, 5–25 cm tall. Stem much branched, narrowly winged, glabrous. Petioles 1–2 mm; leaf blade membranous, ovate-cordate or cordate, 4–20 × 3–14 mm, base ± cordate, apex obtuse or mucronate, margin entire or slightly undulate, glabrous on both surfaces, 3-veined. Spike 1–6 cm; bracts caducous, very small. Flowers very small, 2–3 mm, sessile. Sepals 5, persistent, linear-subulate, 0.4–0.5 mm, base connate, persistent. Petals pale red; lateral ones ca. 2.5 mm; keel broadly ovate, ca. 3 mm. Filaments ca. 2 mm; anthers connate. Ovary reniform, ca. 1 mm in diam.; style ca. 2.5 mm; stigma slightly lobed. Capsule reniform, ca. 1 × 2 mm, both lateral margins shortly triangular-denticulate. Seeds 2, black, shiny, ovoid, slightly compressed, ca. 1 mm in diam.

Locality: Hong Kong Island, Ma On Shan, Ta Ti Yan, Wu Kau Teng, Lung Tsai, Lantau Island. *H. C. Tang 1995; Y. S. Lau 385, 1616.*

Distribution: E, C, S & SW China; Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam, Philippines, Australia.

Ecology: Forests on hillslopes. Flowering: Jul.–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

### 3. *Polygala* L. 遠志屬

Annual or perennial herbs, rarely shrubs or small trees. Leaves alternate, rarely opposite or whorled, margin entire, petiolate, exstipulate. Inflorescence a raceme or panicle, terminal, axillary or extra-axillary. Flowers bisexual, zygomorphic; bracts 1–3, persistent or caducous; bracteoles present. Sepals 5, unequal, persistent or caducous, outer 3 small, inner 2 petaloid, large. Petals 3, lower 1/2 connate, keel boat-shaped, cucullate, or helmet-shaped, apex often with appendage, lateral petals smaller. Stamens 8; filaments united at least at base and forming a sheath, opening on upper side, adnate with petals; anthers basifixed, 1–2-celled, dehiscent by apical pore. Disk present or absent. Ovary 2-locular, compressed; style 1, erect or curved; stigmas 1 or 2. Fruit a loculicidal capsule, compressed, often winged. Seeds 2, usually black, ovoid, pubescent or glabrous, arillate; endosperm present or absent.

About 500 species distributed worldwide; 45 species in China; six species in Hong Kong.

- 1a. Shrubs to treelets, to 1 m or taller ..... 1. *P. fallax*
- 1b. Herbs or subshrubs, less than 0.5 m tall.
  - 2a. Petioles narrowly winged ..... 2. *P. latouchei*
  - 2b. Petioles not winged.
    - 3a. Racemes terminal ..... 3. *P. hongkongensis*
    - 3b. Racemes leaf-opposed, super-axillary, or extra-axillary.
      - 4a. Perennial herbs; lateral veins of leaves prominent on both surfaces ..... 4. *P. japonica*
      - 4b. Annual herbs; lateral veins of leaves inconspicuous on both surfaces.
        - 5a. Capsules ca. 2 mm, alae 3–4 mm; stamens unequally connate in three bundles ..... 5. *P. polifolia*
        - 5b. Capsules 3–5 mm, alae 4–6 mm; stamens almost equally connate in a single bundle ..... 6. *P. chinensis*

#### 1. *Polygala fallax* Hemsl. 黄花倒水薺(屈頭雞)

(Photo 403)

*J. Linn. Soc., Bot.* 23: 59. 1886; *FYN* 3: 271, pl. 75: 10–19. 1983; *FFJ* 3: 159, fig. 114. 1987; *FGD* 2: 53. 1991; *FRPS* 43(3): 151. 1997.

*Polygala aureocauda* Dunn, *Bull. Misc. Inform. Kew*, 1911(4): 188. 1911; *FKH* 38. 1912.

*Polygala arillata* auct. non Buch.-Ham. ex D. Don: *FHK* 45. 1861.

Shrub to treelets, 1–3 m tall. Branchlets pubescent when young, later glabrescent. Petioles 1–1.5 cm, pubescent, sulcate adaxially; leaf blade papery, lanceolate to elliptic-lanceolate, 8–17 × 3–6.5 cm, base cuneate to obtuse, apex acuminate, margin entire, puberulous along veins adaxially, pubescent abaxially; lateral veins 5–10 pairs, reticulate veins distinct. Racemes terminal or axillary, sometimes leaf-opposed, 8–30 cm, apex pendulous; peduncles nearly absent. Flowers yellow, 1.6 cm. Pedicels ca. 3 mm, pubescent. Sepals 5, ciliate, caducous after anthesis; outer 3 small, unequal, upper one helmet-shaped, 6–7 mm, other 2 ovate to elliptic, ca. 3 mm; inner 2 larger, petaloid, oblong, 1.2–1.5 cm, base attenuate, apex rounded. Petals yellow, lower 2/3 connate; lateral 2 narrowly oblong, ca. 1 cm, keel hooded, ca. 1.2 cm, apex with a bundle of fimbriate appendages. Ovary subglobose, 3–4 mm in diam., narrowly winged, ciliate. Capsule compressed subglobose, 1–1.4 cm in diam., with many longitudinal veins. Seeds brown-black, globose, ca. 4 mm in diam., densely white

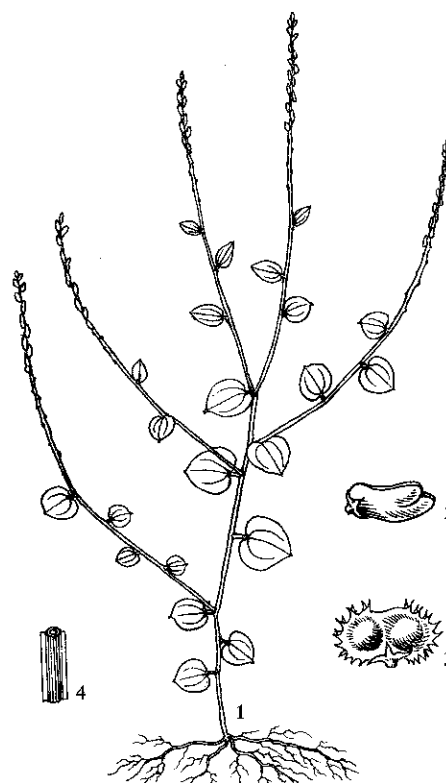


Figure 209. *Salomonina cantoniensis* Lour.

1. whole plant; 2. flower; 3. fruit; 4. portion of stem. (drawn by H. P. Yu)

pubescent; aril membranous, 3-lobed, lobes narrowly oblong, 2 lobes forming a cap and covered 1/3 of the seed, 1 lobe hooked upward.

Locality: Hong Kong Island, Tai Mo Shan, Sai Kung, Lantau Island. *P. S. Choi 468; Y. W. Lam 1662; HK sheet 39422.*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Jiangxi, Fujian.

Ecology: Forests of valleys. Flowering: May–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

2. *Polygala latouchei* Franch. 大葉金牛(岩生遠志)

(Photo 404)

Bull. Soc. Bot. France 46: 206. 1899; FFFJ 3: 160, fig. 115. 1987; FGD 2: 55, fig. 36: 9–12. 1991; FRPS 43(3): 165, pl. 37: 1–9. 1997.

*Polygala nimborum* Dunn, FKH 39. 1912.

Subshrub, 5–20 cm tall. Stems simple or branched at base, often with raised leaf scars, curved-pubescent. Leaves crowded on upper part of branches; petioles 5–8 mm, pubescent, narrowly winged; leaf blade papery, ovate-lanceolate to obovate or elliptic-lanceolate, 4–10 × 2–4 cm, base obliquely cuneate, apex rounded and mucronate, margin entire, reddish or dark purple abaxially, green adaxially, ± pubescent on both surfaces or glabrous abaxially; midvein slightly raised on both surfaces, lateral veins 4–5 pairs, reticulate veinlets indistinct. Racemes terminal or axillary, solitary or in pairs, 1–6 cm, pubescent, densely flowered. Flowers pink or purplish red, ca. 1 cm. Pedicels 1.5–3 mm; bract 1, caducous, ovate-lanceolate, ca. 3–5 mm. Sepals caducous, glabrous; outer 3 ovate, subequal, ca. 1.5 mm; inner 2 elliptic, petaloid, ca. 5 mm, 3–7-veined. Petals pink to purple-red, membranous, lower 3/4 connate; lateral ones narrowly elliptic, ca. 8 mm; keel shorter than lateral petals, cucullate, apex with 2 trilobed cockscomb-shaped appendages. Ovary obovoid, narrowly winged, ca. 1 mm in diam., glabrous. Capsule suborbicular, ca. 4–5 mm in diam., narrowly winged, not veined. Seeds ovoid, black, ca. 1.2 mm in diam.; arils wing-shaped, yellow-brown, as long as seeds.

Locality: Pat Sin Leng, Nam Chung. *HK sheet 39763, 41025.*

Distribution: Guangdong, Guangxi, Jiangxi, Zhejiang, Fujian.

Ecology: Streamsides. Flowering: Mar.–Apr.; fruiting: Apr.–May.

Uses: Medicinal (folklore).

3. *Polygala hongkongensis* Hemsl. 香港遠志

(Fig. 210; Photo 405)

J. Linn. Soc., Bot. 23: 60. 1886; FKH 38. 1912; FFFJ 3: 161, fig. 116. 1987; FGD 2: 57. 1991; FRPS 43(3): 190. 1997.

*Polygala elegans* auct. non Wall. ex Royle: FHK 44. 1861, *p.p.*

Perennial herb or subshrub, erect, 15–50 cm tall. Stems much branched; branches slender, puberulous. Petioles 1–3 mm, pubescent; leaf blade papery or membranous, lanceolate or ovate-lanceolate, 1–6.5 × 0.5–2.5 cm, base rounded, apex acuminate, margin entire, ± revolute, glabrous on both surfaces; lateral veins 3–5 pairs, inconspicuous. Racemes terminal, 3–8 cm, rachis and pedicels pubescent. Flowers purplish red, 7–9 mm. Pedicels 1–2 mm. Bracts 3, subulate, ca. 1 mm, caducous. Sepals persistent, ciliate; outer 3 lanceolate, boat-shaped, ca. 3.5 mm, 1-veined; inner 2 obliquely ovate, petaloid, 5–8 × 3–5 mm. Petals connate at base; lateral ones oblong, 3–5 mm, pubescent at base abaxially; keel cucullate, ca. 5 mm, apex with 2 bundles of fimbriate appendages. Ovary compressed globose, ca. 1.5 mm, shortly stipitate, glabrous. Capsule suborbicular, ca. 5 mm in diam., narrowly winged, apex retuse. Seeds 2, black, ovoid, ca. 3.5 mm, ca. 1.5 mm in diam., apex beak-like; arils 3-lobed, half as long as seeds.

Locality: Hong Kong Island, Ma On Shan, Tai Mo Shan. *L. T. Lo 609; HK sheet 39722, 40743.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Forests. Flowering: May–Jun.; fruiting: Jun.–Jul.

Uses: Medicinal (folklore).

Notes: The syntype specimens were collected by J. G. Champion, C. Wright and J. Lamont respectively from Hong Kong Island in 1850s.

4. *Polygala japonica* Houtt. 瓜子金

Handl. Pl.-Kruiddk. 10: 89. 1779; FTW 3: 558, pl. 726. 1977; FYN 3: 281, pl. 80: 1–8. 1983; FGD 2: 58, fig. 38. 1991; FTW ed. 2, 3: 573, pl. 295. 1993; FRPS 43(3): 179. 1997.

*Polygala elegans* auct. non Wall. ex Royle: FHK 44. 1861, *p.p.*

*Polygala sibirica* auct. non L.: FKH 39. 1912.

Perennial herb, 15–20 cm tall. Stems erect or decumbent, much branched, curved-pubescent. Petioles ca. 1 mm, pubescent; leaf blade thickly papery or subleathery, ovate or ovate-lanceolate, rarely lanceolate, 1–3 × 0.3–1 cm, base broadly rounded, apex acute,



Figure 210. *Polygala hongkongensis* Hemsl.

1. flowering branch; 2. flower; 3. flower with petals removed; 4. pistil; 5. capsule. (drawn by H. P. Yu)

margin entire, glabrous or pubescent on both surfaces; lateral veins 3–5 pairs, prominent on both surfaces, pubescent. Racemes leaf-opposed, or extra-axillary, 1–5 cm. Flowers purple or bluish purple, ca. 7 mm. Pedicels ca. 5 mm, slender, puberulous; bracts caducous, lanceolate. Sepals persistent, ciliate; outer 3 lanceolate, ca. 3 mm, pubescent abaxially; inner 2 ovate to oblong, petaloid, ca. 7 mm, 3–5-veined. Petals connate at base; lateral ones oblong, ca. 6 mm, pubescent at base adaxially; keel cucullate, apex with 2 bundles of fimbriate appendages. Ovary ellipsoidal, ca. 2 mm in diam., winged. Capsule orbicular, ca. 6 mm in diam. with wing, apex retuse, margin broadly winged, not ciliate. Seeds 2, black, compressed ovoid, ca. 1.5 mm in diam., white pubescent; arils unequal, 2-lobed, half as long as seeds.

Locality: Tai Mo Shan. *HK sheet 2332*.

Distribution: NE, N, NW, E, C, S, SW China; Korea, Japan, Russia (E Siberia), NE India, Myanmar, Sri Lanka, Vietnam, Philippines, New Guinea.

Ecology: Grassy hillslopes. Flowering: Apr.–May; fruiting: May–Aug.

Uses: Medicinal (folklore).

### 5. *Polygala polifolia* C. Presl 小花連志

(Photo 406)

Rel. Haenk. 2: 101. 1835; FTW 3: 558. 1977; C. A. Pendry, *Fl. Thailand* 7(3): 514. 2001.

*Polygala arvensis* auct. non Willd. (1802): FYN 3: 283, pl. 81: 1–9. 1983; FRPS 43(3): 180, pl. 42: 1–9. 1997.

*Polygala telephioides* auct. non Willd., FKH 38. 1912; FHN 1: 366. 1964.

*Polygala brachystachya* DC., Prodr. 326. 1824, non Poiret (1816), *nom illeg.*

*Polygala chinensis* L. f. *arvensis* (Willd.) Chodat, Mem. Soc. Phys. Geneve 31(2): 386. 1893.

*Polygala chinensis* auct. non L.: FGD 2: 56. 1991.

Annual herb, 5–25 cm tall. Stems simple or much branched, diffuse, densely curved-pubescent. Petioles very short, pubescent; leaf blade thickly papery, obovate, elliptic to oblong, 1–1.8 cm × 2–6 mm, base broadly cuneate to obtuse, apex obtuse to acute, margin entire, slightly revolute, glabrous on both surfaces or sparsely pubescent; midvein conspicuous, lateral veins inconspicuous. Racemes axillary, extra-axillary, or leaf-opposed, ca. 1 cm, shorter than leaves; bracts 3, minute, caducous, ovate, ciliate. Pedicels 1–1.5 mm, pubescent. Sepals persistent, outer 3 ovate, 1.2–3 × 1–1.2 mm, 1-veined, ciliate; inner 2 asymmetrical, falcate, 2–2.5 mm, 5-veined. Petals bluish purple, connate at base; lateral ones obtriangular, asymmetrical; keel cucullate, longer than lateral petals, ca. 2 mm, apex with 20 lacinate appendages. Stamens unequally connate in three bundles. Ovary obovoid, ca. 1 mm in diam., ciliate. Capsule suborbicular, ca. 2 mm in diam., margin minutely winged, slightly ciliate; wings 3–4 mm. Seeds 2, black, oblong, ca. 1.5 × 1 mm, silky hairy; arils white, 3-lobed.

Locality: Aberdeen, Shek O, Ninepin Group. *H. C. Tang 1997*; *S. P. Lau 140*; *HK sheet 30746*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Jiangxi, Jiangsu, Anhui, Zhejiang; SE Asia, New Guinea, Australia.

Ecology: Grassland near seashore. Flowering & fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

### 6. *Polygala chinensis* L. 華南連志(金不换)

(Photo 407)

Sp. Pl. 2: 704. 1753; Icon. Corm. Sin. 2: 577, fig. 2884. 1972; C. A. Pendry, *Fl. Thailand* 7(3): 503. 2001.

*Polygala glomerata* Lour., Fl. Cochinch. 426. 1790; FHK 44. 1861; FKH 38. 1912; FYN 3: 289, pl. 81: 19–27. 1983; FGD 2: 58. 1991; FTW ed. 2, 3: 573, pl. 294. 1993; FRPS 43(3): 186. 1997.

Annual herb, erect, 6–30 cm tall. Stems simple or ± branched, curved-pubescent. Petioles 1–3 mm, pubescent; leaf blade papery, varied in shape, often elliptic, or oblong-lanceolate to lanceolate, 1–7 × 1–1.5 cm, base cuneate to rounded or cordate, apex obtuse, mucronate, or rarely emarginate, margin entire, slightly revolute, glabrous or slightly fine pubescent on both surfaces, midvein prominent abaxially, impressed adaxially, lateral veins inconspicuous. Racemes super-axillary, 0.5–2 cm, shorter than leaves. Flowers white or pink, spreading or pendulous, 4–5 mm. Pedicels ca. 1.5 mm, pubescent. Bracts 2, caducous, lanceolate, puberulous. Sepals persistent, ciliate; outer 3 ovate-oblong, ca. 1.5 mm; inner 2 falcate, petaloid, ca. 4.5 mm, 5-veined. Petals connate at base; lateral ones shorter than keel, obovate, with fasciculate white hairs at base adaxially; keel cucullate, ca. 4 mm, apex with 2 bundles of filiform appendages. Stamens almost equally connate in a single bundle. Ovary compressed globose, ca. 1 mm in diam., ciliate. Capsule compressed globose, 3–5 mm in diam., narrowly winged, ciliate; wings 4–6 mm. Seeds black, ovoid, silky hairy; arils white, cucullate, 2-lobed.

Locality: Hong Kong Island, Tai Lam Chung, Lantau Island. *Y. S. Lau 21, 1153*; *P. S. Choi 253*.

Distribution: Fujian, Hainan, Guangdong, Guangxi, Yunnan; India, Vietnam, Philippines.

Ecology: Grassy hillslopes. Flowering: Apr.–Oct.; fruiting: May–Nov.

Uses: Medicinal (folklore).

Notes: The species was reported as *Polygala glomerata* Lour. previously (Check List HK Plants 193. 2002; 68. 2004.)

## 251. XANTHOPHYLLACEAE 黃葉樹科

XIA Nian-he 夏念和

Trees or shrubs. Leaves simple, alternate, exstipulate, petiolate. Inflorescence a raceme or panicle, axillary or terminal. Flowers bisexual, zygomorphic, axillary or terminal. Bracts and bracteoles present. Sepals 5, imbricate, inner 2 slightly larger. Petals 5, unequal, imbricate, sometimes unguiculate, free, keel without apical appendages. Stamens 8; filaments free or 2–4 adherent at base of ovary, other 4–6 adherent at base of petals; anthers introrse, longitudinally dehiscent. Disk annular, fleshy. Ovary superior; carpels 2, connate,

stalked, 1-locular, ovules 2-many per locule, anatropous, placentation parietal; style 1, hairy; stigma capitate. Fruit a drupe, globose, fibrous-fleshy when dry, 1-seeded, seed coat membranous, endosperm absent.

One genus and 93 species distributed in Australia, India, Indonesia, Malaysia; four species in China; one species in Hong Kong.

### 1. *Xanthophyllum* Roxb. 黃葉樹屬

Morphological characters and geographical distribution are the same as those of the family.

#### 1. *Xanthophyllum hainanense* Hu

黃葉樹

(Fig. 211; Photo 408)

J. Arnold Arbor. 6(3): 142. 1925; FHN 1: 368. 1964; FGD 2: 62, fig. 41. 1991; FRPS 43(3): 138. 1997.

Tree, 5–20 m tall. Branchlets terete, slender, glabrous. Petioles 0.6–1 cm; leaf blade leathery, ovate-elliptic to oblong-lanceolate, 4–15 × 1.5–6 cm, base cuneate or obtuse, apex long acuminate, margin entire, sometimes undulate, yellow, thickened, glabrous, yellow-green when dry, midvein and lateral veins prominent on both surfaces, lateral veins 6–11 pairs, reticulate veins prominent abaxially. Racemes or small panicles 3–9 cm, with a few flowers; peduncles and pedicels densely pubescent; bracteole 1, caducous, lanceolate. Flowers small, pale yellow or white, fragrant, 0.8–1.2 cm. Sepals pubescent on both surfaces, ciliate, outer 3 ovate, small, ca. 2 mm; inner 2 oblong, ca. 4 mm. Petals unequal, abaxial and lateral ones lanceolate and slightly curved, ca. 7 mm, clawed and ciliate. Stamens 4–8 mm, filaments villous at base and apex; anthers basifixed, ellipsoidal, ca. 0.5 mm. Ovary pitcher-shaped, ca. 1 mm in diam., densely pubescent, ovules 4; style 3–6 mm, slightly pubescent at base. Drupe globose, yellowish when mature, 1.5–2 cm in diam., pubescent or subglabrous; fruit stalk terete, ca. 5 mm, stout, pubescent. Seed yellowish, compressed globose, ca. 8 mm in diam.

Locality: Wang Shan Keuk Ha Tsuen, Ha Pak Nai, Plover Cove. *F. W. Xing 7898, 8036, 10011.*

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Forests. Flowering: Mar.–May; fruiting: Apr.–Jul.

Uses: Timber.

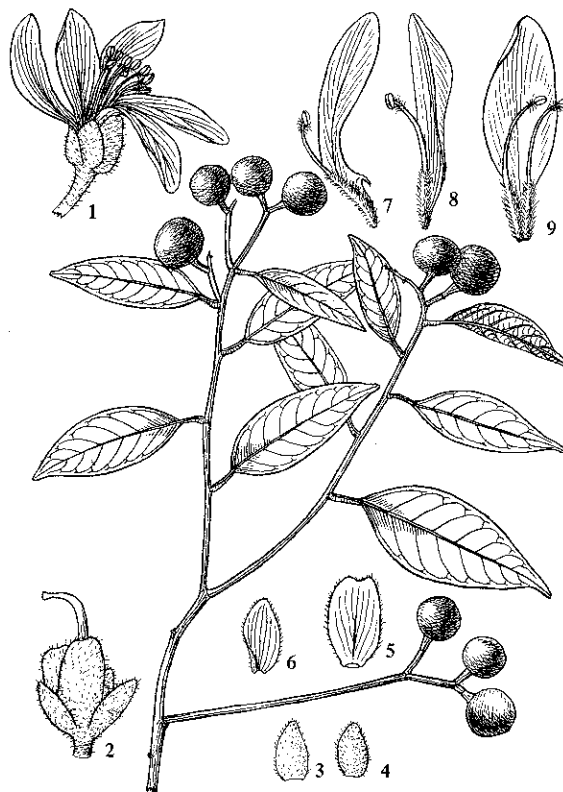


Figure 211. *Xanthophyllum hainanense* Hu

1. fruiting branch; 2. flower with petals removed; 3–4. outer sepals; 5–6. inner sepals; 7–9. petals with stamens. (drawn by H. P. Yu)

## 253. STAPHYLEACEAE 省沽油科

XIA Nian-he 夏念和

Trees or shrubs. Leaves odd-pinnately compound, rarely unifoliolate, opposite, rarely alternate, serrulate, stipulate or exstipulate. Inflorescence paniculate. Flowers bisexual or unisexual, actinomorphic, 5-merous. Sepals distinct or connate, imbricate, often petaloid. Petals imbricate. Stamens inserted outside the disk, alternate with petals; filaments often flat; anthers 2-celled, dorsifixed, longitudinally dehiscent. Disk annular, ± lobed, sometimes absent. Ovary superior, (2–)3(–4)-locular, ovules 1–several per locule, anatropous; placentation axile. Fruit a head of follicles, a drupe, a berry or a capsule, each locule often with 1 or 2 seeds. Embryo straight, endosperm copious, oily.

Six genera and about 60 species distributed in America, Eurasia to Malesia; four genera and 22 species in China; one genus and two species in Hong Kong.

### 1. *Turpinia* Vent. 山香圓屬

Small trees or shrubs. Leaves odd-pinnately compound, sometimes unifoliolate, opposite, stipulate; leaflets opposite, subleathery, petiolulate. Flowers small, 5-merous, bisexual, rarely unisexual. Stamens inserted outside the disk. Disk crenate or lobed. Ovary 3-locular, composed of 3 completely connate carpels, ovules several per locule; styles 3, connate or distinct; stigmas subcapitate. Fruit a berry, subglobose, indehiscent, pericarp fleshy or leathery. Seeds angular, testa bony or crustaceous; aril wanting.

About 40 species distributed in tropical regions of Asia and America; 13 species in China; two species in Hong Kong.

- 1a. Leaves unifoliolate ..... 1. *T. arguta*  
 1b. Leaves imparipinnately compound, 3–5(–7)-foliolate ..... 2. *T. montana*

**1. *Turpinia arguta*** (Lindl.) Seem. 銳尖山香圓

(Photo 409)

Bot. Voy. Herald 371. 1857; FHK 48. 1861; FKH 67. 1912; FRPS 46: 27. 1981; FFJ 3: 298, fig. 203. 1987; FGD 3: 284, fig. 188. 1995.

*Ochranthe arguta* Lindl., Edwards's Bot. Reg. 21: pl. 1819. 1836.*Eyrea vernalis* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 331. 1851.*Staphylea simplicifolia* Gardner & Champ., Hooker's J. Bot. Kew Gard. Misc. 1: 309–310. 1849.

Deciduous shrub, 1–3 m. Leaves unifoliolate; petioles 1.5–2 cm; leaflets thickly papery, long elliptic or elliptic-lanceolate, 7–22 × 2–6 cm, base cuneate or obtuse, apex acuminate, margin sparsely glandular-serrate, glabrous on both surfaces; lateral veins 10–13 pairs, prominent abaxially. Panicles terminal, 5–15 cm. Flowers white, 0.5–1.2 cm; pedicels 1–2 mm; bracteoles 2. Sepals long-ovate, 3–6 mm, ciliate. Petals spatulate or obovate-elliptic. Filaments ca. 8 mm, sparsely pubescent. Styles hairy. Fruit subglobose, 0.7–1 cm in diam., red when mature, rough, base with persistent disk. Seeds 2–3, yellow.

Locality: Common in Hong Kong. *Y. W. Lam* 506, 547; *K. L. Yip* 4525.

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Jiangxi, Fujian.

Ecology: Thin forests of valleys. Flowering: Spring to summer; fruiting: Summer to autumn.

**2. *Turpinia montana*** (Blume) Kurz

山香圓

(Fig. 212; Photo 410)

J. Asiat. Soc. Bengal 44(2): 182. 1857; FHN 3: 99. 1974; FYN 2: 360. 1979; FRPS 46: 33. 1981; FGD 3: 286. 1995.

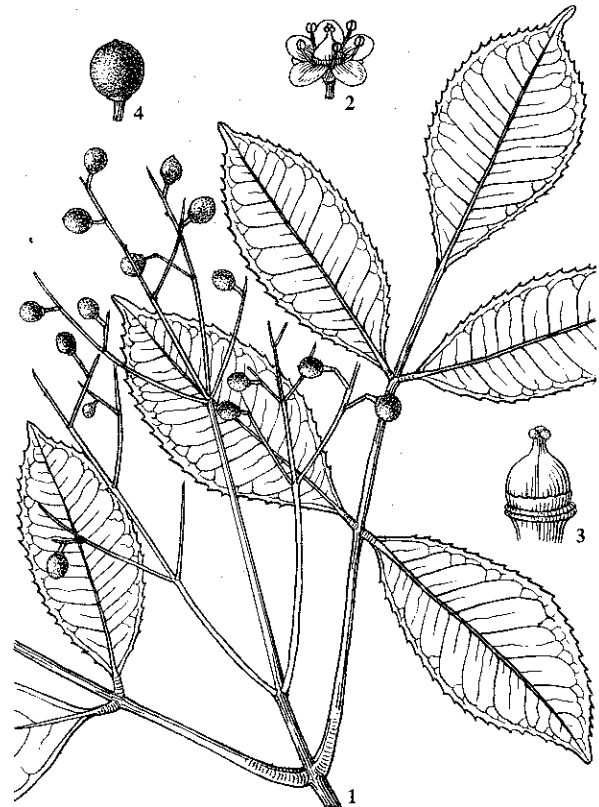
*Zanthoxylum montana* Blume, Bijdr. Fl. Ned. Ind. 248. 1825.*Turpinia cochinchinensis* auct. non (Lour.) Merr.: Check List HK Plants 54. 1993.*Turpinia nepalensis* auct. non Wall. ex Wight & Arn.: FHK 48. 1861.*Turpinia pomifera* auct. non DC.: FKH 67. 1912.

Small tree or shrub, 3–8 m tall. Leaves imparipinnately compound, 3–5(–7)-foliolate; lateral petiolules 2–3 mm, apical one to 1.5 cm; leaflets leathery, elliptic or oblong-elliptic, 5–7 × 2–5.5 cm, base broadly cuneate, apex acuminate to caudate, margin glandular-serrate, glabrous on both surfaces; lateral veins 8–10 pairs, prominent on both surfaces. Panicles terminal or axillary, 8–12 cm. Flowers 3–4 mm in diam.; pedicels ca. 1.5 mm. Sepals broadly elliptic, ca. 1.3 mm, ciliate. Petals pale yellow, membranous, elliptic or long-elliptic, ca. 2 mm. Stamens slightly shorter than petals, filaments glabrous. Fruit subglobose, green to purplish brown, 4–7 mm in diam. Seeds 3–4, ca. 4 mm in diam.

Locality: Common in Hong Kong. *Y. W. Lam* 610, 649; *HK sheet* 39972.

Distribution: S &amp; SW China; Indochina, Indonesia.

Ecology: Forests. Flowering: Aug.–Oct.; fruiting: Aug.–Dec.

Figure 212. *Turpinia montana* (Blume) Kurz

1. fruiting branch; 2. flower; 3. pistil; 4. fruit. (drawn by H. P. Yu)

**257. SAPINDACEAE 無患子科**

XIA Nian-he 夏念和

Trees or shrubs, rarely herbaceous climbers. Leaves pinnately or digitately compound, rarely simple, alternate, usually exstipulate. Inflorescence a terminal or axillary thyrse; bracts and bracteoles small. Flowers unisexual, rarely polygamous or bisexual, actinomorphic or zygomorphic, usually small. Sepals 4–6, distinct or connate at base, imbricate or valvate. Petals 4–6, sometimes absent, free, imbricate, usually clawed, often with scales or hair-tufted basal appendages. Disk conspicuous, fleshy, entire or interrupted, rarely absent. Stamens 5–10, usually 8, free, rarely connate at base; anthers dorsifixed, longitudinally dehiscent, introrse; staminodes sometimes present in carpellate flowers, but filaments shorter. Ovary superior, (1–)3(–4)-locular; ovules 1–2, rarely several per locule, placentation axile, rarely parietal; style usually apical; stigma entire or 2–3(–4)-lobed. Fruit a loculicidal capsule, berry, or drupe, or consisting of 2–3 samaras. Seeds 1, rarely 2 or more per locule; testa black or brown, hard, often with a conspicuous fleshy aril or sarcotesta; embryo curved, plicate, or twisted, oily and starchy; endosperm usually wanting.

About 135 genera and 1500 species widely distributed in tropical and subtropical regions of the world; 21 genera and 48 species in China; six genera and six species in Hong Kong.

- 1a. Herbaceous climbers; leaves stipulate; inflorescences with basal tendrils ..... 1. *Cardiospermum*  
 1b. Trees or shrubs; leaves exstipulate; inflorescences without tendrils.



- 2a. Shrubs; leaves simple ..... 2. *Dodonaea*  
 2b. Trees; leaves pinnately compound.  
 3a. Leaves imparipinnately compound..... 3. *Koelreuteria*  
 3b. Leaves paripinnately compound.  
 4a. Pericarp fleshy; seeds not arillate ..... 4. *Sapindus*  
 4b. Pericarp leathery or crustaceous; seeds arillate.  
 5a. Leaflets 3–5 pairs; calyx-lobes imbricate ..... 5. *Dimocarpus*  
 5b. Leaflets 2–3 pairs; calyx-lobes valvate ..... 6. *Litchi*

### 1. *Cardiospermum* L. 倒地鈴屬

Herbaceous or woody climbers, rarely shrubs, monoecious or dioecious. Leaves usually biternate or bitrilobate; stipules small, deciduous. Leaflets pinnately lobed or dentate, usually with pellucid glands. Panicles axillary; peduncles rather long, first pair of branches forming tendrils or spines; bracts and bracteoles subulate. Flowers unisexual, zygomorphic; pedicels articulate. Sepals 4–5, imbricate, outer 2 smaller. Petals 4, with a large scale inside, scales of abaxial petals with broadly winged appendage, scales of adaxial petals simple. Disk lobed into 2 large glandular lobes at base of petals. Stamens 8 (male flowers), slightly longer than petals. Ovary (female flowers) ellipsoidal, trigonous, 3-locular; ovules 1 per locule, inserted at middle of middle axis; style short; stigma 3-lobed. Capsules inflated, saclike, 3-locular; pericarp membranous or papery, veined. Seeds 1 per locule, subglobose, hilum cordate or suborbicular.

About 12 species mostly distributed in tropical and subtropical America; one species in China; it also occurs in Hong Kong.

#### 1. *Cardiospermum halicacabum* L. 倒地鈴(包袱草)

(Photo 411)

Sp. Pl. 1: 366. 1753; FHK 46. 1861; FKH 66. 1912; FRPS 47(1): 4, fig. 1. 1985; FFFJ 3: 316, fig. 213. 1987; FGD 1: 237, fig. 261. 1987; FTW ed. 2, 3: 601. 1993.

*Cardiospermum halicacabum* var. *microcarpum* (Kunth) Blume, Rumphia 3: 185. 1847; FHN 3: 77, fig. 576. 1974.

*Cardiospermum microcarpum* Kunth, Nov. Gen. Sp. (quarto ed.) 5: 104. 1821.

Herbaceous climber, 1–1.5 m or longer. Stems and branches green, slender, 5–6-sulcate, glabrous or sparsely hairy. Leaves biternate, triangular in outline; petioles 3–4 cm; leaflets subsessile, thinly papery, terminal one obliquely lanceolate or subrhombic, 3–8 × 1.5–2.5 cm, apex acuminate; lateral ones slightly smaller, ovate or narrowly elliptic, margin sparsely serrate or pinnately parted, adaxially sparsely villous on midvein and lateral veins, adaxially subglabrous or sparsely pilosulose. Panicles few-flowered, nearly as long as or slightly longer than leaves; peduncles straight, 4–8 cm, tendrils spiral. Petals 4, ciliate, outer 2 ovate, 8–10 mm, inner 2 narrowly elliptic, ca. 2 times as long as outer ones. Petals milky-white, obovate. Stamens (male flowers) nearly as long as or slightly longer than petals; filaments sparsely long villous. Ovary (female flowers) obovoid or sometimes subglobose, pubescent. Capsules brown, pearlike, turbinate-obtriangular or sometimes nearly ellipsoidal, 1.5–3 × 2–4 cm, pubescent. Seeds black, shiny, ca. 5 mm in diam.; hilum green when fresh, white when dry, cordate.

Locality: Aberdeen, Ma On Shan, Tai Mo Shan, Lam Tsuen Valley, Yin Kong, Lantau Island. *Y. S. Lau* 237; *Y. W. Lam* 1793; *HK sheet* 40714.

Distribution: E, S, SW & N China; tropical and subtropical regions of the world.

Ecology: Farmlands and wastelands. Flowering: Summer to autumn; fruiting: Autumn to early winter.

Uses: Medicinal (folklore), ornamental.

### 2. *Dodonaea* Mill. 車桑子屬

Evergreen shrubs or small trees, sometimes with a glandular resinous exudate on leaves and inflorescences. Leaves simple or pinnate, exstipulate. Flowers bisexual or unisexual (plants dioecious), actinomorphic, solitary and axillary or arranged in terminal and axillary racemes, corymbs or panicles. Sepals (3–)5(–7), valvate or sometimes imbricate. Petals absent. Disk inconspicuous, absent in male flowers. Stamens (male flowers) 5–8; filaments short; anthers ellipsoidal, obtusely 4-gonous, connectives prominent. Ovary (female flowers) ellipsoidal, obcordiform, or transversely ellipsoidal, usually (2–)3(–6)-gonous, (2–)3(–6)-locular; ovules 2 per locule; style apical, much longer than ovary, often twisted; stigma (2–)3(–6)-lobed. Capsules samara-like, (2–)3(–6)-locular, septifragal, boat-like. Seeds 1–2 per locule, arillode present or absent.

About 65 species mainly distributed in Australia; one species in China; it also occurs in Hong Kong.

#### 1. *Dodonaea viscosa* (L.) Jacq. 車桑子(坡柳)

(Fig. 213; Photo 412)

Enum. Pl. Carib. 19. 1760; FKH 67. 1912; FYN 1: 282, pl. 66: 7–8. 1977; FTW 3: 584. 1977; FRPS 47(1): 59, fig. 20. 1985; FFFJ 3: 319, fig. 217. 1987; FGD 1: 253, fig. 281. 1987; FTW ed. 2, 3: 602. 1993.

*Ptelea viscosa* L., Sp. Pl. 1: 118. 1753.

Shrub or small tree, 1–3 m or taller. Branches flat, narrowly winged or ridged, with sticky juice. Leaves simple, short-petiolate or subsessile; leaf blade papery, variable in shape and size, linear, linear-spooniform, linear-lanceolate, or oblong, 5–12 × 0.5–4 cm, base cuneate, apex acute, obtuse or rounded, margin entire or inconspicuously shallowly wavy, both surfaces with sticky juice, glabrous, shining when dry, lateral veins many. Inflorescences terminal or axillary near apices, shorter than leaves, densely flowered, rachis and branches ridged. Pedicels 2–5(–10) mm, slender. Sepals 4, lanceolate or narrowly elliptic, ca. 3 mm, apex obtuse. Stamens 7–8;

filaments less than 1 mm; anthers incurved, ca. 2.5 mm, glandular. Ovary ellipsoidal, abaxially with sticky juice, 2–3-locular; styles ca. 6 mm, apex 2–3-lobed. Capsules obcordiform or compressed-globose, 2–3-winged, 1.5–2.2 cm tall, with wing 1.8–2.5 cm wide, testa membranous or papery, veined. Seeds 1–2 per locule, black, lens-like.

Locality: Ting Kok Rd., Sai Kung, Tai Lam Chung, Pak Nai, Tung Chung, Yi Long. *Y. S. Lau 3058*; *P. S. Choi 157, 280*.

Distribution: E, S & SW China; tropical and subtropical regions of the world.

Ecology: Sandy beaches and wastelands. Flowering: Autumn; fruiting: Late winter to early spring.

### 3. *Koelreuteria* Laxm. 欒樹屬

Trees or shrubs, deciduous, polygamo-monoecious or polygamo-dioecious. Leaves imparipinnate or bipinnate, exstipulate; leaflets alternate or opposite, usually serrate or parted, rarely entire. Thyrses terminal, rarely axillary, large; branches many, spreading. Flowers zygomorphic. Sepals (4–)5, valvate, outer 2 smaller. Petals 4(–5), slightly unequal in length, adaxially with 2-lobed scales at base, clawed. Disk thick, apex often crenate. Stamens often 8, sometimes fewer, inserted on disk; filaments distinct, often villous. Ovary 3-locular; ovules 2 per locule, on upper half of middle axis; style short or slightly longer; stigma 3-lobed or entire. Capsules swollen, ovoid, ellipsoidal, or subglobose, trigonous, loculicidal into 3 schizocarps; carpels membranous, reticulate. Seeds 1 per locule, globose, arillodes absent.

Three species distributed in Japan, China and Fiji; three species in China; one species commonly cultivated in Hong Kong.

#### 1. *Koelreuteria bipinnata* Franch. 複羽葉欒樹

Bull. Soc. Bot. France 33: 453. 1886; FRPS 47(1): 56, pl. 19: 6. 1985; FFIJ 3: 321, fig. 219. 1987; FGD 1: 254. 1987.

*Koelreuteria bipinnata* var. *puberula* Chun, Acta Phytotax. Sin. 3: 408. 1955; FYN 1: 286. 1977.

Tree, to 20 m tall. Branches pubescent, densely lenticellate. Leaves bipinnate, 45–70 cm including petioles; axes pubescent; leaflets 9–17, alternate, rarely opposite; petiolules ca. 3 mm or leaflets subsessile; blades papery or subleathery, obliquely ovate, 3.5–7 × 2–3.5 cm, base broadly cuneate or rounded, slightly oblique, apex acute to acuminate, margin incurved serrate, abaxially densely pubescent or sometimes mixed with appressed hairs, adaxially glabrous or pilosulose on midvein. Thyrses large, 35–70 cm, pubescent. Calyx 5-lobed to middle; lobes broadly triangular or elliptic, 2 mm, margin erose. Petals 4, oblong-lanceolate, 6–9 × 1.5–3 mm, apex obtuse or acute, claw 1.5–3 mm, villous, scale deeply 2-lobed. Disk red at base. Stamens slightly shorter than petals; filaments white villous. Ovary trigonous-ellipsoidal, pilose. Capsules pale purplish red, brown when mature, ellipsoidal or subglobose, 3-ridged, 4–7 × 3.5–5 cm, apex obtuse or rounded, mucronate. Seeds subglobose, 5–6 mm in diam.

Locality: Cultivated. *Y. S. Lau 3266*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan.

Ecology: Flowering: Jul.–Sep.; fruiting: Aug.–Oct.

Uses: Ornamental, medicinal (folklore).

#### 4. *Sapindus* L. 無患子屬

Trees, rarely shrubs, monoecious. Leaves paripinnate, rarely simple, alternate, exstipulate; leaflets entire, opposite or alternate. Thyrses large, many-branched, terminal or fasciculate at apex of branchlets; bracts and bracteoles subulate, small. Flowers unisexual, actinomorphic or zygomorphic. Sepals 4–5, imbricate, outer 2 smaller. Petals 4–5, clawed or not, with (1–)2 scales at base adaxially. Disk fleshy, acetabuliform or semilunar, sometimes lobed. Stamens (male flowers) 8, rarely more or fewer, exserted; filaments ± hairy. Ovary (female flowers) obovoid or turbinate, usually 3-lobed, 3-locular; ovules 1 per locule, ascending; style terminal. Fruit dehiscent into 3 schizocarps, usually 1–2 developed, developed schizocarps subglobose or obovoid, abaxially slightly flat; pericarp fleshy, containing abundant saponin. Seeds black or pale brown, ellipsoidal or subglobose, testa bony, hilum linear.

About 13 species distributed in warm regions of N & S America, Asia, and Australia; four species in China; one species in Hong Kong.

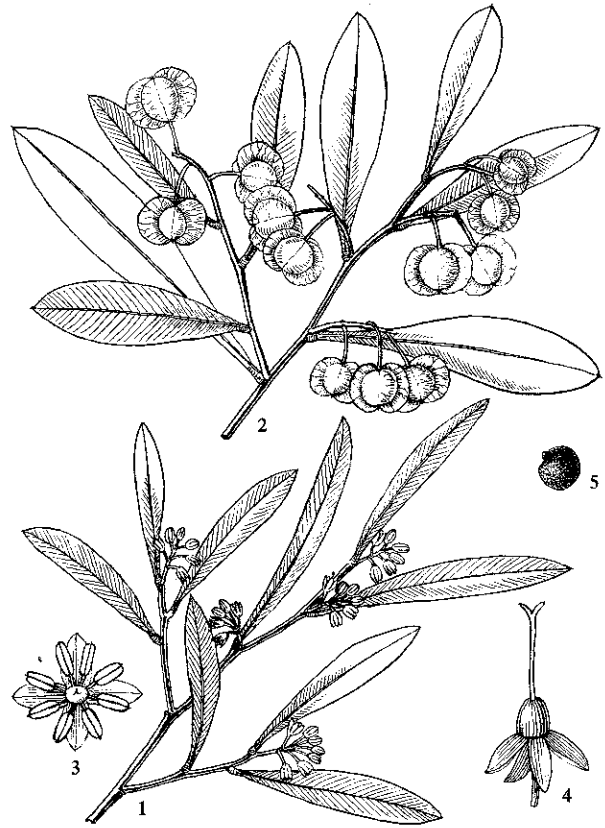


Figure 213. *Dodonaea viscosa* (L.) Jacq.

1. flowering branch; 2. fruiting branch; 3. male flower; 4. female flower; 5. seed. (drawn by H. P. Yu)

(Photo 413)

1. *Sapindus saponaria* L.

無患子(木患子)

(Fig. 214; Photo 414)

Sp. Pl. 1: 367. 1753.

*Sapindus mukorossi* Gaertn., Fruct. Sem. Pl. 1: 342. 1788; FKH 66. 1912; FTW 3: 592. 1977; FRPS 47(1): 14, pl. 4. 1985; FFJ 3: 316, fig. 214. 1987; FGD 1: 241, fig. 266. 1987; FTW ed. 2, 3: 281. 1993.

*Sapindus abruptus* Lour., Fl. Cochinch. 238. 1790.

Deciduous tree, to 20 m tall. Bark greyish brown or blackish brown; young branches green, glabrous. Leaves alternate, including petiole 25–45 cm or longer, axes slightly flat, grooved adaxially, glabrous or pilosulose; leaflets 5–8 pairs, usually subopposite; petiolule ca. 5 mm; blades thinly papery, narrowly elliptic-lanceolate or slightly falcate, 7–15 × 2–5 cm, base cuneate, slightly asymmetrical, apex acute or shortly acuminate, shining adaxially, glabrous or pilosulose abaxially; lateral veins ca. 15–17 pairs, nearly parallel, slender. Inflorescences terminal, conical. Flowers actinomorphic, small. Pedicels very short. Sepals ovate or oblong-ovate, larger ones ca. 2 mm, abaxially pilose at base. Petals 5, lanceolate, ca. 2.5 mm, abaxially villous at base or subglabrous, long clawed; scales 2, ear-like. Disk acetabuliform, glabrous. Stamens 8, exserted; filaments ca. 3.5 mm, densely villous below middle. Ovary glabrous. Fertile schizocarps orange, black when dry, subglobose, 2–2.5 cm in diam.

Locality: Aberdeen, Lam Tsuen, Tai Om, Ng Tung Chai. *W. J. Tutch* 7261; *L. T. Lo* 339.

Distribution: E, C, S & SW China; Japan, Korea, Indochina, India.

Ecology: Flowering: Spring; fruiting: Summer to autumn.

Uses: Medicinal (folklore), fruit as a substitute of soap.

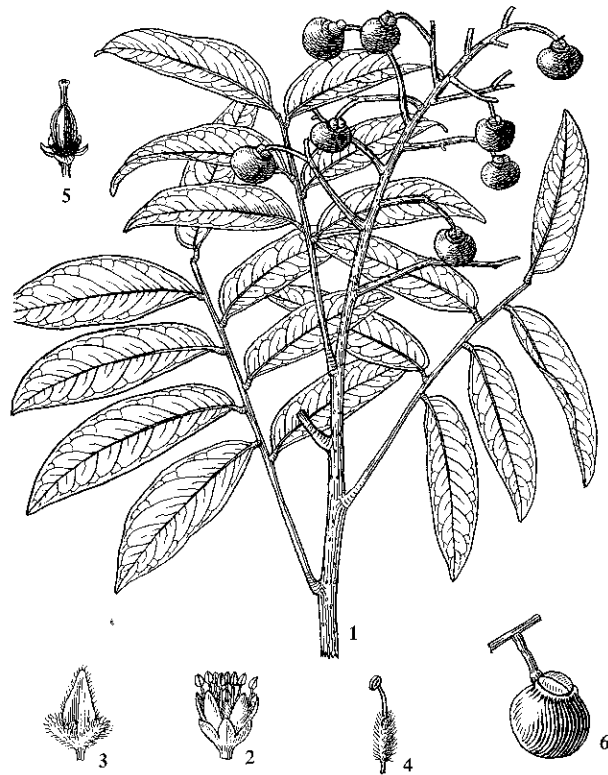


Figure 214. *Sapindus saponaria* L.

1. fruiting branch; 2. male flower; 3. petal (ventral view); 4. stamen; 5. pistil; 6. fruit. (drawn by H. P. Yu)

5. *Dimocarpus* Lour. 龍眼屬

Evergreen trees or shrubs, usually monoecious. Leaves paripinnate, alternate, exstipulate; leaflets opposite or subopposite, entire. Thyrses usually large, terminal, or fasciculate, stellate or tomentose; bracts and bracteoles subulate, small. Flowers unisexual, actinomorphic. Calyx cupular; sepals 5, imbricate, stellate-hairy or tomentose. Petals (0–)5, usually spatulate or lanceolate, without scales. Disk acetabuliform. Stamens (male flowers) often 8, exserted; filaments hirsute; anthers ellipsoidal. Ovary (female flowers) obcordiform, 2–3-lobed and 2–3-locular, densely tuberculate, with tufted stellate hairs and tomentose on tubercles; ovules 1 per locule; style between ovary lobes; stigma 2–3-lobed. Fruit deeply lobed into 2 or 3 schizocarps, usually 1–2 developed; fertile schizocarp berry-like, subglobose, pericarp leathery (crustaceous when dry), endocarp papery. Seeds subglobose or ellipsoidal; testa leathery, smooth; hilum elliptic, slightly large; pseudotesta fleshy, embedding all or half of seed.

About seven species distributed in S and SE Asia from Sri Lanka and India to E Malesia and Australia; four species in China; one species in Hong Kong.

1. *Dimocarpus longan* Lour. 龍眼

(Photo 415)

Fl. Cochinch. 1: 233. 1790; FYN 1: 266, pl. 63: 1–2. 1977; FRPS 47(1): 28, pl. 9. 1985; FFJ 3: 317, fig. 215. 1987; FGD 1: 245, fig. 270. 1987.

*Euphoria longan* (Lour.) Steud., Nomencl. Bot. 1: 328. 1821; FHN 3: 83. 1974.

*Euphoria longana* Lam., Encycl. 3(1): 574. 1792; FTW ed. 2, 3: 602. 1993.

*Nephelium longana* Cambess., Mem. Mus. Hist. Nat. 18: 30. 1829; FKH 66. 1912.

Tree, usually ca. 10 m tall. Branches strong, puberulous, with scattered glaucous lenticels. Leaves 15–30 cm or longer including the petiole; leaflets (3–)4–5(–6) pairs; petiolules less than 5 mm; blades thinly leathery, oblong-elliptic to oblong-lanceolate, 6–15 × 2.5–5 cm, base extremely asymmetrical, apex acute, sometimes slightly obtuse, abaxially powdery green, adaxially deep green and shiny, both surfaces glabrous; lateral veins 12–15 pairs, prominent abaxially. Inflorescences terminal or axillary near apex, large, many-branched, densely stellate hairy. Pedicels short. Sepals triangular-ovate, ca. 2.5 mm, subleathery, both surfaces brownish yellow tomentose with tufts of stellate hairs. Petals milky-white, lanceolate, nearly as long as sepals, only pilosulose abaxially. Filaments hirsute. Fruit usually yellowish brown or sometimes greyish yellow, subglobose, 1.2–2.5 cm in diam., abaxially slightly rugose, or with few slightly prominent tubercles. Seeds brown, shining, with fleshy arilode.

Locality: Cultivated. *H. C. Tang* 146; *HK sheet* 6012, 10710.

Distribution: Fujian, Hainan, Guangdong, Guangxi, Yunnan; SE Asia.

Ecology: Flowering: Spring and summer; fruiting: Autumn.

Uses: Fruit, timber.

## 6. Litchi Sonn. 荔枝屬

Evergreen trees, monoecious. Leaves paripinnate, alternate, exstipulate. Thyrses terminal, golden tomentose; bracts and bracteoles small. Flowers unisexual, actinomorphic. Calyx cupular, 4–5-lobed, valvate. Petals absent. Disk acetabuliform, entire. Stamens (male flowers) 6–8, exserted; filaments filiform, pilose. Ovary (female flowers) shortly stalked, obcordiform, 2–3-lobed, 2–3-locular; ovules 1 per locule; style inserted between ovary lobes; stigma 2–3-lobed. Fruit deeply lobed into 2–3 schizocarps, usually only 1–2 developed, ovoid or subglobose; pericarp leathery (crustaceous when dry), abaxially with tortoise-shell-like fissure, with scattered conical prominents, sometimes nearly smooth. Seeds nearly same shape as schizocarps; testa brown, shining, leathery; arillode fleshy, wrapping all or lower half of seed.

One species distributed in SE China and Malesia, widely cultivated in subtropical regions; it also occurs in Hong Kong.

1. *Litchi chinensis* Sonn. 荔枝

(Photo 416)

Voy. Ind. Orient. 3: 255, pl. 129. 1782; FRPS 47(1): 32, pl. 10. 1985; FFJ 3: 318, fig. 216. 1987; FGD 1: 246, fig. 272. 1987; FTW ed. 2, 3: 606. 1993.

*Dimocarpus litchi* Lour., Fl. Cochinch. 223. 1790.

*Nephelium litchi* Cambess., Mem. Mus. Hist. Nat. 18: 30. 1829; FHK 47. 1861; FKH 67. 1912.

Tree, often less than 10 m tall. Bark greyish black; branches brownish red, terete, densely white lenticellate. Leaves including petioles 10–25 cm or longer; leaflets 2–3(–4) pairs; petiolules 7–8 mm; blades thinly leathery or leathery, lanceolate or ovate-lanceolate, sometimes elliptic-lanceolate, 6–15 × 2–4 cm, base cuneate to rounded, apex cuspidate or shortly caudate-acuminate, margin entire, adaxially deep green and shining, abaxially glaucous, glabrous on both surfaces; lateral veins often slender, conspicuous or slightly prominent abaxially. Inflorescences terminal, large, many-branched. Pedicels 2–4 mm, slender, sometimes short and stout. Calyx golden tomentose. Stamens 6–7(–8); filaments ca. 4 mm. Ovary densely tuberculous and hispid. Fruit usually dark red to fresh red when mature, globose to subglobose, 2–3.5 cm. Seeds thoroughly covered by fleshy arillode.

Locality: Cultivated. *H. C. Tang 843; Y. S. Lau 1543; K. L. Yip 4258.*

Distribution: Fujian, Hainan, Guangdong, Guangxi, Yunnan, Sichuan; SE Asia, widely cultivated in subtropical regions of the world.

Ecology: Flowering: Spring; fruiting: Summer.

Uses: Fruit, medicinal (folklore).

## 259. ACERACEAE 槭樹科

XIA Nian-he 夏念和

Trees, sometimes shrubs. Winter buds imbricate or valvate. Leaves simple, usually palmately lobed, rarely pinnately or palmately compound, opposite, petiolate, usually estipulate. Inflorescence a corymb, umbel, raceme, or panicle, terminal or lateral. Flowers bisexual (but functionally female) or unisexual, actinomorphic. Sepals (4–)5, distinct or seldomly connate. Petals (4–)5(–6), rarely 0, imbricate, distinct, like sepals. Stamens usually 8, sometimes 4–6 or 10–12. Disk present or absent. Ovary superior, compressed, usually 2-locular, ovules 2 per locule; style usually bifurcate; stigmas 2. Fruit a winged schizocarp, usually a double samara, usually 1-seeded, endosperm absent.

Two genera and ca. 130 species widespread in N temperate and some tropical regions of the world; two genera and about 100 species in China; one genus and four species native to Hong Kong.

1. *Acer* L. 槭樹屬

Trees or shrubs, andro-monoecious, andro-dioecious or dioecious. Leaves often simple and palmately lobed, rarely pinnately or palmately 3–5-foliolate. Inflorescence corymbiform or umbelliform, sometimes racemose or large paniculate. Sepals (4–)5. Petals (4–)5(–6), rarely 0. Stamens (4–)8(–12); filaments distinct. Carpels 2; ovules (1–)2 per locule. Fruit a winged schizocarp, commonly a double samara, usually 1-seeded.

About 130 species widespread in both temperate and tropical regions of Asia, Europe, N and C America, and N Africa; 98 species in China; four species in Hong Kong.

## 1a. Leaves entire.

2a. Reticulate veins of leaves prominent abaxially; wings of samara spreading at acute angle ..... 1. *A. sino-oblongum*

2b. Reticulate veins of leaves prominent on both surfaces; wings of samara spreading at obtuse angle ..... 2. *A. reticulatum*

## 1b. Leaves 3–5-lobed.

3a. Leaf lobes entire ..... 3. *A. buergerianum*

3b. Leaf lobes serrate ..... 4. *A. tutcheri*

1. *Acer sino-oblongum* F. P. Metcalf 濱海槭(華南飛蛾樹)

(Photo 417)

Lingnan Sci. J. 11: 202. 1932; FRPS 46: 205, pl. 58: 3. 1984; FGD 3: 276. 1995.

*Acer oblongum* Benth., FHK 47. 1861, non Wall. ex DC. (1824).

Evergreen tree, 5–7 m tall, andro-monoecious. Bark brownish grey, rough. Branchlets glabrous, purple to brownish purple, lenticels ovate or rounded. Leaves simple; petioles 1–3 cm, glabrous; leaf blade leathery, elliptical or elliptical-oblong, 6–9 × 2–4 cm, base broadly cuneate or rounded, apex acuminate or caudate-acuminate, margin entire, glaucous abaxially; lateral veins 5–7 pairs, slightly prominent abaxially. Inflorescence terminal, corymbose; peduncle ca. 1 cm. Flowers greenish yellow. Sepals 5, obovate-oblong, ca. 4 mm. Petals 5, oblanceolate, as long as sepals. Stamens 8. Ovary glabrous. Fruiting pedicels 5–10 mm, villous. Nutlets pale yellowish brown, strongly convex; wings spreading at acute angle.

Locality: Hong Kong Island, Tai Tam, Repulse Bay, Aberdeen, Mount Nicholson, Pat Sin Leng, Bride's Pool, Tsing Yi. *Y. S. Lau* 1008, 1259, 2670.

Distribution: Guangdong.

Ecology: Thin forests. Flowering: Apr.; fruiting: Sep.

Notes: The type specimen was collected by C. Wright from Hong Kong Island between 1854 and 1855.

## 2. *Acer reticulatum* Champ. 網脈槭(長葉槭)

(Photo 418)

Hooker's J. Bot. Kew Gard. Misc. 3: 312. 1851; FHK 47. 1861; FRPS 46: 216. 1981; FGD 3: 277. 1995.

*Acer laevigatum* var. *reticulatum* (Champ.) Rehder, *Trees & Shrubs* 1(4): 180. 1905.

*Acer laevigatum* subsp. *reticulatum* (Champ.) A.E. Murray, *Kalmia* 8: 6. 1977.

Evergreen tree, 5 m tall, andromonoecious. Bark deep grey. Branchlets slender, glabrous, green when young, yellowish green when old. Leaves simple; petioles 1–1.5 cm, glabrous, sulcate adaxially; leaf blade leathery, lanceolate or oblong-lanceolate, 10–15 × 4–5 cm, base cuneate or broadly cuneate, apex acuminate or shortly acuminate, margin entire, light green on both surfaces, abaxially with tufts of hairs at vein axils when young; 3-veined at base, lateral veins 7 or 8 pairs, reticulate veins slightly prominent abaxially. Inflorescence terminal, corymbose paniculate, 2 × 3 cm; peduncles 2–3 cm, glabrous. Sepals 5, pale purple or pale green, ovate or ovate-oblong, ca. 2 mm. Petals 5, white, spatulate, longer than sepals, slightly retuse. Stamens 8, filaments ca. 6 mm, glabrous. Ovary slightly pubescent. Fruit purplish at first, later becoming yellow; nutlets strongly convex, ellipsoidal or ellipsoidal-oblong, ca. 6–8 mm in diam., wings spreading at obtuse angle.

Locality: Deep Water Bay, Shek O, Tai Tam, Aberdeen, Pok Fu Lam, Victoria Peak, Fo Tan, Ma On Shan, Tai Mo Shan. *Y. S. Lau* 877; *P. S. Choi* 386; *Y. W. Lam* 154.

Distribution: Guangdong.

Ecology: Thin forests. Flowering: Winter; fruiting: Spring.

Notes: The type specimens were collected by J. G. Champion from Mount Gough and Happy Valley, Hong Kong Island between 1847 and 1850.

## 3. *Acer buergerianum* Miq. 三角槭

Ann. Mus. Bot. Lugduno-Batavi 2: 88. 1865; FRPS 46: 183, pl. 55: 1. 1981; FFJ 3: 306, fig. 207. 1987; FGD 3: 274. 1995.

*Acer trifidum* f. *buergerianum* (Miq.) Schwer., *Gartenflora* 42: 258. 1893.

Deciduous tree, 4–10(–20) m tall, andro-monoecious. Bark rough, brown. Young branchlets purplish green, old branchlets waxy. Leaves simple; petioles slender, 2.5–5 cm, glabrous; leaf blade membranous, ovate, obovate or elliptic, (3–)6–10 × 4–6 cm, base rounded or cuneate, usually 3-lobed; middle lobe triangular-ovate, apex acute or shortly acuminate; lateral lobes short, margin usually entire, adaxially glabrous, abaxially glaucous; primary veins 3(–5), conspicuous abaxially. Inflorescence terminal, corymbose, ca. 3 cm wide. Peduncles 1.5–2 cm. Sepals 5, ovate, ca. 1.5 mm, glabrous. Petals 5, yellowish white, narrowly lanceolate or spatulate-lanceolate, ca. 2 mm, apex obtuse. Stamens 8, nearly as long as sepals or shorter. Ovary densely yellowish villous. Fruit yellowish brown; nutlets strongly convex, 6–7 mm in diam.; wing broad at middle, contracted at base, wings spreading at acute angle.

Locality: Cultivated. *Y. W. Lam* 373.

Distribution: S, E, C & SW China; Japan.

Ecology: Flowering: Apr.; fruiting: Aug.

## 4. *Acer tutcheri* Duthie 嶺南槭 (Fig. 215; Photo 419)

Bull. Misc. Inform. Kew 1: 16. 1908; FKH 67. 1912; FRPS 46: 175, pl. 51: 2. 1981; FFJ 3: 303. 1987; FGD 3: 274, pl. 184. 1995.

*Acer oliverianum* var. *tutcheri* (Duthie) Metc. ex Kussm., *Handb. Laubgeh.* 1: 104. 1959.

Deciduous tree, 5–10(–15) m tall, andro-monoecious. Bark brown or dark brown. Branchlets slender, glabrous, green or purplish green when young. Leaves simple; petioles 2–3 cm,

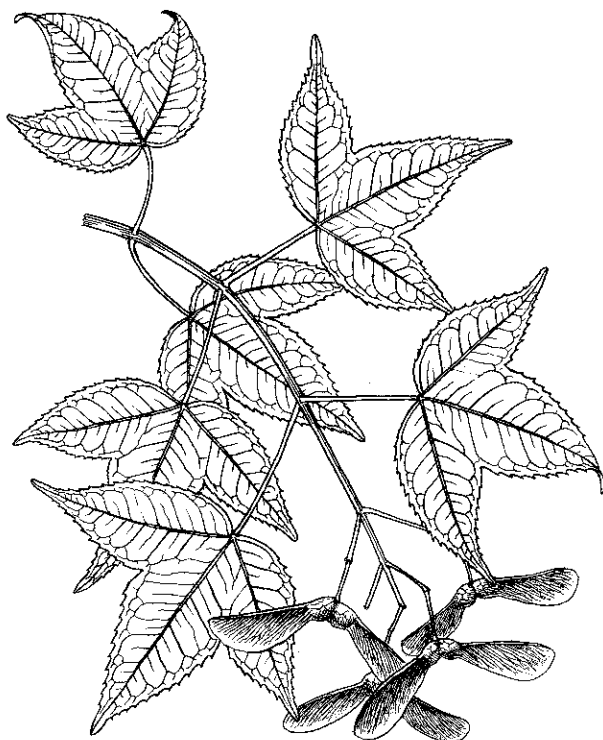


Figure 215. *Acer tutcheri* Duthie  
1. fruiting branch. (drawn by H. P. Yu)

slender, glabrous; leaf blade membranous, broadly ovate, 6–7 × 8–11 cm, base rounded or subtruncate, usually 3(–5)-lobed; lobes triangular-ovate, rarely ovate-oblong, apex acuminate, rarely caudate-acuminate, margin sparsely serrulate, sometimes entire near base, glabrous on both surfaces or hairy at vein axils abaxially; basal veins 3. Inflorescence terminal, 6–7 cm. Peduncles ca. 3 cm. Sepals 4, ovate-oblong, yellowish green. Petals 4, obovate, pale yellowish white, ca. 2.5 mm. Stamens 8, filaments glabrous. Ovary densely white pilose. Fruit yellowish; nutlets convex, ca. 6 mm in diam.; wings spreading obtusely or almost horizontally.

Locality: Victoria Peak, Ma On Shan, Sunset Peak. *Y. S. Lau 3248*; *Y. W. Lam 1360*; *K. Y. Tam 104*.

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Zhejiang.

Ecology: Thin forests. Flowering: Apr.; fruiting: Sep.

Note: The type specimen (*W. J. Tutcher s.n.*, K) was collected by W. J. Tutcher from Lantau Island in 1894. Listed in *Rare and Precious Plants of Hong Kong*.

## 260. BURSERACEAE 橄欖科

XIA Nian-he 夏念和

Trees or shrubs, bark with prominent resin ducts. Leaves odd-pinnate or trifoliolate, very rarely unifoliolate, alternate, very rarely opposite, exstipulate or rarely stipulate. Inflorescence terminal or axillary, racemose or paniculate or capitate. Flowers regular, small, hermaphrodite or often polygamous. Calyx usually connate at base, (3–)4–5-lobed; lobes imbricate or valvate. Petals (3–)4–5, rarely 0, distinct, rarely connate, imbricate or valvate. Disk annular or cupular. Stamens as many as or twice as many as petals, inserted at base or margin of disk; filaments free, rarely connate at base; anthers 2-celled, dehiscing longitudinally. Ovary superior, rarely perigynous, 1–5-locular, ovules 1–2 per locule; placentation axile; style simple, stigma undivided or 2–5-lobed. Fruit a drupe, indehiscent, rarely a pseudo-capsule and dehiscent. Seeds 1–3, endosperm wanting, embryo straight or curved.

About 16 genera and 550 species distributed in tropical regions of the world; three genera and 13 species in China; one genus and two species in Hong Kong.

### 1. *Canarium* L. 橄欖屬

Evergreen trees, rarely shrubs. Leaves alternate, odd-pinnate, rarely unifoliolate, often stipulate, rarely exstipulate; leaflets opposite or subopposite. Inflorescence a thyrses, rarely a raceme or spike, axillary or terminal. Flowers bracteate, hermaphrodite or polygamous, 3-merous. Calyx cupular or campanulate, lobes triangular, valvate. Petals 3, imbricate, usually exceeding calyx, oblong-obovate. Stamens 6, distinct or completely connate; filaments flat; anthers dorsifixed. Ovary 2–3-locular; ovules 2 per locule; style terete, or stigma subsessile, capitate, 3-lobed. Drupe ovoid to ellipsoidal, with a 1–3-locular and 1(–3)-seeded stone; cotyledons often partite, contortuplicate.

About 75 species mainly distributed in tropical Africa and Asia; seven species in China; two species in Hong Kong.

- 1a. Leaflets scabrous abaxially ..... 1. *C. album*  
1b. Leaflets smooth abaxially ..... 2. *C. tramdenum*

#### 1. *Canarium album* (Lour.) Raeusch.

橄欖(白欖) (Fig. 216; Photo 420)

Nomencl. Bot. 287. 1797; FKH 57. 1912; FGZ 438. 1956; FHN 3: 57, fig. 562. 1974; FYN 1: 197, pl. 46: 1–10. 1977; FPN 2: 381, fig. 282. 1985; FGD 3: 267, fig. 181. 1995; FRPS 43(3): 25, pl. 7: 1–10. 1997.

*Pimela alba* Lour., Fl. Cochinch. 2: 408. 1790.

Tree, 10–25 m tall. Branchlets yellowish brown tomentose when young, glabrescent. Leaves odd-pinnate; stipules linear, yellowish brown tomentose, caducous; leaflets 7–11(–17), shortly petiolulate; blade papery to leathery, oblong-lanceolate to ovate-lanceolate, 6–20 × 2–5.5 cm, base rounded or cuneate, oblique, apex acuminate, margin entire, glabrous on both surfaces, scabrous abaxially; lateral veins 12–16 pairs, conspicuous on both surfaces. Inflorescence axillary, slightly tomentose or glabrescent, shorter than leaves. Calyx cupular, shallowly 3-lobed, 2.5–3 mm. Petals white, twice as long as calyx. Stamens glabrous; filaments connate at lower half. Ovary densely pubescent. Drupe ovoid or spindle-shaped, suborbicular in cross section, 2.5–3.5 cm, yellow green, glabrous; exocarp thick, wrinkled when dry, stone acuminate at both ends.

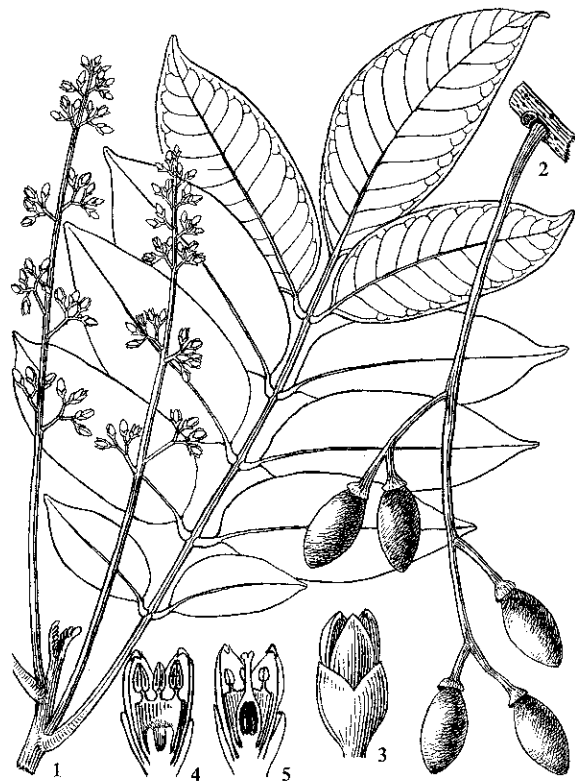


Figure 216. *Canarium album* (Lour.) Raeusch.

1. flowering branch; 2. infructescence; 3. flower; 4. vertical section of male flower; 5. vertical section of female flower. (drawn by H. P. Yu)

Locality: Cultivated. *Y. S. Lau 645; HK sheet 40740.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; Vietnam.

Ecology: Flowering: Apr.–May; fruiting: Oct.–Dec.

Uses: Fruit, roadside tree, timber.

2. *Canarium trandenum* C. D. Dai & Yakovlev 烏欖

(Photo 421)

Bot. Zhurn. (Moscow & Leningrad) 70(6): 784. 1985; FGD 3: 267. 1995.

*Canarium pimela* K. D. König, Ann. Bot. (König & Sims) 1: 361, t. 7: 1. 1805, *nom. illeg.*; FGZ 439. 1956; Icon. Corm. Sin. 2: 463, fig. 2856. 1972.

*Canarium pimela* Leenh., Blumea 9(2): 406, fig. 25. 1959, *isonym*; FHN 2: 57. 1974; FYN 1: 198, pl. 46: 14–16. 1977; FRPS 43(3): 27, pl. 7: 14–16. 1997.

*Canarium pimeloides* Govaerts, World Checklist Seed Plants 3(1): 12. 1999.

Tree, up to 20 m tall. Leaves odd-pinnate, exstipulate; leaflets 7–13(–17), blade papery to leathery, broadly elliptic, ovate, oblong, ovate-lanceolate or obovate, 3–20 × 2–8 cm, base cuneate to subrounded, oblique, apex acute, margin entire, glabrous on both surfaces, smooth abaxially; lateral veins 8–15 pairs, reticulate veins conspicuous. Inflorescence a cymose panicle, glabrous. Calyx cupular, ca. 2 mm, shallowly-lobed. Petals 3 times as long as calyx. Stamens glabrous; filaments connate at lower half. Ovary glabrous. Infructescence 8–35 cm long, 1–4-fruited. Drupe purple black when mature, narrowly ovoid, 3–4 × 1.7–2 cm, orbicular to inconspicuously triangular in cross section.

Locality: Cultivated. *H. C. Tang 2476; Y. S. Lau 1164; K. L. Yip 4101.*

Distribution: Hainan, Guangdong, Guangxi, S Yunnan (cultivated); Vietnam, Laos, Cambodia.

Ecology: Flowering: Apr.–May; fruiting: May–Nov.

Uses: Timber, fruit used for making preserved fruit.

Notes: *Canarium pimela* K. D. König was proposed to be conserved by Y. F. Deng & G. H. Zhu (Taxon 54(2): 550. 2005) and approved by Nomenclature Committee for Vascular Plants (Taxon 56(2): 592. 2007). If the proposal is approved by Nomenclature Section of the next International Botanical Congress, the correct name of this species will be *Canarium pimela* K. D. König.

## 261. ANACARDIACEAE 漆樹科

XIA Nian-he 夏念和

Trees or shrubs, rarely woody climbers, hermaphroditic, polygamo-dioecious or dioecious, with vertical resin-ducts in bark. Leaves simple, trifoliate or imparipinnate, alternate, rarely opposite or whorled, exstipulate. Inflorescences thyrsoid, terminal or axillary. Flowers small, actinomorphic, bisexual to unisexual; pedicels often articulate. Sepals distinct or connate at base, imbricate or valvate, caducous or persistent. Petals (0–)3–7, distinct or rarely connate at base, sometimes adnate basally to receptacle, imbricate or valvate, deciduous or persistent. Stamens 5–10, in 1–2 whorls, one, several or all fertile, filaments distinct or rarely connate at base, anthers introrse, dorsi- or basifixed, 2-celled, longitudinally dehiscent. Disk usually distinct, fleshy, complete or lobed. Carpels 1–5, connate, rarely distinct. Ovary superior, 1(–5)-locular, ovule 1 per locule; style 1–5, distinct or connate, stigma slightly enlarged. Fruit usually a drupe with ± resinous mesocarp, 1–5-locular; epicarp thin, mesocarp usually fleshy, fibrous and resinous, endocarp crustaceous to bony. Seeds usually without endosperm, cotyledons fleshy.

About 77 genera and 600 species mainly distributed in tropical, subtropical and temperate regions of the world; 16 genera and 50 species in China; four genera and six species in Hong Kong.

- 1a. Leaves simple..... 1. *Mangifera*  
 1b. Leaves imparipinnate.  
 2a. Ovary 1-locular; fruit 1-locular..... 2. *Rhus*  
 2b. Ovary 4–5-locular; fruit 4–5-locular.  
 3a. Flowers bisexual; styles ± connate..... 3. *Dracontomelon*  
 3b. Flowers polygamous; styles conspicuously distinct..... 4. *Choerospondias*

### 1. *Mangifera* L. 杧果屬

Evergreen trees, andro-monoecious. Leaves simple, alternate, entire, petiolate. Inflorescence a terminal panicle. Flowers small, 4–5-merous. Calyx 4–5-lobed; lobes connate at base, imbricate. Petals 4–5(–6), distinct, sometimes adnate to disk, imbricate. Disk usually lobed. Stamens 5, rarely 8–12, distinct or united with disk at base, usually 1 or 2 well-developed and bigger. Ovary glabrous, 1-locular, style 1, terminal. Fruit a drupe, mesocarp fleshy or fibrous, endocarp thick and bony, compressed. Seed flat, testa thinly papery.

About 35 species distributed in tropical Asia; five species in China; one species cultivated in Hong Kong.

1. *Mangifera indica* L. 杧果

(Photo 422)

Sp. Pl. 1: 200. 1753; FKH 69. 1912; FGZ 446, fig. 240. 1956; FHN 3: 102, fig. 597. 1974; FYN 2: 367. 1979; FRPS 45(1): 74. 1980;

FFJ 3: 242. 1987; FGD 2: 308. 1991.

*Mangifera austro-yunnanensis* Hu, Bull. Fan Mem. Inst. Biol., Bot. 10: 160. 1940.

Tree, 10–20 m tall; branchlets brown, glabrous. Leaves often crowded towards apex of branchlets; petiole 2–4 cm.; leaf blade leathery, oblong to oblong-lanceolate, rarely oblong-ovate, 12–20 × 3.5–6.5 cm, base cuneate to obtuse, apex acute to acuminate, margin entire, undulate, deep green adaxially, light green abaxially, glossy and glabrous on both surfaces; lateral veins ca. 15 on each side of midvein. Panicle as long as or slightly longer than leaves, pubescent; bracts ca. 1.5 mm, lanceolate, pubescent; pedicels 1.5–3 mm, articulate. Calyx lobes ovate or long elliptic, 1.7–3.5 mm, pubescent. Petals light yellow or white, later turning to purple, oblong or oblong-lanceolate, 2 times as long as calyx-lobes, glabrous, recurved at anthesis. Fertile stamen 1, ca. 2.5 mm; staminodes 4, 0.7–1.5 mm. Disk inflated, fleshy, 5-lobed. Ovary oblique, ovoid, ca. 1.5 mm in diam.; style ca. 2.5 mm. Drupe ellipsoidal to nearly kidney-shape, greenish yellow to red, 8–15 cm, fleshy mesocarp bright yellow, endocarp more or less compressed.

Locality: Cultivated. *Y. S. Lau* 698, 1753; *HK sheet* 6455.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan (cultivated); native to India, Indochina, Malay Peninsula, Indonesia, cultivated in tropical regions worldwide.

Ecology: Flowering: Spring; fruiting: Summer to autumn.

Uses: Fruit, ornamental.

## 2. *Rhus* L. 漆樹屬

Deciduous shrubs or trees, polygamous or dioecious. Leaves imparipinnately compound, rarely trifoliolate or simple; leaf rachis sometimes winged; leaflets petiolate or sessile, serrate or entire. Inflorescence paniculate or thyrsoid, axillary or terminal. Flowers functionally unisexual or bisexual, usually 5-merous. Calyx (4–)5(–6)-lobed; lobes imbricate. Petals (4–)5(–6), imbricate. Stamens (4–)5(–6), or rarely 10, distinct, inserted at the base of disk. Disk annular. Ovary 1-locular, styles 3, often united basally; stigma capitate. Drupe globose, dry, slightly compressed, smooth or hairy, stone leathery or bony. Seed 1, cotyledons flat.

About 200 species distributed in subtropical and warm temperate regions of the world; 14 species in China; three species in Hong Kong.

- 1a. Leaves glabrous.....1. *R. succedanea*  
 1b. Leaves ± hairy.  
   2a. Leaflet 7–13, ovate to oblong, margin coarsely serrate.....2. *R. chinensis*  
   2b. Leaflet 9–17, ovate-lanceolate or lanceolate, margin entire to sparsely serrate.....3. *R. hypoleuca*

**1. *Rhus succedanea* L. 木蠟樹(野漆樹) (Photo 423)**  
 Mant. Pl. 2: 221. 1771; **FKH 69. 1861**; FKH 69. 1912; FGD 447. 1956; FHN 3: 108, fig. 605. 1974; FTW 3: 570, pl. 732. 1977; FGD 2: 315. 1991.

*Toxicodendron succedaneum* (L.) O. Kuntze, Rev. Gen. Pl. 154. 1891; FYN 2: 403. 1979; FRPS 45(1): 120. 1980; FFJ 3: 247, fig. 168. 1987.

Shrub or small tree, 2–5(–12) m tall, all parts glabrous. Branchlets stout, greyish white or greyish brown. Leaves ± clustered on apex of branch, 15–30 cm including the petiole; petioles 6–9 cm, not winged; leaflets 7–13, opposite, shortly petiolulate or sessile; blade papery, elliptic-oblong or ovate-lanceolate, 5–10 × 1.5–3.5 cm, base oblique, rounded, apex caudate, margin entire, shining adaxially, pale green or greyish green abaxially; lateral veins 15–20 on each side of midvein. Panicles axillary, 5–15 cm. Flowers small; pedicels short and slender. Calyx-lobes ovate, apex obtuse. Petals yellowish green, oblong, ca. 2 mm, apex obtuse. Drupe oblique, compressed, ca. 6–8 mm wide, pericarp thin, separating, mesocarp thick, waxy, stone bony.

Locality: Common in Hong Kong. *W. Y. Chun* 4804 (IBSC); *C. L. Tso* 20226 (IBSC); *HK sheet* 40015.

Distribution: Area S of Changjiang River; SE to E Asia.

Ecology: Forests or thickets. Flowering: Spring; fruiting: Autumn.

Uses: Raw material for industry (pericarp, seed).

**2. *Rhus chinensis* Mill. 鹽膚木 (Fig. 217; Photo 424)**  
 Gard. Dict. (ed. 8) 7. 1768; FHN 3: 109. 1947; FYN 2: 388. 1979; FRPS 45(1): 100. 1980; FFJ 3: 243. 1987; FGD 2: 315. 1991.



Figure 217. *Rhus chinensis* Mill.

1. fruiting branch; 2. flower with petals removed; 3. petal; 4. gall on leaflet. (drawn by H. P. Yu)



*Rhus chinensis* var. *roxburghii* (DC.) Rehder, J. Arnold Arb. 20: 416. 1929.

*Rhus semialata* Murray, Comm. Doc. Goetting. 6: 27, t. 23. 1784; FKH 69. 1912.

*Rhus semialata* var. *roxburghii* DC., Prodr. 2: 67. 1825.

Shrub or tree, 2–10 m tall. Bark greyish brown; branchlets, petioles and inflorescences densely rusty pubescent. Leaves 25–45 cm, including the petiole, rachis winged or not; leaflets 7–13, shortly petiolulate; blade ovate to oblong, 5–12 × 2–4 cm, base rounded to broadly cuneate, slightly oblique, apex acuminate to acute, margin coarsely serrate, adaxially rusty pubescent on midvein, abaxially glaucous and greyish tomentose; lateral veins and reticulate venation impressed adaxially, prominent abaxially. Inflorescence 20–30 cm; peduncles short, robust; pedicels ca. 1 mm. Calyx minutely pubescent; lobes ovate, ca. 0.5 mm. Petals white, oblong, ca. 2 mm. Stamens 5; filaments ca. 1.5 mm. Ovary ovoid, ca. 1 mm, densely white-villous. Drupe red, globose, slightly compressed, 4–5 mm in diam., glandular-pubescent.

Locality: Common in Hong Kong. *H. C. Tang* 2216; *Y. S. Lau* 843, 2300.

Distribution: S, E, C & SW China; SE to E Asia.

Ecology: Thickets or thin forests. Flowering: Late summer; fruiting: Autumn.

Uses: Tannin, dye stuff, medicinal (folklore).

### 3. *Rhus hypoleuca* Champ. ex Benth. 白背鹽膚木(白背漆)

(Photo 425)

Hooker's J. Bot. Kew Gard. Misc. 4: 43. 1852; FHK 69. 1861; FKH 69. 1912; FTW 3: 569. 1977; FRPS 45(1): 103. 1980; FFJ 3: 244, fig. 165. 1987; FGD 2: 315, fig. 207. 1991.

Shrub or small tree, 1.5–5 m tall; branchlets minutely greyish pubescent to glabrous, with brownish red orbicular lenticels. Leaves 20–25 cm including the petiole; rachis not winged; leaflets 9–17, shortly petiolulate or sessile; blade ovate-lanceolate or lanceolate, 5–9.5 × 2–3.5 cm, base oblique, apex acuminate to caudate, margin entire to sparsely serrate, slightly revolute, grey tomentose along midvein adaxially, densely white tomentose abaxially; lateral veins dense, 15–20 on each side of midvein, midvein and lateral veins slightly impressed adaxially, prominent abaxially. Inflorescence to 20 cm, greyish yellow tomentose; peduncles very short; pedicels 1–2 mm, greyish yellow tomentose. Calyx lobes 0.5 mm, minutely pubescent. Petals white, obovate-oblong, ca. 2 mm. Ovary globose, densely white hairy. Drupe ca. 4 mm in diam., red glandular-pubescent.

Locality: Common in Hong Kong. *H. C. Tang* 2051; *HK sheet* 1221, 6372.

Distribution: Guangdong, Taiwan.

Ecology: Forests. Flowering: Summer; fruiting: Autumn.

Notes: The type specimen was collected by J. G. Champion from Happy Valley, Hong Kong Island between 1847 and 1850.

## 3. *Dracontomelon* Blume 人面子屬

Trees. Leaves imparipinnate, alternate, exstipulate; leaflets opposite or alternate, entire, rarely serrulate. Inflorescence a panicle, axillary or terminal. Flowers small, bisexual, 5-merous. Calyx 5-lobed; lobes imbricate. Petals imbricate, recurved at anthesis. Stamens 10, inserted at base of disk. Disk cupular, shallowly 10-lobed. Ovary 5-locular, ovule 1 per locule; styles 5, joined in upper part. Drupe subglobose, mesocarp fleshy, endocarp pentagonal and slightly compressed. Seed compressed globose, 3-ribbed.

About eight species distributed in tropical Asia; two species in China; one species cultivated in Hong Kong.

### 1. *Dracontomelon duperreanum* Pierre 人面子

(Photo 426)

Fl. Forest. Cochinch. 5: t. 374. 1898; FYN 2: 375. 1979; FRPS 45(1): 83, pl. 26: 1–4. 1980; FFJ 3: 251, fig. 171. 1987; FGD 2: 310, fig. 202. 1991.

*Dracontomelon sinense* Stapf, Hooker's Icon. Pl. 27(2): t. 2641. 1900.

*Dracontomelon mangiferum* auct. non Blume: Forb. & Hemsl., J. Linn. Soc. 23: 149. 1886; FKH 69. 1912.

*Dracontomelon dao* auct. non (Blanco) Merr. & Rolfe: FZ 449, fig. 212. 1956; Icon. Corm. Sin. 2: 637, fig. 3004. 1972; FHN 3: 104, fig. 600. 1974.

Evergreen tree, 20–25(–40) m tall; branchlets minutely grey tomentose. Leaves 30–45 cm including the petiole; rachis and petioles ribbed, tomentulose; leaflets 11–17; petiolules 2–5 mm; blade subleathery, oblong to oblong-lanceolate, 6–12 × 2.5–4 cm, base broadly cuneate or rounded, oblique, apex acuminate, margin entire, minutely pubescent along midvein on both surfaces, covered with white tufts of hair in vein axils abaxially; lateral veins 7–9 on each side of midvein, reticulate venation prominent on both surfaces. Inflorescence paniculate, terminal, shorter than leaves, densely pubescent; pedicels 2–3 mm, hirsute. Calyx lobes ovate, 4–6 mm, apex obtuse, tomentulose on both surfaces. Petals white, lanceolate or narrowly oblong, ca. 7–8 mm, glabrous. Filaments ca. 3.5 mm; anthers ca. 1.5 mm. Disk lobed, undulate. Ovary glabrous, 2.5–3 mm. Drupe ca. 2 × 2.5 cm, yellow at maturity, endocarp compressed, 1.7–1.9 cm in diam., with 4–5 pores at apex.

Locality: Cultivated. *Y. W. Lam* 1643.

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Vietnam.

Ecology: Flowering: Apr.–May; fruiting: Jun.–Nov.

Uses: Fruit, timber.

4. *Choerospondias* B. L. Burtt & A. W. Hill 南酸棗屬

Deciduous trees, polygamous or dioecious. Leaves imparipinnate, alternate; leaflets opposite, petiolulate. Flowers 5-merous, unisexual; male flowers arranged in axillary or subterminal thyrsoid panicles; female flowers solitary. Calyx cupular, 5-lobed. Petals 5, distinct, imbricate, revolute at anthesis. Stamens 10, inserted at the base of disk. Disk 10-lobed; lobes alternate to filaments. Ovary superior, 5-locular, ovule 1 per locule; styles 5, distinct; stigmas capitate. Drupe ellipsoidal to obovoid, mesocarp fleshy, endocarp bony, with 5 germination holes at apex; seed without endosperm, cotyledons thick.

One species distributed in China, Indochina to NE India and S Japan; it also occurs in Hong Kong.

1. *Choerospondias axillaris* (Roxb.) B. L. Burtt & A. W. Hill  
南酸棗(酸棗) (Fig. 218; Photo 427)

Ann. Bot. (Oxford), n.s. 1: 254. 1937; FHN 3: 106, fig. 602. 1974; FRPS 45(1): 86, pl. 26: 7-11. 1980; FFJ 3: 252, fig. 172. 1987; FGD 2: 312, fig. 204. 1991.

*Spondias axillaris* Roxb., Fl. Ind. (ed. 1832) 2: 453. 1832.

*Poupartia fordii* Hemsl., Hooker's Icon. Pl. 26(3): t. 2557. 1898; FKH 12. 1912.

Deciduous tree, 7-20 m tall; branchlets ± robust, dark purplish brown, glabrous, lenticellate. Leaves 20-25 cm including the petiole, glabrous, lenticellate. Leaves 20-25 cm including the petiole; rachis puberulous; petioles inflated at base, puberulous; leaflets 7-15; opposite or alternate; petiolules 0.5-1.2 cm, glabrous to puberulous; blade papery, ovate to lanceolate, 4-12 × 2-4.5 cm, base ± oblique, broadly cuneate to rounded, apex long-acuminate, entire or serrate at the base, puberulous or subglabrous on both surfaces, or with tufts of hair in the axils of veins abaxially; lateral veins 8-10 on each side of midvein, prominent on both surfaces. Male inflorescences 4-10 cm, minutely pubescent to glabrous. Calyx minutely pubescent to glabrous; lobes triangular, ca. 1 mm. Petals purple, oblong-lanceolate, 2.5-3 mm. Stamens exserted. Female flower solitary in axils of distal leaves, larger than male flowers. Ovary ca. 1.5 mm, 5-locular. Drupe ellipsoidal or ovoid, yellow at maturity, 2.5-3 × 2 cm, rounded at both ends.

Locality: Common in Hong Kong. Also planted. H. C. Tang 2327; L. T. Lo 18, 495.

Distribution: S & SW China; S Japan, NE India, Myanmar, Vietnam, Laos and Thailand.

Ecology: Forests. Flowering: Early summer; fruiting: Autumn.

Uses: Roadside tree, timber.

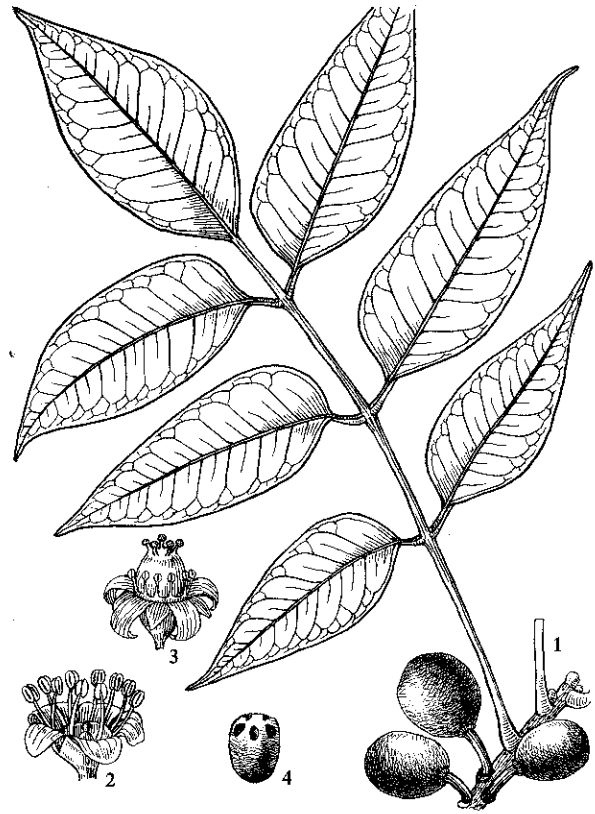


Figure 218. *Choerospondias axillaris* (Roxb.) B. L. Burtt & A. W. Hill  
1. fruiting branch; 2. male flower; 3. female flower;  
4. stone. (drawn by H. P. Yu)

## 263. SIMAROUBACEAE 苦木科

XIA Nian-he 夏念和

Trees or shrubs; bark, wood and seeds usually bitter. Leaves pinnate to unifoliate or rarely simple, alternate, sometimes opposite, stipulate or exstipulate. Inflorescence racemose, cymose or thyrsoid, axillary. Flowers small, bisexual or unisexual (plant andromonoecious or dioecious), often with rudiments of opposite sex, actinomorphic. Calyx usually connate at base; lobes 3-5(-8), imbricate or valvate. Petals 3-5(-8), distinct, imbricate or valvate. Stamens as many as the petals and alternate with them, or twice as many as the petals; filaments distinct, often with basal appendages; anthers 2-celled, longitudinally dehiscent. Disk usually present, sometimes a gynophore or androgynophore. Gynoecium often united at base, rarely distinct, usually 2-5-carpellate. Ovary superior, 2-5-locular, ovules 1-2 per locule; styles 1-5, connate or distinct; stigmas 2-5, capitate. Fruit a capsule, samara, rarely aberry or drupe, often a schizocarp of dry or fleshy mericarps; endosperm present or absent; embryo straight or curved.

About 22 genera and ca. 95 species mainly distributed in tropical and subtropical regions of the world; three genera and ten species in China; three genera and three species in Hong Kong.

- 1a. Stamens twice as many as petals; fruit a samara..... 1. *Ailanthus*  
1b. Stamens as many as petals; fruit a drupe.  
2a. Stipules absent; fruit with persistent calyx lobes..... 2. *Brucea*  
2b. Stipules present, caducous; fruit without persistent calyx lobes..... 3. *Picrasma*

1. *Ailanthus* Desf. 臭椿屬

Trees or small trees, polygamo-dioecious; branchlets pubescent, with a pith. Leaves imparipinnate or paripinnate, alternate; leaflets opposite or nearly so. Inflorescence a thyrses, axillary or terminal. Flowers small, 5-merous. Calyx 5-lobed; lobes imbricate. Petals 5, valvate. Disk 10-lobed. Stamens 10, inserted at base of disk. Carpels 2–5, free or slightly connate only at base; ovules 1–2 per locule, campylotropous or anatropous; styles 2–5, connate. Fruit a samara, long-elliptic, with a seed surrounded by wing. Seed 1, flat, orbicular, obovate or slightly deltoid; endosperm few or wanting.

About ten species distributed in Asia to N Oceania; six species in China; one species in Hong Kong.

1. *Ailanthus fordii* Noot. 常綠臭椿(福氏臭椿)

(Photo 428)

Fl. Malesiana, Ser. 1, Spermatoph. 6: 220. 1962; FYN 1: 181, pl. 43: 1–2. 1977; FFJ 2: 378, fig. 280. 1985; FGD 1: 230. 1987; FRPS 43(3): 3. 1997.

*Ailanthus malabarica* auct. non DC.: FKH 57. 1912.

Evergreen small tree, 3–5 m tall; branchlets greyish brown, densely puberulous. Leaves crowded at apex of branches, 40–60 cm; rachis puberulous; petioles 7–13 cm; leaflets 6–13 pairs, opposite or nearly so, blade papery to leathery, oblong-ovate, 7–13 × 4–6 cm, base obtuse, oblique, apex short acuminate or obtuse, margin entire, with scattered small and flat glands abaxially. Thyrses terminal, 20–40 × 20 cm, branch base articulate. Flowers unisexual or polygamous, 1–3-clustered; pedicels 1–2 mm; bracts small, triangular. Calyx cupular, puberulous, ca. 0.5 mm, 5-lobed. Petals 5, glabrous, 2–3 × 1 mm. Stamens curved and folded, glabrous; anthers ca. 0.8 mm. Carpels 5, densely puberulous; styles connate, 0.5–1 mm, ± puberulous, stigma 5, distinct or base slightly connate. Samara 3–5 × 1–1.8 cm.

Locality: Cape D'Aguiar, Mount Gough, Sha Tin, Ma On Shan, Lamma Island. Also cultivated at gardens and roadsides. *Y. S. Lau* 1438, 1472; *K. L. Yip* 4538.

Distribution: Fujian, Guangdong, Yunnan.

Ecology: Forests. Flowering: Oct.–Nov.; fruiting: Dec.–Apr. of the following year.

Uses: Roadside tree.

Note: The type specimen was collected by C. Ford from Hong Kong Island between 1884 and 1886. Listed in *Rare and Precious Plants of Hong Kong*.

2. *Brucea* J. F. Mill. 鴉膽子屬

Shrubs or trees, monoecious or dioecious; root cortex and bark bitter. Leaves imparipinnate, alternate, stipulate or exstipulate; leaflets opposite or nearly so. Inflorescence a thyrses, axillary. Flowers unisexual, rarely bisexual, 4–5-merous. Sepals small, distinct or connate at base, imbricate. Petals small, distinct, valvate. Disk thick, entire or 4–5-lobed. Stamens inserted at base of disk. Carpels 2–5, distinct; ovule 1 per carpel; styles distinct or connate at base; stigmas distinct. Fruit drupaceous, hard, pericarp thin, somewhat fleshy, endocarp bony; seeds without endosperm, hilum broad, testa slightly thick and hard.

About six species mainly distributed in Africa, Asia, and N Oceania; two species in China; one species in Hong Kong.

1. *Brucea javanica* (L.) Merr.

鴉膽子(苦參子)

(Fig. 219; Photo 429)

J. Arnold Arb. 9: 3. 1928; FGZ 437, fig. 232. 1956; FHN 3: 55, fig. 561. 1974; FYN 1: 186, pl. 44: 1–3. 1977; FTW 3: 540. 1977; FFJ 2: 379, fig. 281. 1985; FGD 1: 232. 1987; FRPS 43(3): 10. 1997.

*Rhus javanica* L., Sp. Pl. 265. 1753.

*Brucea sumatrana* Roxb., Hort. Bengal. 12. 1814; FHK 60. 1861; FKH 57. 1912.

Deciduous shrub to tree, to 10 m or taller; young branches, petioles and inflorescence yellow pubescent. Leaves 20–40 cm; leaflets 3–15; petiolules 4–8 mm; blade ovate or ovate-lanceolate, 5–20(–13) × 2.5–5(–6.5) cm, base broadly cuneate to subrounded, ± oblique, apex acuminate, margin coarsely serrate, pubescent on both surfaces, especially abaxially. Male inflorescences 15–25(–40) cm, female ones half as long as males. Flowers small, dark purple, 1.5–2 mm in diam. Male flowers: pedicels slender, ca. 3 mm; sepals puberulous, 0.5–1 mm; petals sparsely puberulous or subglabrous, 1–2 mm; filaments subulate, ca. 0.6 mm, the anthers ca. 0.4 mm. Female flowers: pedicels ca. 2.5 mm; sepals

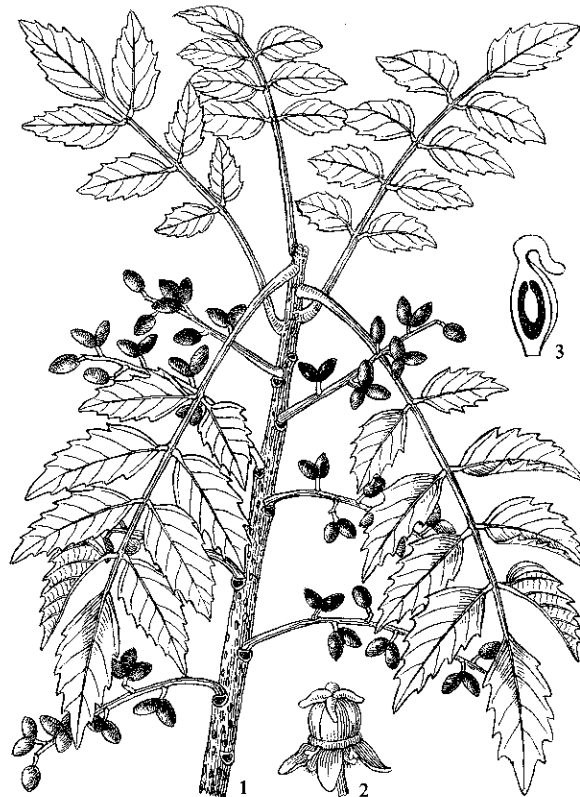


Figure 219. *Brucea javanica* (L.) Merr.

1. fruiting branch; 2. flower; 3. vertical section of ovary. (drawn by H. P. Yu)

and petals as in males, stamens rudimentary. Drupes 1–4, distinct, long-ovoid, 6–8 × 4–6 mm, greyish black when mature; exocarp reticulate, wrinkled when dry; endocarp hard bony. Seeds yellow-white, ovoid.

Locality: Common in Hong Kong. *Y. S. Lau* 26; *L. T. Lo* 131; *S. P. Lau* 146.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; SE Asia to Australia.

Ecology: Thickets and thin forests. Flowering: Summer; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

### 3. *Picrasma* Blume 苦樹屬

Trees, all parts bitter; branches glabrous. Leaves imparipinnate, alternate, stipulate, base of petioles and petiolules often enlarged; leaflets opposite or nearly so, entire or serrate. Inflorescence a thyrse, axillary. Flowers unisexual, 4–5-merous. Pedicels articulate at lower half. Sepals small, distinct or connate at base, persistent. Petals valvate or nearly so, apex with an incurved acumen, longer than sepals and persistent in females. Stamens inserted at base of disk. Disk slightly thickened, entire or shallowly 4–5-lobed, sometimes enlarged in fruit. Carpels 2–5, distinct, ovule 1 per carpel; styles connate at base; stigmas distinct. Fruit comprising one or more drupaceous monocarps, exocarp thin, fleshy, rugose when dry; endocarp bony. Seeds with a broad hilum, without endosperm; testa membranous.

About nine species distributed in tropical and subtropical America and Asia; two species in China; one species in Hong Kong.

#### 1. *Picrasma quassioides* (D. Don) Benn.

苦樹 (Fig. 220; Photo 430)

*Pl. Jav. Rar.* 198. 1844; *FKH* 61. 1861; *FKH* 12. 1912; *FYN* 1: 190, pl. 44: 8–10. 1977; *FFJ* 2: 380. 1985; *FGD* 1: 231, fig. 257. 1987; *FRPS* 43(3): 7. 1997.

*Simaba quassioides* D. Don, *Prodr. Fl. Nep.* 248. 1825.

Deciduous tree, up to 10 m tall, dioecious; bark purplish brown, smooth. Leaves 15–30 cm; stipules lanceolate, caducous; petiolules 1–4 mm; leaflets 9–15, blade ovate-lanceolate or broadly ovate, (4–)7–12 × 2.5–4 cm, base cuneate, oblique except for the terminal leaflet, apex acuminate, margin irregularly coarse-serrate, glabrous adaxially, pubescent along midvein or lateral veins when young abaxially; lateral veins 8–10 on each side of midvein. Thyrses axillary, to 12 cm; rachis densely puberulous. Sepals (4–)5, small, ovate or oblong. Petals as many as sepals, ovate or broadly ovate. Stamens twice as long as petals in males, shorter than petals in females, opposite to sepals. Disk (4–)5-lobed. Carpels 4–5. Drupe ovoid, greyish black when mature, 6–8 × 5–7 mm, with persistent and enlarged sepals.

Locality: Common in Hong Kong. *Y. S. Lau* 1586; *N. H. Li* 29; *HK sheet* 39973.

Distribution: Area S of Yellow River; N India, Bhutan, Nepal, Korea, Japan.

Ecology: Forests. Flowering: Apr.–May; fruiting: Jun.–Sep.

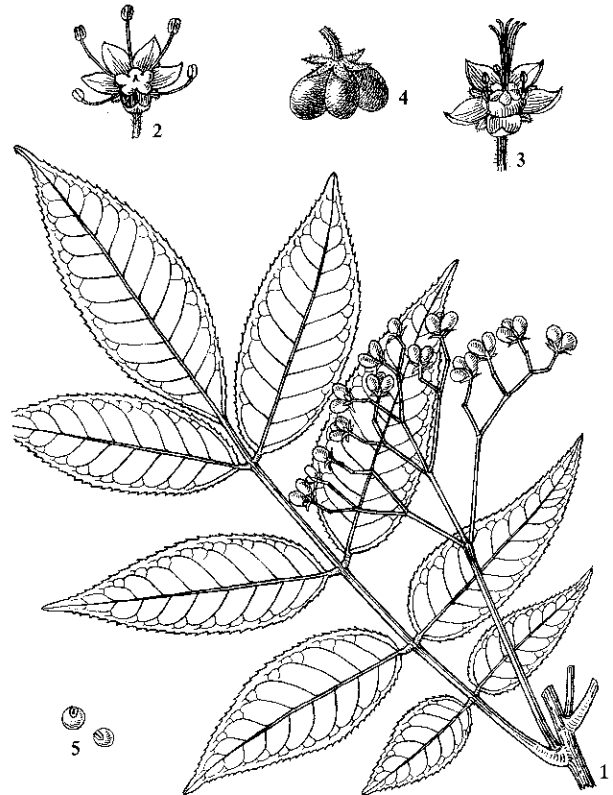


Figure 220. *Picrasma quassioides* (D. Don) Benn.

1. fruiting branch; 2. male flower; 3. female flower; 4. drupe; 5. seeds. (drawn by H. P. Yu)

## 265. MELIACEAE 楝科

XIA Nian-he 夏念和

Trees, shrubs, or sometimes shrublets. Stipules absent. Leaves alternate, rarely opposite, usually pinnate. Leaflets opposite or alternate; leaflet somewhat oblique at base, margin usually entire or rarely serrate. Flowers bisexual, dioecious, or polygamo-dioecious, usually in axillary cymose panicles (racemose in *Aglaia*). Calyx small, 3–6-lobed or with distinct sepals, usually cup-shaped or tubular, imbricate or valvate in buds. Corolla contorted or imbricate (quincuncial in *Aglaia*). Petals (3–)4–5(–6), rarely more, distinct or connate, sometimes adnate to staminal tube and then valvate. Stamens 5–10(–12), hypogynous, mostly monadelphous by connate filaments (distinct in *Toona*); anthers usually sessile on stamen tube, erect, included or exerted, 2-celled, longitudinally dehiscent. Disk tubular, annular, obsolete, or absent, free or adnate with ovary. Ovary usually free, 2–5-locular; ovules 1 or 2 or more per locule, collateral or superposed. Style single (or absent in *Aglaia*); stigma disciform or capitate. Fruit a berry, capsule, or rarely a drupe. Seeds winged or with a fleshy aril wholly or partly covering the seed; endosperm fleshy or absent.

About 50 genera and 550 species distributed in tropical, subtropical, and occasionally warm temperate regions of the world; 17 genera and 43 species in China; six genera, seven species and one variety (one genus and one species native) in Hong Kong.

- 1a. Filaments distinct ..... 1. *Toona*  
 1b. Filaments connate into a tube.  
 2a. Ovary with 4–12 or more ovules per locule; seeds winged.  
 3a. Anthers inserted on apical margin of staminal tube, exerted; plants ± puberulous ..... 2. *Chukrasia*  
 3b. Anthers inserted on apical inside of staminal tube, included; plants quite glabrous ..... 3. *Khaya*  
 2b. Ovary with 1–2 ovules per locule; seeds wingless.  
 4a. Leaves bipinnate ..... 4. *Melia*  
 4b. Leaves pinnate  
 5a. Fruit a berry ..... 5. *Aglaiia*  
 5b. Fruit a capsule ..... 6. *Dysoxylum*

### 1. *Toona* M. Roem. 香椿屬

Trees; bark coarse, exfoliated. Buds subglobose, with several outer scales. Leaves pinnate, alternate; leaflets petiolulate, opposite or alternate. Inflorescence a terminal or axillary panicle. Flowers bisexual, small, (4–)5-merous. Calyx tubular, short, (4–)5-lobed or with (4–)5 distinct sepals. Petals (4–)5, alternate with sepals, distinct, imbricate or contorted in buds. Stamens (4–)5, distinct, alternate with petals; staminodes 5 or absent. Disk thick and fleshy, forming a 5-ridged short column. Ovary 5-locular; ovules 8–15 per locule; style simple; stigma disciform. Fruit a 5-locular capsule, leathery or woody, septifragal. Seeds many per locule, compressed laterally, winged at both ends or at the lower end; endosperm thin.

About five species distributed in Asia, Australia; three species in China; two species cultivated in Hong Kong.

- 1a. Stamens 10; leaflets glabrous ..... 1. *T. sinensis*  
 1b. Stamens 5; leaflets hairy on veins abaxially ..... 2. *T. rubriflora*

#### 1. *Toona sinensis* (A. Juss.) M. Roem. 香椿

(Photo 431)

Fam. Nat. Syn. Monogr. 1: 139. 1846; FHN 3: 75. 1974; FYN 1: 210, pl. 48: 8–10. 1977; FFJ 2: 383. 1985; FGD 2: 303. 1991; FRPS 43(3): 37, pl. 9: 1–5. 1997.

*Cedrela sinensis* A. Juss., Mem. Mus. Hist. Nat. 23: 241. 1830; FKH 58. 1912.

Deciduous tree, up to 25 m tall. Leaves paripinnate, 25–50(–90) cm; leaflets 14–28, opposite or alternate; petiolules 0.5–1 cm; blades papery, ovate-lanceolate to oblong-elliptic, 6–17 × 2.5–4.5 cm, base oblique, apex caudate to acute, margin sparsely serrate or rarely entire, glabrous and without spots on both surfaces, sometimes slightly hairy when young; lateral veins 18–24 on each side of midvein. Panicles as long as or longer than leaves, glabrous or puberulous. Flowers small. Pedicels short. Calyx cupular, 5-lobed or undulate, ca. 1 mm, pubescent abaxially, margin ciliate. Petals 5, white, oblong, 4–5 mm, glabrous, apex obtuse. Stamens 5; staminodes 5. Disk glabrous. Ovary conical, with 5 stripes, glabrous; ovules 8 per locule. Style longer than ovary; stigma disciform. Capsule purplish brown, narrowly ellipsoidal, 1–3.5 cm, glaucous lenticellate, dehiscent into 5 valves when mature. Seed brown, apex with a long membranous wing.

Locality: Cultivated. *Y. S. Lau* 873, 1484; *HK sheet* 35390.

Distribution: N, E, C, S & SW China; India, Indonesia, N Korea, Malaysia, Myanmar.

Ecology: Flowering: Jun.–Aug.; fruiting: Oct.–Dec.

Uses: Timber, vegetable (young shoots).

#### 2. *Toona rubriflora* C. J. Tseng 紅花香椿

(Photo 432)

Univ. Amoiensis Acta Sci. Nat. 9(4): 303. 1962; FRPS 43(3): 42. 1997.

Evergreen tree to 18 m tall; bark grey, longitudinally fissured. Branchlets terete, sparsely pubescent, lenticellate. Leaves 35–40 cm including the petiole; petioles 6–9 cm, together with leaf rachis densely pubescent; leaflets 8–9 pairs, opposite or subopposite; petiolules 2–3 mm; leaflet blades papery, ovate-oblong to ovate-lanceolate, 4.5–13 × 2–4 cm, base oblique, apex caudate-acuminate, margin entire, adaxial surfaces glabrous, abaxial surface pubescent densely on midvein, sparsely on veins, and with tuft of hairs in axils of lateral veins; lateral veins 10–15 on each side of midvein. Panicles terminal, ca. 17 cm; peduncle densely pubescent. Pedicels ca. 1 mm. Sepals 5, small, broadly triangular, covered with minute coarse hairs, ciliate. Petals 5, red (according to collector), ovate, 3–4 × ca. 2 mm, imbricate, abaxial surface glabrous, adaxial surface densely hirsutulous and keeled at base. Stamens 5, glabrous; filaments ca. 2.5 mm; anthers ellipsoidal. Ovary 5-locular, together with disk densely covered with tawny coarse hairs; ovules 13–15 per locule. Style glabrous; stigma disciform. Capsule black when dry, oblong-obovoid, 3.5–4.5 cm, woody, with large pale lenticels. Seeds with membranous wings on both ends, 2–2.8 cm including wings.

Locality: Kei Ling Ha. *S. C. Ng* 3518.

Distribution: Fujian.

Ecology: Dense moist forests along valleys and streams. Flowering: Jun.; fruiting: Nov.

### 2. *Chukrasia* A. Juss. 麻楝屬

Trees. Buds lepidote, hirsute. Leaves usually paripinnate, sometimes imparipinnate, alternate; leaflets usually alternate, entire. Inflorescence a panicle, axillary or terminal. Flowers bisexual, 4–5-merous. Calyx short, 4–5-lobed. Petals 4–5, distinct, convolute.

Staminal tube cylindrical, slightly shorter than petals, apex entire or 10-dentate; anthers 10, ellipsoidal, exerted. Disk absent or inconspicuous. Ovary shortly stipitate, 3–5-locular; ovules many per locule, in 2 series. Style thick; stigma capitate. Fruit a septicidal capsule, 3–5-locular. Seeds many per locule, flat, winged; endosperm absent; cotyledons leaf-like, orbicular.

One species distributed in tropical and subtropical Asia; one species in China; one species cultivated in Hong Kong.

### 1. *Chukrasia tabularis* A. Juss. 麻楝

(Photo 433)

Mem. Mus. Hist. Nat. 19: 251, pl. 22. 1830; FHN 3: 70, fig. 572. 1974; FYN 1: 211, pl. 49: 1–4. 1977; FFJ 2: 389. 1985; FGD 2: 297, fig. 192. 1991; FRPS 43(3): 47, pl. 11: 1–6. 1997.

Tree, to 25 m tall. Bark longitudinally fissured. Young shoots, petioles and leaf rachis tawny puberulent. Leaves usually paripinnate, 30–50 cm; petioles 4.5–7 cm; leaflets alternate, 10–16; petiolules 2–4 mm, puberulent; blades papery, ovate to oblong-lanceolate, (5–)7–12 × 3–5 cm, base oblique, broadly cuneate to subrounded, apex acute to acuminate, margin entire, puberulent along veins on both surfaces; lateral veins 8–10 on each side of midvein, prominent abaxially. Panicles terminal, lax, about half as long as leaves; peduncle short. Flowers 1.2–1.5 cm, fragrant. Pedicels short, articulate. Calyx ca. 2 mm, puberulous abaxially, teeth short, obtuse. Petals yellow or slightly purplish, oblong, 1.2–1.5 cm. Staminal tube cylindrical, glabrous, apex truncate; anthers 10, ellipsoidal. Ovary stipitate, slightly hispidulous. Style cylindrical, short and thick, hairy. Capsule greyish yellow to brown, subglobose to ellipsoidal, ca. 4.5 × 3.5–4 cm, usually 3-valved, woody, surface coarse and verrucose. Seeds flat, elliptic, ca. 3 × 0.5 mm, wing membranous.

Locality: Cultivated. *P. S. Choi 44*; *Y. W. Lam 266, 334*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Zhejiang, Fujian; Nepal, India, Sri Lanka, Indochina, Malay Peninsula.

Ecology: Flowering: Apr.–May; fruiting: Jul.–Jan. of the following year.

Uses: Timber.

### 3. *Khaya* A. Juss. 非洲楝屬

Trees. Leaves paripinnate; leaflets entire. Panicles axillary or subterminal. Flowers bisexual, 4–5-merous. Calyx parted nearly to base; lobes imbricate. Petals distinct, imbricate, much longer than calyx when in bud. Staminal tube urceolate; anthers 8–10, inserted on inside apical part of the tube. Disk cup-shaped. Ovary 4–5-locular; ovules 12–16(–18) per locule, amphitropous. Stigma disciform, with 4 grooves on apex. Capsule globose or nearly so, woody, apically 4- or 5-valvate when mature. Seeds broad, oblong to suborbicular, margin with round membranous wing.

Seven species in tropical Africa, Madagascar; one species cultivated in China; it also occurs in Hong Kong.

### 1. *Khaya senegalensis* (Desr.) A. Juss. 非洲楝

(Photo 434–435)

Mem. Mus. Hist. Nat. 19: 250. 1832; FGD 2: 296, fig. 190. 1991.

*Swietenia senegalensis* Desr., *Encycl.* 3: 679. 1791.

Evergreen tree to 25 m tall or more, quite glabrous throughout. Young branches with dark greyish brown lenticels. Leaves alternate, crowded towards apex of branches, 15–60 cm including the petiole; leaflets 6–16, alternate to subopposite; petiolules 5–10 mm; leaflet blades oblong to elliptic, 7–17 × 2.5–6 cm, base broadly cuneate, apex broadly obtuse, with a short cusp, dark green adaxially, paler abaxially, lateral veins 8–12 on each side of midvein, margin entire. Panicles terminal or axillary, shorter than leaves. Sepals 4, distinct, oblong, ca. 1 mm. Petals 4, distinct, oblong to obovate, ca. 3 mm, glabrous. Staminal tube urceolate; anthers inserted on apical inside of the tube, included. Ovary ovoid, usually 4-locular, with amphitropous ovules. Capsule globose, dehiscent from apex when mature; pericarp woody. Seeds broad, ellipsoidal to suborbicular, margin with a round membranous wing.

Locality: Cultivated.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan (cultivated); native to tropical Africa and Madagascar.

Ecology: Flowering: Apr.–Jun.; fruiting: Apr.–Jul. of the following year.

Uses: Timber, ornamental (roadside tree).

### 4. *Melia* L. 楝屬

Deciduous trees or shrubs. Branchlets with obvious leaf scars and lenticels, hairy. Leaves bipinnate to tripinnate, alternate; leaflet usually serrate or sometimes entire. Panicles axillary, multi-branched. Flowers bisexual. Calyx 5–6-parted; lobes imbricate. Petals 5–6, white or purple, distinct, imbricate. Staminal tube cylindrical, with 10–12 stripes, mouth expanding; anthers 10–12, inserted between staminal tube lobes, inclusive or partly exerted. Disk annular. Ovary subglobose, 3–6(–8)-locular, ovules 2 per locule, superposed. Style slender; stigma capitate, 3–6-lobed. Fruit a drupe, nearly fleshy; stone bony. Seed 1, pendulous; testa hard crustaceous; endosperm fleshy, thin, or absent.

Three species distributed in S tropical Africa, tropical to temperate Asia; one species in China, it also occurs in Hong Kong.

### 1. *Melia azedarach* L. 楝(苦楝)

(Photo 436)

Sp. Pl. 1: 384. 1753; FKH 58. 1912; *Icon. Corm. Sin.* 2: 566, fig. 2864. 1972; FHN 3: 61, fig. 566. 1974; FYN 1: 220, pl. 52: 8–10. 1977; FGD 2: 285. 1991; FTW ed. 2, 3: 564. 1993.

Tree, to 10 m or taller. Bark brownish grey, longitudinally fissured. Leaves imparipinnate, bipinnate or tripinnate, 20–40 cm; leaflets opposite or alternate; blades ovate, elliptic, or lanceolate, 3–7 × 2–3 cm, base oblique, cuneate to broadly cuneate, apex shortly acuminate to caudate, margin serrate, rarely entire, covered with stellate trichomes when young on both surfaces, glabrescent; lateral veins 12–16 on each side of midvein. Panicles shorter than or as long as leaves, glabrous or puberulous. Flowers slightly fragrant. Calyx 5-parted, pubescent; lobes ovate to oblong-ovate. Petals 5, lilac or pale blue, obovate-spathulate, ca. 1 cm, pubescent abaxially, glabrous or slightly pubescent adaxially. Staminal tube purple, 7–8 mm, glabrous or slightly hairy, apical margin with 10–12 dentate lobes; anthers 10–12, inserted at adaxial surface of lobes and alternate to lobes. Ovary subglobose, glabrous, 5–8-locular, ovules 2 per locule. Drupe globose to ellipsoidal, 1–2 × 1 cm, yellow when mature; endocarp bony. Seeds 1(–2), ellipsoidal, black when dry.

Locality: Cultivated or naturalized. *Y. S. Lau 539; S. Y. Hu & P. P. H. But 24054; HK sheet 39517.*

Distribution: Area S of Yellow River; tropical and subtropical regions of Asia, tropical Australia, Pacific Islands.

Ecology: Forests, open fields near villages, roadsides. Flowering: Apr.–May; fruiting: Oct.–Dec.

Uses: Medicinal (folklore), raw material (industrial oil), timber.

### 5. *Aglaia* Lour. 米仔蘭屬

Evergreen trees or shrubs, dioecious. Leaves imparipinnate or trifoliolate, rarely simple, alternate, lepidote or stellately pubescent at least on young parts; leaflets entire. Inflorescence an axillary panicle. Male inflorescences large and many-flowered, female ones smaller, few-flowered and sometimes reduced to a short spike. Calyx 3–5-lobed, or with distinct sepals, imbricate. Petals 3–5(–6), distinct or connate at base, imbricate. Staminal-tube usually subglobose, urceolate, campanulate or rarely shortly cylindrical, margin entire, crenate, or shallowly lobed; anthers 5 or 6(–12), inclusive or slightly exerted. Disk absent or inconspicuous. Ovary 1–2(–5)-locular, ovules 1 or 2 per locule. Style short or absent; stigma disciform or clavate. Fruit a berry, nut, or rarely capsule; pericarp leathery, often containing latex. Seeds 1–several, usually surrounded by a fleshy aril; endosperm absent.

About 120 species distributed in tropical and subtropical Asia, tropical Australia, Pacific Islands; eight species in China; one species and one variety often cultivated in Hong Kong.

- 1a. Leaflets 3–5, obovate to oblong, 2–7(–11) × 1–3.5(–5) cm.....1. *A. odorata*  
 1b. Leaflets 5–7(–9), narrowly elliptic or narrowly oblanceolate-elliptic, shorter than 4 cm, 0.8–1.5 cm wide.....  
 ..... 1a. *A. odorata* var. *microphyllina*

#### 1. *Aglaia odorata* Lour. 米仔蘭

(Photo 437)

Fl. Cochinch. 1: 173. 1790; FKH 58. 1912; FGZ 440. 1956; FHN 3: 65. 1974; FYN 1: 239, pl. 57: 9. 1977; FFJ 2: 386, fig. 285. 1985; FGD 2: 289, fig. 184. 1991; FRPS 43(3): 70, pl. 17: 1–5. 1997.

Evergreen shrub or small tree, to 8 m. Young branches stellately lepidote at apex. Leaves alternate; petioles and leaf-rachis narrowly winged; leaflets 3–5, opposite; blades thickly papery, obovate to oblong, 2–7(–11) × 0.8–3.5(–5) cm, apical one largest, base cuneate, apex obtuse, glabrous on both surfaces; lateral veins 8 on each side, very slender, prominent on both surfaces. Panicles 5–10 cm, glabrous. Flowers fragrant, ca. 2 mm in diam. Pedicels 1–3 mm, slender. Calyx 5-lobed, lobes orbicular. Petals 5, yellow, oblong to suborbicular, 1.5–2 mm, apex rounded to truncate. Staminal tube slightly shorter than petals, obovoid to nearly campanulate, glabrous abaxially, apex entire or crenate. Anthers 5, ovoid, inclusive. Ovary ovoid, densely yellow hirsute. Berry ovoid to subglobose, 1–1.2 cm, stellately lepidote at first. Seeds with a fleshy aril.

Locality: Cultivated. *Y. S. Lau 1619, 3187; HK sheet 36074.*

Distribution: Hainan, Guangdong, Guangxi; SE Asia.

Ecology: Flowering: May–Dec.; fruiting: Jul.–Mar. of the following year.

Uses: Ornamental, flower used for fumigating tea.

#### 1a. *Aglaia odorata* var. *microphyllina* C. DC. 小葉米仔蘭

(Photo 438)

Monogr. Phan. 1: 602. 1878; FGD 2: 290. 1991; FRPS 43(3): 70. 1997.

It differs from var. *odorata* by leaflets 5–7(–9), narrowly elliptic or narrowly oblanceolate-elliptic, shorter than 4 cm, 0.8–1.5 cm wide.

Locality: Cultivated. *P. S. Choi 276.*

Distribution: Hainan.

Ecology: Flowering: May–Dec.; fruiting: Jul.–Mar. of the following year.

Uses: Ornamental.

### 6. *Dysoxylum* Blume 檳木屬

Trees or shrubs. Leaves pinnate, alternate or rarely opposite. Inflorescence a panicle, axillary. Flowers bisexual, 4–5-merous. Calyx cupular, 4–5-lobed or parted into 4–5 sepals. Petals 4–5, oblong, valvate or apex slightly imbricate, distinct or sometimes adnate to staminal tube at base. Staminal tube cylindrical, slightly shorter than petals, apex usually lacinate or obtusely dentate; anthers 8–10, inclusive. Disk tubular, as long as or longer than ovary, margin entire or obtusely dentate. Ovary (3–)4–5-locular, ovules 1 or 2 per locule. Style as long as staminal tube; stigma disciform. Fruit a capsule, globose or pyriform, dehiscent into (3–)4–5 valves. Seeds

arillate or not; hilum broad; cotyledons large.

About 75 species distributed in tropical Asia, tropical Australia, Pacific Islands, New Zealand; 15 species in China; one species in Hong Kong.

**1. *Dysoxylum hongkongense* (Tutcher) Merr.**

香港欖木 (Fig. 221; Photo 439)

Lingnan Sci. J. 13(1): 33. 1934; FHN 3: 63. 1974; FGD 2: 287. 1991; FTW ed. 2, 3: 558. 1993; FRPS 43(3): 89, pl. 21: 4–5. 1997.

*Chisocheton hongkongensis* Tutcher, J. Linn. Soc., Bot. 37: 64. 1905; FKH 58. 1912.

Tree, to 25 m tall. Young branches yellow pubescent to subglabrous. Leaves imparipinnate or paripinnate, 20–40 cm or longer; leaflets 9–16, opposite, subopposite, or alternate; petiolules 0.5–1.5 cm; blades subleathery, long-elliptic, 5–27 × 3–7 cm, base oblique, apex obtuse to shortly acuminate, margin entire, glabrous on both surfaces; midvein slightly impressed adaxially and prominent abaxially, lateral veins 8–15 on each side of midvein. Panicles axillary near apex of branch, 12–25 cm, pubescent, with tawny appressed hairs. Pedicels stout, 2–4 mm. Calyx shallowly cupular, 5-lobed, pubescent abaxially. Petals 5, white, long-elliptic, 5–6 × ca. 2 mm, tawny pubescent abaxially. Staminal tube ca. 4 mm, hairy abaxially, apex truncate to undulate-crenulate; anthers 8, ellipsoidal, inclusive. Disk tubular, obtusely dentate, apex brightly yellow ciliate. Ovary 3-locular, densely covered with yellow silky hairs. Style ca. 2 mm, flat, glabrous; stigma flat, disciform, glabrous. Capsule pyriform to ellipsoidal, ca. 4 cm in diam. Seeds brown, long ellipsoidal, to 2.5 cm, arillate.

Locality: Mount Parker, Cape D'Aguiar, Ng Tung Chai. *W. J. Tutcher 1056; Y. S. Lau 2745; HK sheet 40374.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan.

Ecology: Forests. Flowering: May–Jul.; fruiting: Oct.–Apr.

Uses: Timber.

Notes: The type specimen (*Hong Kong Herb. No. 969*) was collected from Mount Parker, Hong Kong Island by W. J. Tutcher in 1903. Listed in *Rare and Precious Plants of Hong Kong*.

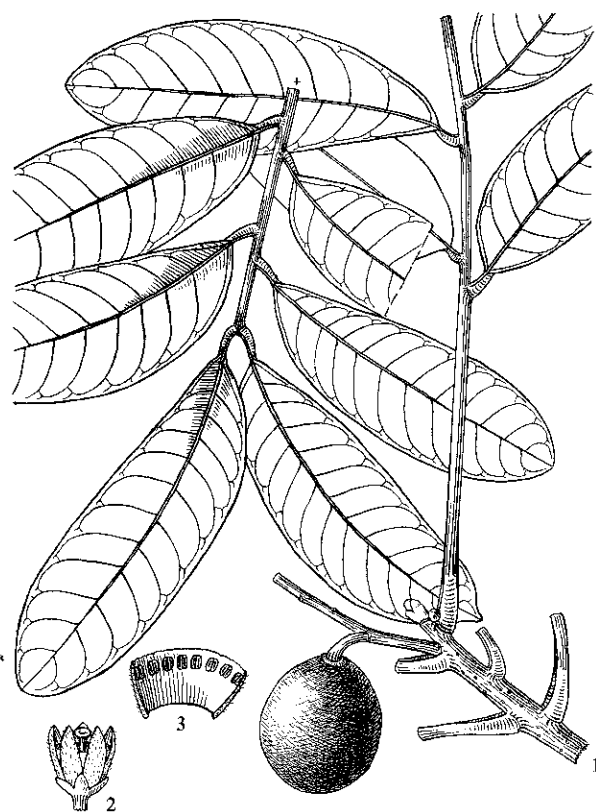


Figure 221. *Dysoxylum hongkongense* (Tutcher) Merr.

1. fruiting branch; 2. flower; 3. stamen tube opened. (drawn by H. P. Yu)

## 266. RUTACEAE 芸香科

XIA Nian-he 夏念和

Aromatic trees, shrubs or herbs, armed or unarmed. Leaves simple or compound, alternate, rarely opposite, with pellucid gland-dots, exstipulate. Inflorescence in cymes, panicles, racemes or corymbs, rarely flowers solitary and axillary. Flowers bisexual or unisexual, actinomorphic or zygomorphic. Sepals (2–)5, sometimes connate at base, often imbricate. Petals twice as many as and alternate with sepals, distinct, rarely connate, imbricate, rarely valvate. Stamens 4–5, or 2(–3–4) times as many as petals, or even up to 60, filaments distinct, rarely connate at base, 2-celled, dehiscing longitudinally. Nectary-disk annular. Gynoecium of (2–)4–5(–many) carpels; carpels distinct or connate; ovary superior, usually (1–)4–5-locular, placentation axile; ovules (1–)2(–many) per locule; styles distinct, coherent or connate; stigmas capitate. Fruit a schizocarp, berry or drupe, etc. Seeds with large, embryo straight or curved, endosperm well developed or wanting.

About 160 genera and 1700 species mainly distributed in tropical and subtropical regions of the world, few in temperate regions; 14 genera and 25 species in Hong Kong.

- 1a. Herbs ..... 1. *Ruta*  
 1b. Trees or shrubs.  
   2a. Leaves opposite  
     3a. Leaves unifoliolate or digitately 3-foliolate  
       4a. Fruit a drupe ..... 2. *Acronychia*  
       4b. Fruit 1–4 follicles ..... 3. *Melicope*  
     3b. Leaves imparipinnate ..... 4. *Tetradium*  
   2b. Leaves alternate.  
     5a. Stems and branches unarmed.



- 6a. Leaves simple ..... 5. *Skimmia*  
 6b. Leaves unifoliolate or pinnate.  
 7a. Flower buds terete-ellipsoidal, style much longer than ovary ..... 6. *Murraya*  
 7b. Flower buds globose or broadly ovoid, style shorter than or as long as ovary.  
 8a. Buds, young branches apices and flower buds often reddish or rusty puberulous; ovule 1 per locule 7.  
*Glycosmis*  
 8b. Buds, young branches not rusty hairy; ovules 2 per locule ..... 8. *Clausena*  
 5b. Stems and branches armed.  
 9a. Leaves pinnately or digitately compound.  
 10a. Leaves digitately 3-foliolate ..... 9. *Toddalia*  
 10b. Leaves imparipinnate ..... 10. *Zanthoxylum*  
 9b. Leaves unifoliolate.  
 11a. Pericarp woody or leathery; seeds hairy ..... 11. *Aegle*  
 11b. Pericarp not woody or leathery; seeds glabrous.  
 12a. Stamens twice as many as petals ..... 12. *Atalantia*  
 12b. Stamens 4 times as many as petals or more.  
 13a. Ovary 2-5(-6)-locular, ovules 2 per locule ..... 13. *Fortunella*  
 13b. Ovary (6-)7-15-locular, ovules many per locule ..... 14. *Citrus*

### 1. *Ruta* L. 芸香屬

Perennial herbs, strongly scented, all parts glandular-punctate. Stems woody at base. Leaves alternate, pinnately compound. Inflorescence a thyrse or corymb. Flowers yellow, 4-5-merous. Calyx 4-5-lobed, persistent. Petals imbricate, margin lacerate. Stamens 8-10, unequal, the alternate one shorter. Gynoecium composed of 4-5 carpels; carpels distinct at upper part and coherent at lower part, 4-5-locular, ovules 2 or more per locule. Fruit 4-5 follicles. Seeds ridged. Seed coat tuberculate.

About seven species distributed in Canary Islands, Mediterranean regions to SW Asia; two species introduced to China; one species cultivated in Hong Kong.

**1. *Ruta graveolens* L. 芸香(臭草) (Fig. 222; Photos 440-441)**  
 Sp. Pl. 1: 383. 1753; Icon. Corm. Sin. 2: 550, fig. 2829. 1972; FHN 3: 36, fig. 547. 1974; FGD 2: 246, fig. 161. 1991; FRPS 43(2): 89, pl. 20. 1997.

Perennial herb, to 1 m tall. Leaves bipinnate to tripinnate, 6-12 cm; leaflets shortly spatulate or narrowly oblong, 5-30 × 2-5 mm, greyish green or bluish green. Flowers golden yellow, ca. 2 cm in diam. Calyx lobes 4. Petals 4. Stamens 8. Ovary usually 4-locular, ovules many per locule. Fruit 6-10 mm, dehiscent from apex to middle; pericarp with many glandular-glands. Seeds many, reniform, ca. 1.5 mm, brownish black.

Locality: Cultivated. *L. T. Lo 197; HK sheet 4266.*

Distribution: Areas S of Changjiang River (occasionally cultivated); native to Mediterranean region.

Ecology: Flowering: Jul.-Aug.

Uses: Additive (flavoring), medicinal (folklore).

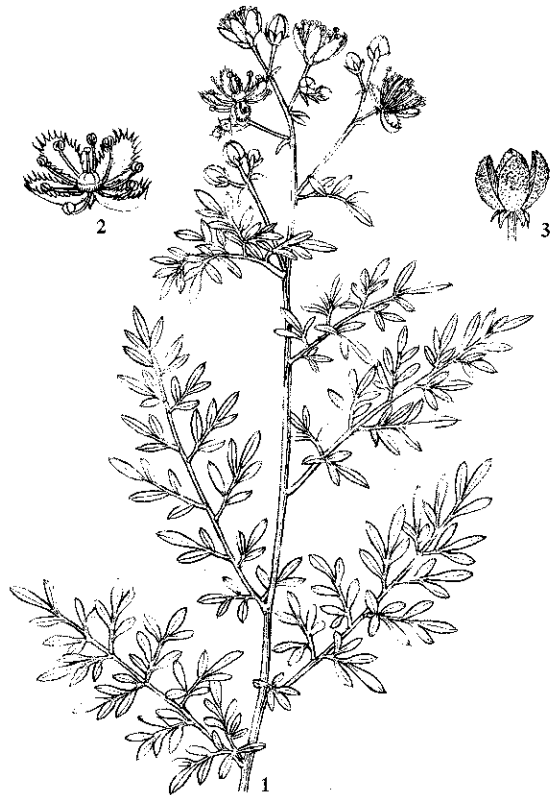


Figure 222. *Ruta graveolens* L.

1. flowering branch; 2. flower; 3. fruit. (drawn by H. P. Yu)

### 2. *Acronychia* J. R. & G. Forst. 山油柑屬

Evergreen shrubs or trees, unarmed. Leaves opposite, unifoliolate or digitately 3-foliolate; leaflets entire. Inflorescence a thyrse, axillary. Flowers bisexual, 4-merous. Sepals 4, distinct, valvate. Stamens 8, distinct, in 2 whorls; filaments hairy at lower half. Disk small. Carpels connate; ovary 4-locular, ovule 1 per locule; stigmas slightly thicker than styles. Fruit a drupe with 4 drupelets. Seeds solitary or in pairs, endosperm fleshy.

About 44 species distributed in tropical and subtropical regions of Asia, Australia and Pacific Islands; two species in China; one species in Hong Kong.

**1. *Acronychia pedunculata* (L.) Miq.**

山油柑(降真香)

(Fig. 223; Photo 442)

Fl. Ind. Bat. Suppl. 532. 1861; Icon. Corm. Sin. 2: 553, fig. 2835. 1972; FHN 3: 38. 1974; FTW 3: 508, fig. 705. 1977; FGD 2: 249, fig. 164: 4–6. 1991; FRPS 43(2): 106, pl. 26: 1–6. 1997.

*Acronychia laurifolia* Blume, Cat. Gew. Buitenz. 27. 63. 1823; FKH 56. 1912.

*Cyminosma pedunculata* DC., Prodr. 1: 722. 1824; FHK 60. 1861.

*Gela lanceolata* Lour., Fl. Cochinch. 232. 1790.

*Jambolifera pedunculata* L., Sp. Pl. 349. 1753.

Tree, 5–15 m tall. Bark greyish white to greyish yellow, smooth. Juvenile branches fragrant, often hollow. Leaves unifoliolate; leaflets elliptic to oblong, sometime obovate-elliptic, 7–18 × 3.5–7 cm. Flowers yellowish white, 1.2–1.5 cm in diam. Petals narrowly elliptic, margin and apex slightly incurved at first, apex reflexed and slightly pendulous when full blooming, hairy adaxially. Ovary hairy, rarely glabrous. Inflorescence pendulous. Fruit pale yellow, translucent, subglobose and slightly angled, 1–1.5 cm in diam., apex flat, slightly concave and with 4 shallow furrows in middle. Each drupelet 1-seeded. Seed obovoid, 4–5 × 2–3 mm; seed coat brownish black, bony.

Locality: Common in Hong Kong. *H. C. Tang* 991; *L. T. Lo* 82; *K. L. Yip* 4400.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan, Yunnan.

Ecology: Margins of forests, thin forests. Flowering: Apr.–Aug.; fruiting: Aug.–Dec.

Uses: Medicinal (folklore), timber.

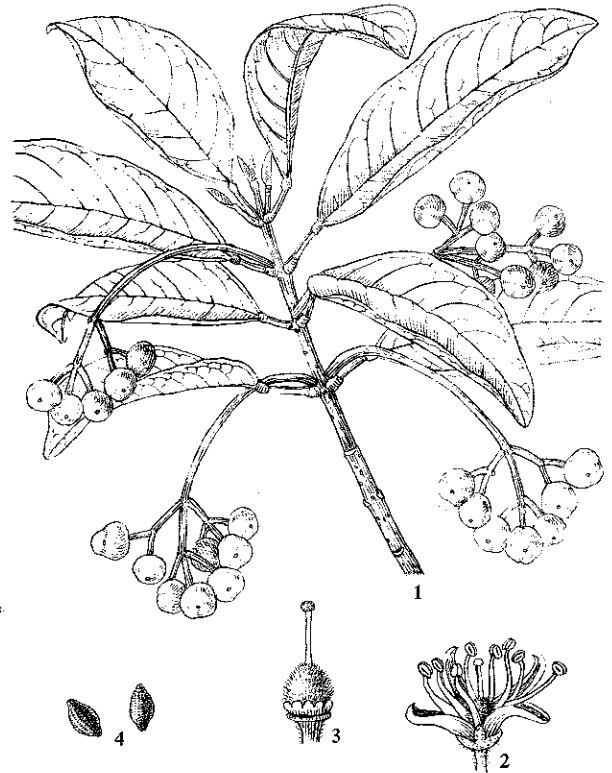


Figure 223. *Acronychia pedunculata* (L.) Miq.

1. fruiting branch; 2. flower; 3. pistil; 4. seeds. (drawn by H. P. Yu)

**3. *Melicope* J. R. & G. Forst. 蜜茱萸屬**

Shrubs or trees, unarmed. Leaves opposite or whorled, digitately 3-foliolate or 1-foliolate. Inflorescence a thyrse, axillary or on branches, rarely terminal or cauliflorous. Flowers small, bisexual or functionally unisexual. Sepals 4. Petals 4, distinct, valvate or imbricate. Stamens 4 or 8, distinct. Gynoecium 4-carpellate; carpels connate at base or completely united; ovules 2 or sometimes 1 per carpel; styles adnate to each other, stigmas capitate. Fruit 1–4 follicles; follicles connate at base, dehiscent along dorsal and ventral sutures, apex with or without beaked awn, 1–2-seeded.

About 240 species distributed SE Asia, Malesia, Australia, New Zealand and Pacific Islands; eight species in China; one species in Hong Kong.

**1. *Melicope pteleifolia* (Champ. ex Benth.) T. G. Hartley**

蜜茱萸(三椏苦)

(Fig. 224; Photo 443)

FTW ed. 2, 3: 521. 1993.

*Zanthoxylum pteleifolium* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 330. 1851, as '*Xanthoxylum pteleaeifolium*'.

*Ilex lept* Spreng., Syst. Veg. 1: 496. 1825.

*Lepta triphylla* Lour., Fl. Cochinch. 82. 1790.

*Evodia lept* (Spreng.) Merr., Trans. Amer. Philos. Soc. 23: 219. 1915; FHN 3: 34, fig. 546. 1974; FTW 3: 514. 1977; FGD 2: 242, fig. 156. 1991; FRPS 43(2): 59, pl. 13. 1997.

*Evodia lamarckiana* Benth., FHK 59. 1861.

*Evodia chunii* Merr., J. Arnold Arb. 6: 132. 1925.

*Evodia lept* var. *chunii* C. C. Huang, Acta Phytotax. Sin. 6: 92. 1957.

*Evodia triphylla* auct. non DC.: FKH 55. 1912.

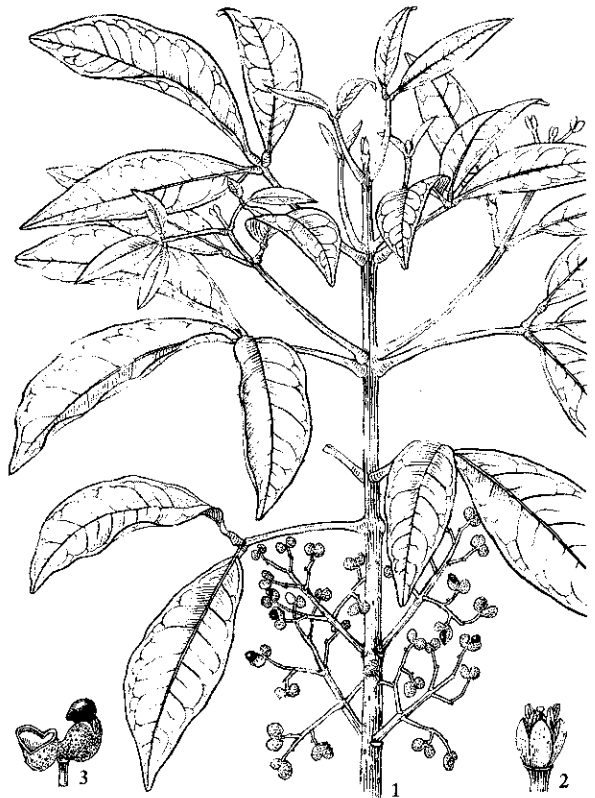


Figure 224. *Melicope pteleifolia* (Champ. ex Benth.) T. Hartley

1. fruiting branch; 2. flower; 3. fruit. (drawn by H. P. Yu)

Shrub or small tree, 2–8 m tall. Bark grey. Juvenile branches flat. Leaves (1–)3-foliolate; petiole 1.5–14 cm; leaflet blade elliptic or oblong, sometimes obovate-elliptic, 6–12 × 2–6 cm, base cuneate, apex acuminate to subcaudate, margin entire and wavy, scattered with many small glandular dots, puberulous on midvein, especially abaxially. Inflorescences axillary, rarely terminal, 2–10 cm. Flowers unisexual or rarely bisexual, small. Petals white or pale yellow, ca. 1.5 mm, glandular-dotted. Male flower: stamens 4, filaments slightly longer than petals. Female flower: staminodes often with anthers but without pollens; ovary glabrous to pubescent, carpels connate at base. Fruit 1–4 basally connate follicles; follicles subglobose to obovoid, 3–7.5 mm, glabrous to puberulous. Seeds subglobose, 2.5 mm in diam., brownish black, glossy.

Locality: Common in Hong Kong. *H. C. Tang 2095; Y. S. Lau 25; HK sheet 39951.*

Distribution: Hainan, Guangxi, Guangdong, Jiangxi, Fujian, Taiwan, Yunnan, Guizhou; Vietnam, Laos, Thailand.

Ecology: Secondary forests or thickets. Flowering: Apr.–May; fruiting: Aug.–Sep.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by J. G. Champion from Mount Gough, Hong Kong Island between 1847 and 1850.

#### 4. *Tetradium* Lour. 四數花屬

Shrubs or trees, unarmed, dioecious. Leaves opposite, imparipinnate. Inflorescence a thyrses, terminal or subterminal. Flowers small, functionally unisexual, 4–5-merous. Calyx 4–5-lobed. Petals distinct, imbricate. Stamens 4–5, distinct. Disk pulvinate to conical. Gynoecium 4–5-carpellate; carpels distinct or connate at base, ovules 1–2 per carpel; style apical; stigma peltate. Fruit 1–5 distinct or basally connate follicles.

Nine species distributed in E, S, and SE Asia; seven species in China; one species in Hong Kong.

1. *Tetradium glabrifolium* (Champ. ex Benth.) T. G. Hartley  
棟葉吳茱萸 (Fig. 225; Photo 444)  
Gard. Bull. Singapore 34: 109. 1981; FTW ed. 2, 3: 533, pl. 275. 1993.

*Boymia glabrifolia* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 330. 1851.

*Evodia glabrifolia* (Champ. ex Benth.) C. C. Huang, Guihaia 11(1): 9. 1991.

*Euodia glabrifolia* (Champ. ex Benth.) D. D. Tao, FYN 6: 730. 1995, *nom. illeg.*

*Megabotrya meliaefolia* Hance ex Walp., Ann. Bot. Syst. 2: 259. 1852.

*Ampacus meliaefolia* (Hance ex Walp.) Kuntze, Revis. Gen. Pl. 98. 1891.

*Evodia melifolia* (Hance ex Walp.) Benth., FHK 58. 1861, '*meliaefolia*'; FKH 55. 1912, '*meliaefolia*'.

Tree, to 20 m tall. Bark greyish white, densely covered with orbicular, slightly prominent lenticels. Leaves (5–)7–11-foliolate; petiolule (0.6–)1–1.5(–2) cm; leaflet blade ovate-lanceolate, strongly asymmetrical, 6–10 × 2.5–4 cm, base cuneate, apex acuminate, margin subentire and wavy, glandular dots inconspicuous, glabrous on both surfaces, greyish green abaxially. Inflorescences terminal, many-flowered. Calyx (4–)5-lobed, small. Petals (4–)5, white, ca. 3 mm. Male flower: filaments villous at lower half; pistillode clavate, 4–5-lobed at apex. Female flower: staminodes scale-like. Fruit purplish red, glandular-dotted. Follicles ca. 5 mm in diam., 1-seeded. Seed 4 × 3.5 mm, brownish black.

Locality: Hong Kong Island, Sai Kung, Tai Po, Bride's Pool, Lantau Island. *Y. S. Lau 2308; N. H. Li 145; HK sheet 40665.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan, Yunnan.

Ecology: Secondary forests or thickets. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

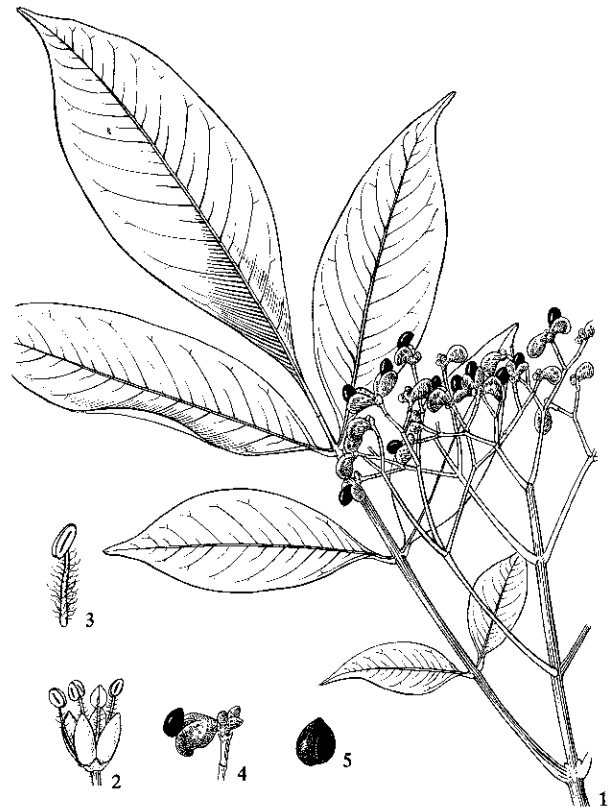


Figure 225. *Tetradium glabrifolium* (Champ. ex Benth.) T. Hartley  
1. fruiting branch; 2. flower; 3. stamen; 4. fruit; 5. seed. (drawn by H. P. Yu)

#### 5. *Skimmia* Thunb. 茵芋屬

Evergreen shrubs or small trees, unarmed. Bark thick and smooth. Leaves alternate, simple, entire, densely glandular-dotted. Inflorescence a terminal panicle. Flowers unisexual or polygamous, white or yellow. Calyx 4–5-lobed, margin ciliolate. Petals 4–5, imbricate, glandular-dotted, 2–4 times as long as sepals, reflexed at anthesis. Stamens 4–5, filaments distinct. Ovary 2–5-locular, ovule

1 per locule; style short; stigma capitate. Fruit a drupe, ovoid or subglobose, with 2–5 one-seeded stones. Seeds small, compressed ovoid, endosperm fleshy, embryo straight.

About 14 species distributed in SE Asia and neighbouring islands; six species in China; one species in Hong Kong.

1. *Skimmia arborescens* T. Anderson ex Gamble

喬木茵芋

(Fig. 226)

J. Linn. Soc., Bot. 43: 491. 1916; FGD 2: 251, fig. 165. 1991; FRPS 43(2): 112. 1997.

*Skimmia euphlebia* Merr, Lingnan Sci. J. 13: 32. 1934.

*Skimmia kwangsiensis* C. C. Huang, Acta Phytotax. Sin. 7: 346, pl. 66: 2, 70: 2. 1958.

Small tree, 2–8 m tall. Branchlets with conspicuous pith. Petiole 1–2 cm; leaf blade thinly papery, elliptic, oblong or obovate-elliptic, 5–18 × 2–6 cm, base cuneate, apex acute to long acuminate, glabrous on both surfaces; midvein slightly prominent adaxially; lateral veins 7–10 pairs. Inflorescences 2–5 cm, rachis puberulous or glabrous. Bracts broadly ovate, 1–1.5 mm, margin hairy. Calyx-lobes slightly larger than bracts, margin hairy. Petals obovate or ovate-elliptic, 4–5 mm, spreading horizontally or ascending. Male flower: stamens longer than petals, filaments filiform; pistillode 3–4 mm, clavate, apex 3–4-parted. Female flower: sterile stamens shorter than petals; ovary subglobose; style ca. 1 mm; stigma capitate. Fruit globose, 6–8 mm in diam., bluish black, 1–3-seeded.

Locality: Tai Mo Shan.

Distribution: Guangdong, Guangxi, Guizhou; Myanmar, India, Sikkim, Bhutan, Nepal.

Ecology: Secondary forests of valleys. Flowering: Apr.–Jun.; fruiting: Jul.–Sep.

6. *Murraya* J. König ex L. 九里香屬

Shrubs or small trees, unarmed. Leaves alternate, imparipinnate, rarely unifoliate; leaflets alternate. Inflorescence a corymbose thyrse, terminal and axillary. Calyx 5-lobed. Petals 5, distinct, imbricate. Stamens 10; filaments linear-subulate; anthers small. Ovary 2–5-locular, ovules (1–)2 per locule; style slender, often longer than ovary; stigma capitate. Fruit a berry, (1–)2-seeded. Seed coat smooth or woolly.

About 12 species distributed in tropical and subtropical regions of Asia, NE Australia; nine species in China; one species commonly cultivated in Hong Kong.

1. *Murraya paniculata* (L.) Jack 九里香 (Fig. 227; Photo 445)

Malay. Misc. 31. 1820; Icon. Corm. Sin. 2: 554, fig. 2838. 1972; FHN 3: 44. 1974; FTW 3: 521, pl. 710. 1977; FGD 2: 260, fig. 172: 2–3. 1991; FRPS 43(2): 141, pl. 36: 2–3. 1997, *excl. syn. M. omphalocarpa* Hayata.

*Chalcas paniculata* L., Mant. Pl. 1: 68. 1767.

*Murraya exotica* L., Mant. Pl. 2: 563. 1771; FHK 50. 1861; FKH 56. 1912; FGD 2: 259, fig. 172: 1. 1991; FRPS 43(2): 143, pl. 36: 1. 1997.

*Murraya paniculata* var. *exotica* (L.) C. C. Huang, Acta Phytotax. Sin. 8: 100, pl. 11–12. 1959; FHN 3: 44. 1974.

Small tree, to 12 m tall. Trunk and branchlets greyish white or pale yellowish grey, slightly glossy. Juvenile branches green, obtusely triangular in cross section. Leaves 3–5(–7)-foliolate; petiolule less than 1 cm; leaflet blade ovate, ovate-lanceolate,

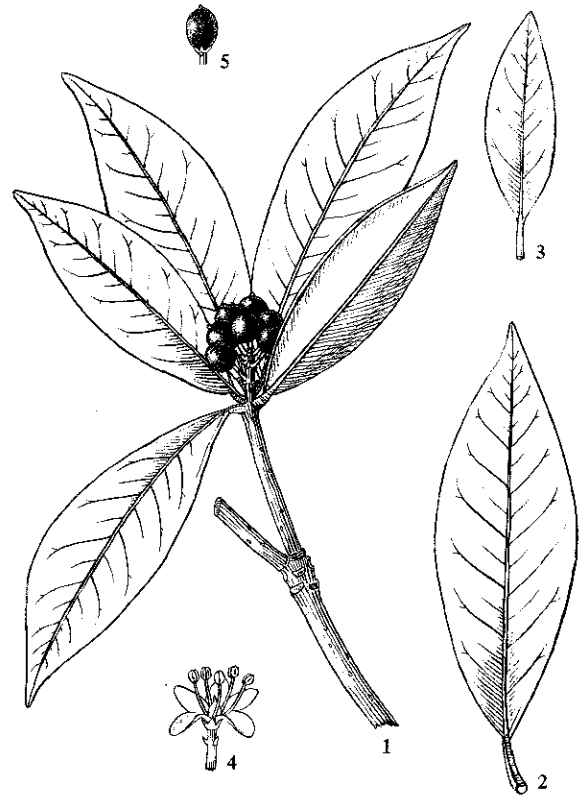


Figure 226. *Skimmia arborescens* Gamble

1. fruiting branch; 2–3. leaves; 4. male flower; 5. fruit. (drawn by H. P. Yu)

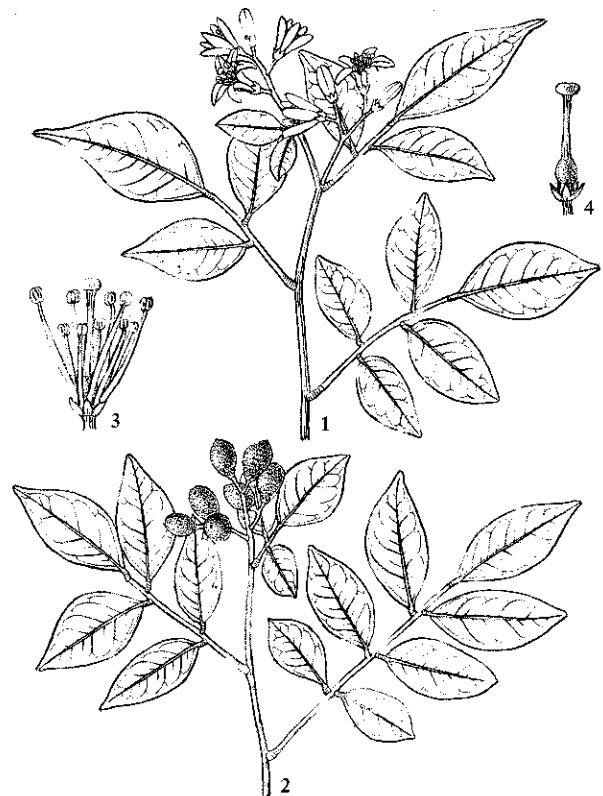


Figure 227. *Murraya paniculata* (L.) Jack.

1. flowering branch; 2. fruiting branch; 3. flower with petals removed; 4. pistil. (drawn by H. P. Yu)

broadly obovate or obovate-elliptic, 1–9 × 0.6–4 cm, base cuneate, symmetrical or slightly asymmetrical, apex long acuminate, rounded or obtuse, margin entire and wavy, glossy adaxially. Inflorescences axillary or terminal. Calyx lobes ovate, ca. 2 mm, margin sparsely hairy, persistent. Petals white, oblanceolate or narrowly elliptic, 1–2 cm, reflexed when full blooming, scattered with pale yellow translucent glands. Stamens 10, unequal, glabrous; filaments white, filiform, slightly shorter than style. Ovary 2-locular, ovule 1 per locule; style green, slender. Fruit orange-yellow to red, narrowly ellipsoidal, rarely ovoid, 1–2 × 0.5–1.4 cm, apex narrowed. Seeds 1–2, hairy.

Locality: Cultivated or naturalized. *Y. S. Lau* 220, 1897; *HK sheet* 9269.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan.

Ecology: Flowering: Apr.–Aug.; fruiting: Sep.–Dec.

Uses: Medicinal (folklore), ornamental (hedge, bonsai).

## 7. *Glycosmis* Corrêa 山小橘屬

Shrubs or small trees, unarmed; young parts often red or brown rusty puberulous. Leaves alternate, unifoliolate or imparipinnate; leaflets entire, alternate. Inflorescence a thyrses, axillary or terminal. Flowers bisexual, small, shortly pedicellate, often hairy. Sepals (4–)5, connate at base. Petals (4–)5, imbricate. Stamens 10, rarely 8 or fewer, equal or unequal, shorter than or as long as petals; filaments subulate, dilated; anthers often with a dorsal or apical gland. Ovary 2–5-locular, ovule solitary and pendulous per locule; style very short, persistent, stigma simple. Fruit a berry, small, dry or fleshy, 1–2(–3)-seeded. Seed coat thinly membranous.

About 50 species distributed in SE Asia and NE Australia; 11 species in China; one species in Hong Kong.

### 1. *Glycosmis citrifolia* (Willd.) Lindl.

小花山小橘(山小橘) (Fig. 228; Photo 446)

*Trans. Hort. Soc.* 6: 772. 1826; *FTW* 3: 517, pl. 709; 1977; *FTW* ed. 2, 3: 519, pl. 269. 1993.

*Glycosmis parviflora* (Sims) Kurz, *J. Bot. n.s.* 5: 40. 1876; *FRPS* 43(2): 124, pl. 29. 1. 1997.

*Limonia citrifolia* Willd., *Enum. Pl. Hort. Berol.* 448. 1809.

*Limonia parviflora* Sims, *Bot. Mag. t.* 2416. 1823.

*Glycosmis erythrocarpa* (Hayata) Hayata, *Icon. Pl. Form.* 8: 14. 1919.

*Citrus erythrocarpa* Hayata, *Icon. Pl. Form.* 6: 13. 1916.

*Glycosmis pentaphylla* auct. non Corrêa: *FKH* 56. 1912.

Shrub or small tree, 1–3 m tall. Leaves 2–4(–5)-foliolate, rarely unifoliolate; petiolule 1–5 mm; leaflet blade elliptic, oblong or lanceolate, sometimes obovate-elliptic, 5–19 × 2.5–8 cm, base cuneate, apex acute to acuminate, sometimes obtuse, glabrous, margin irregularly wavy when dry; midvein flat or slightly raised, or slightly impressed at lower half adaxially. Thyrses terminal, 3–5(–14) cm; rachis, pedicels and calyx lobes often covered with deciduous brown rusty hairs. Calyx lobes ovate, apex obtuse, ca. 1 mm wide. Petals white, long elliptic, ca. 4 mm. Stamens 10, rarely 8, filaments slightly unequal, wider at upper part, anthers with 1 apical gland. Ovary broadly ovoid to globose, glands not prominent. Fruit globose or ellipsoidal, 1–1.5 cm in diam., pale yellowish white, turning to pale red or dark red, translucent, conspicuously glandular-dotted, (1–)2–3-seeded.

Locality: Hong Kong Island, Shing Mun, Sai Kung, Sha Tin, Tai Po, Fanling, Lantau Island. *Y. S. Lau* 391, 798; *HK sheet* 38809.

Distribution: Hainan, Guangxi, Guangdong, Fujian, Taiwan, Yunnan, Guizhou.

Ecology: Thickets. Flowering: Mar.–May; fruiting: Jul.–Sep.

Uses: Medicinal (folklore).

Notes: The species was reported as *Glycosmis parvifolia* (Sims) Little previously (Check List HK Plants 200. 2002; 71. 2004).

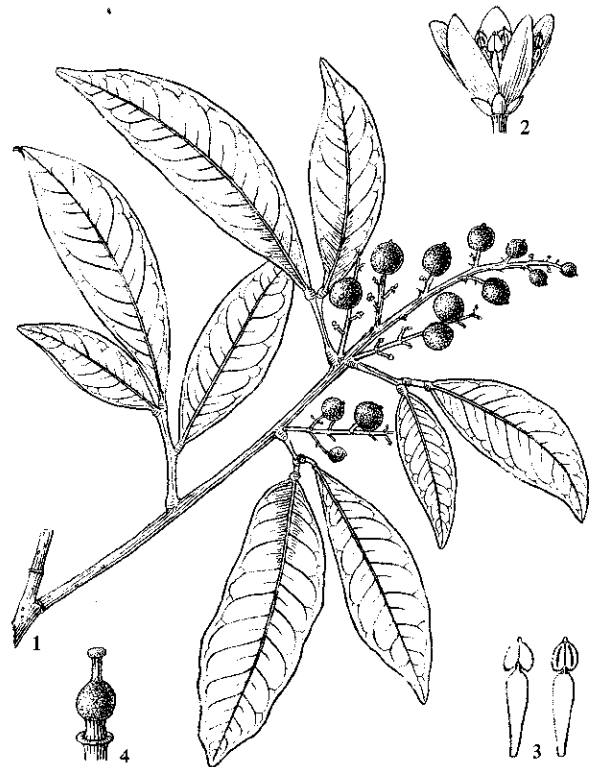


Figure 228. *Glycosmis citrifolia* (Willd.) Lindl.

1. fruiting branch; 2. flower; 3. stamens; 4. pistil. (drawn by H. P. Yu)

## 8. *Clausena* Burm. f. 黄皮屬

Shrubs or small trees, unarmed, all parts often with glandular-dots. Branchlets or inflorescence rachis often covered with clustered short hairs. Leaves imparipinnate, leaflets asymmetrical. Inflorescences a panicle, terminal or subterminal. Flower buds globose, rarely ovoid. Flowers bisexual. Calyx 4–5-lobed, connate at base. Petals 4–5, imbricate. Stamens twice as many as petals, in 2 whorls, outer ones opposite to sepals, inner ones opposite to petals. Filaments subulate at apex, geniculate at middle, enlarged at base, rarely filiform. Ovary (1–)4–5-locular; ovules (1–)2 per locule. Styles short and thick, rarely longer than ovary; stigmas as wide as styles or slightly

wider. Fruit a berry, (1–)4-seeded. Seed coat membranous, brown.

About 30 species distributed in Asia, Africa and Australia; ten species in China; one species commonly cultivated in Hong Kong.

**1. *Clausena lansium* (Lour.) Skeels 黄皮**

(Photo 447)

U. S. Depart. Agr. Bur. Pl. Ind. Bull. 176: 29. 1909; FHN 3: 42, fig. 553. 1974; FGD 2: 257, fig. 170. 1991; FRPS 43(2): 132, pl. 33: 5–9. 1997.

*Quinaria lansium* Lour., Fl. Cochinch. 272. 1790.

*Clausena wampi* (Blanco) Oliv., J. Linn. Soc., Bot. 5(suppl. 2): 34. 1861.

*Clausena wampi* (Blanco) Oliv. ex Benth., FHK 51. 1861; FKH 56. 1912.

*Cookia wampi* Blanco, Fl. Filip. 358. 1837.

Evergreen small trees, to 12 m tall. Branchlets, leaf rachis, inflorescence rachis and veins of leaves on abaxial surface hirsute, with scattered and raised fine glandular dots. Leaves 5–11-foliolate; petiolules 4–8 mm; leaflets ovate or ovate-elliptic, asymmetrical, 6–14 × 3–6 cm, base subrounded or broadly cuneate, margin wavy or coarsely crenate; midveins finely pubescent on both surfaces. Panicles terminal, many-flowered. Flower-buds globose, 5-ribbed. Calyx-lobes broadly ovate, ca. 1 mm, pubescent abaxially. Petals oblong, ca. 5 mm, pubescent on both surfaces or glabrous adaxially. Stamens 10, unequal, the 5 longer ones as long as petals; filaments filiform, slightly dilated at lower half, not geniculate. Ovary densely hirsute, shortly stipitate. Fruit globose, ellipsoidal or broadly ovoid, 1.5–3 × 1–2 cm, pale yellow to dark yellow, finely hairy; pulp milky white, translucent, 1–4-seeded.

Locality: Cultivated. *Y. S. Lau* 1555, 1808, 2865.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan, Guizhou (cultivated), native to S China.

Ecology: Flowering: Apr.–May; fruiting: Jul.–Aug.

Uses: Fruit.

**9. *Toddalia* Juss. 飛龍掌血屬**

Scandent shrubs. Stems and branches armed with many hooked spines. Leaves alternate, digitately 3-foliolate, densely glandular-dotted. Inflorescence a corymbose thyrse or panicle, axillary or terminal. Flowers unisexual, small, 4–5-merous. Calyx 4–5-lobed. Petals 4–5, imbricate or valvate. Male flower: stamens 4–5, pistillode clavate. Female flower: staminodes short and small, half as long as pistil, without anthers; ovary 4–5-carpellate, 4–5-locular, ovules 2 per locule; style very short; stigma capitate. Fruit a drupe, subglobose, with 4–8 stones. Seeds reniform; seed coat rigid and bony; endosperm fleshy; embryo curved.

One species distributed in E & SE Asia, E & SW Africa; one species in China; it also occurs in Hong Kong.

**1. *Toddalia asiatica* (L.) Lam.**

飛龍掌血(筋鈎)

(Fig. 229; Photo 448)

Tabl. Encycl. 2: 116. 1797; Icon. Corm. Sin. 2: 552, fig. 2834. 1972; FHN 3: 36, fig. 548. 1974; FTW 3: 529, fig. 714. 1977; FGD 2: 248, fig. 163. 1991; FTW ed 2, 3: 535, pl. 276. 1993; FRPS 43(2): 96, pl. 23. 1997.

*Paullinia asiatica* L., Sp. Pl. 365. 1753.

*Toddalia aculeata* Pers., Syn. Pl. 1: 249. 1805; FHK 59. 1861; FKH 56. 1912.

*Toddalia tonkinensis* Guill., Bull. Soc. Bot. France 91: 215. 1945.

Shrub, with weak or flexuose branches. Stems with thick corky layer and yellowish grey lenticels. Stems, branches and leaf rachis armed with many downward curved sharp spines. Young branchlets glabrous or pubescent. Leaflets sessile, densely covered with pellucid glandular dots, ovate, obovate, elliptic or obovate-elliptic, 5–9 × 2–4 cm, base attenuate, apex caudate, acute or mucronate, sometimes emarginate, margin serrulate; lateral veins dense and slender. Pedicels rather short, subtended by very small scaly bracts. Flowers pale yellowish white. Calyx lobes less than 1 mm, margin ciliolate. Petals 2–3.5 mm. Fruit orange-red to red, 0.8–1 cm in diam., 4–8-furrowed. Seed 5–6 × 4 mm; seed coat brownish black.

Locality: Hong Kong Island, Beacon Hill, Tai Mo Shan, Tai Po Kau, Luk Keng, Lantau Island. *Y. S. Lau* 2830; *P. S. Choi* 518; *Y. W. Lam* 19.

Distribution: Areas S of Qinling Range.

Ecology: Secondary forests or thickets. Flowering: Summer; fruiting: Autumn to winter.

Uses: Medicinal (folklore).

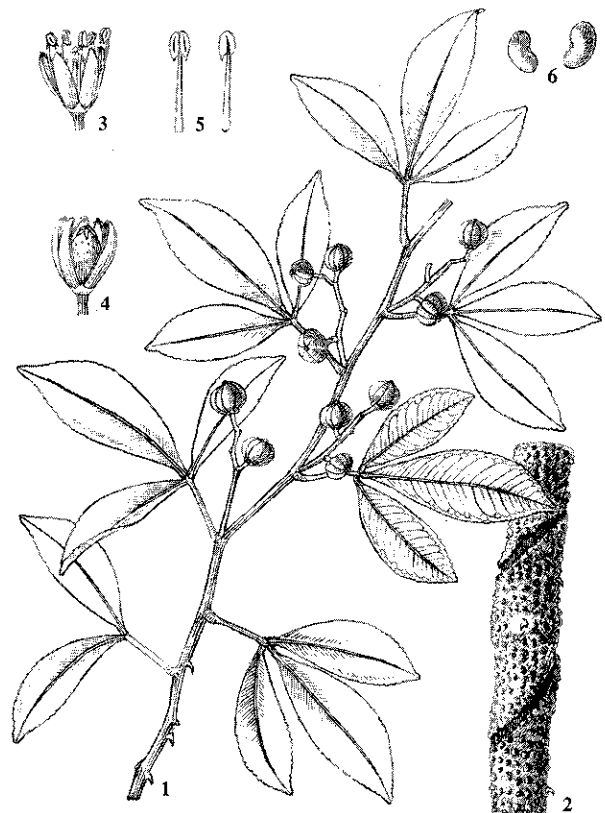


Figure 229. *Toddalia asiatica* (L.) Lam.

1. fruiting branch; 2. portion of stem; 3. male flower; 4. female flower; 5. stamens; 6. seeds. (drawn by H. P. Yu)

10. *Zanthoxylum* L. 花椒屬

Evergreen or deciduous trees or shrubs, dioecious or polygamous. Stems and branches usually armed with prickles. Leaves alternate, imparipinnate, rarely unifoliolate or 3-foliolate; leaflets alternate or opposite, with pellucid dots. Inflorescence a panicle or corymbose thyrse, terminal or axillary. Flowers unisexual. Perianth 1–2 whorls. Sepals 4–8. Petals 4–5 or wanting. Male flower: stamens 4–10, anthers often with a apical gland; pistillode pulvinate; style (0–)2–4-lobed. Female flower: staminodes wanting or scalelike; gynoecium 2–5-carpellate; carpels distinct, ovules 2 per carpel; style coherent or distinct; stigma capitate. Fruit 1–5 follicles; pericarp red, glandular-dotted. Follicle 1(–2)-seeded. Seed black, shiny; endosperm fleshy; embryo straight or curved.

About 250 species distributed in the tropical and subtropical regions of the world; about 40 species in China; six species in Hong Kong.

- 1a. Scandent shrubs.  
 2a. Leaflets 7–23, alternate, asymmetrical; follicle ca. 4 mm in diam. .... 1. *Z. scandens*  
 2b. Leaflets 3–7, opposite, symmetrical; follicle 5–6 mm in diam. .... 2. *Z. nitidum*
- 1b. Trees or erect shrubs.  
 3a. Leaves unifoliolate or 3-foliolate ..... 3. *Z. ovalifolium*  
 3b. Leaves imparipinnate.  
 4a. Leaflets oblique rectangular, strongly asymmetrical ..... 4. *Z. avicemae*  
 4b. Leaflets oblong or elliptic, symmetrical or slightly asymmetrical.  
 5a. Leaflets greyish white and glaucous abaxially ..... 5. *Z. ailanthoides*  
 5b. Leaflets concolour on both surfaces, not glaucous abaxially ..... 6. *Z. myriacanthum*

1. *Zanthoxylum scandens* Blume 花椒筍

(Photo 449)

Bijdr. Natuurk. Wetensch. 249. 1825; FTW 3: 535. 1977; FFJ 2: 358. 1985; FGD 2: 241. 1991; FRPS 43(2): 20. 1997.

*Fagara chinensis* Merr., Philipp. J. Sci. 13(3): 141. 1918.

*Zanthoxylum chinensis* (Merr.) Chung, Mem. Sci. Soc. China 1: 123. 1924.

*Fagara cuspidata* (Champ.) Engl., Nat. Pflanzenfam. 3(4): 118. 1896.

*Zanthoxylum cuspidatum* Champ., Hooker's J. Bot. Kew Gard. Misc. 3: 329. 1851; FHK 58. 1861; FKH 55. 1912; Icon. Corm. Sin. 2: 545, fig. 2819. 1972; FHN 3: 32. 1974.

*Fagara scandens* (Blume) Engl., Nat. Pflanzenfam. 3(4): 118. 1896.

Scandent shrub. Stems, branches and leaf rachis armed with many prickles. Leaves imparipinnate; petiolule 2–5 mm; leaflets 5–25, alternate or irregularly opposite, ovate, ovate-elliptic or oblique oblong, 4–10 × 1.5–4 cm, base broadly cuneate, apex acute to caudate, often emarginate, entire or serrulate at upper half, black when dry, glossy adaxially, glabrous on both surfaces. Panicles 2–5 cm, axillary and terminal. Calyx lobes 4, pale purplish green, broadly ovate, 0.5 mm. Petals 4, pale yellowish green 2–3 mm. Male flower: stamens 4, 3–4 mm, anthers with an apical gland; pistillode semiorbicular, pulvinate, style 2–4-lobed. Female flower: carpels 3–4; staminodes scalelike. Follicle purplish red, greyish brown or black when dry, 4.5–5.5 mm in diam., apex shortly awned, glandular-dots inconspicuous, flat or slightly prominent. Seeds subglobose, 4–5 mm in diam., slightly acute at both ends.

Locality: Common in Hong Kong. *H. C. Tang 2332; Y. S. Lau 494, 1668.*

Distribution: Areas S of Changjiang River; SE Asia.

Ecology: Secondary forests or thickets. Flowering: Mar.–May; fruiting: Jul.–Sep.

Notes: The type specimen of *Zanthoxylum cuspidatum* was collected by J. G. Champion from Hong Kong Island between 1847 and 1850.

2. *Zanthoxylum nitidum* (Roxb.) DC. 兩面針

(Photo 450)

Prodr. 1: 727. 1824; FHK 58. 1861; FKH 56. 1912; FHN 3: 32. 1974; FTW 3: 533, fig. 715. 1977; FGD 2: 240, fig. 155. 1991; FRPS 43(2): 14, pl. 1: 1–3, 2: 5–6. 1997.

*Fagara nitida* Roxb., Fl. Ind. 1: 439. 1820.

*Zanthoxylum asperum* var. *glabrum* C. C. Huang, Acta Phytotax. Sin. 6(1): 76. 1957.

*Zanthoxylum nitidum* f. *fastuosum* How ex Huang, FHN 3: 32, 573, fig. 544. 1974; FFJ 2: 359. 1985.

Scandent shrub, 1–5 m tall. Spines on branches straight, broad and flat at base. Leaves imparipinnate; petiolule 2–5 mm, rarely sessile; leaflets (3–)5–11, opposite, broadly ovate or suborbicular, narrowly elliptic, 3–12 × 1.5–6 cm, base broadly cuneate to subrounded, apex acute to caudate, emarginate, margin sparsely shallow-dentate, teeth glandular-dotted, sometimes entire, glabrous except midveins pubescent at base abaxially. Inflorescences axillary at shoot apex, rachis pubescent. Flowers yellowish green, 4-merous. Sepals purplish green at upper part, ca. 1 mm wide. Petals ovate-elliptic or oblong, ca. 3 mm. Male flower: stamens 5–6 mm, anthers broadly ellipsoidal to subglobose. Pistillode semiglobose, pulvinate, apex 4-lobed. Female flower: petals wider than those of male flower; staminodes absent or scalelike; ovary globose, style thick and short, stigma capitate. Fruiting pedicels 2–5 mm. Pericarp reddish brown. Follicle 5.5–7 mm in diam., shortly awned at apex. Seeds globose, 5–6 mm in diam., slightly flat adaxially.

Locality: Common in Hong Kong. *Y. S. Lau 954; S. P. Lau 103; HK sheet 40088.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan, Yunnan, Guizhou.

Ecology: Lowland secondary forests or thickets. Flowering: Mar.–May; fruiting: Sep.–Nov.

Uses: Medicinal (folklore).

### 3. *Zanthoxylum ovalifolium* Wight 異葉花椒

Ill. Ind. Bot. 1: 169. 1839; FGD 2: 235, fig. 151. 1991; FRPS 43(2): 40. 1997.

*Fagara dimorphophylla* (Hemsl.) Engl., Nat. Pflanzenfam. 3(4): 118. 1896.

*Fagara robiginosa* Reeder & S. Y. Cheo, J. Arnold Arbor. 32(1): 68, pl. 1. 1951.

*Zanthoxylum dimorphophyllum* Hemsl., Ann. Bot. (Oxford) 9(33): 150. 1895.

*Zanthoxylum ovalifolium* Tutcher, J. Linn. Soc., Bot. 37: 64. 1905.

*Zanthoxylum robiginosum* (Reeder & S. Y. Cheo) C. C. Huang, Acta Phytotax. Sin. 6(1): 35. 1957.

Deciduous tree, to 10 m. Branches greyish black, rarely spiny. Young branches and buds often rusty pubescent. Leaves unifoliate or digitately 3-foliolate; petiolule slightly enlarged at apex, wings absent or rudimentary; leaflets broadly elliptic or lanceolate, 4–8 × 1.8–4 cm, base acute, apex rounded or obtuse, often emarginate, margin obviously obtuse-dentate; reticulate veins conspicuous. Inflorescences terminal. Tepals 6–8, unequal, slightly various in shape, 2–3 mm, apex rounded. Male flower: stamens 6; pistillode pulvinate. Female flower: staminodes 4–5, half as long as ovary; carpels 2–3, style backward curved. Follicles purplish red, sparsely pubescent when young, 6–8 mm in diam., base with a very short stipe, glands few, apex shortly awned. Seeds 5–7 mm in diam.

Locality: Mount Parker. *HK sheet 639*.

Distribution: Areas S of Qinling Range.

Ecology: Secondary forests. Flowering: Apr.–Jun.; fruiting: Sep.–Nov.

Uses: Medicinal (folklore).

### 4. *Zanthoxylum avicennae* (Lam.) DC.

筋樞花椒(筋樞) (Fig. 230; Photo 451)

Prodr. 1: 726. 1824; FHK 58. 1861; FKH 55. 1912; Icon. Corm.

Sin. 2: 543, fig. 2815. 1972; FHN 3: 31. 1974; FGD 2: 238, fig.

153. 1991; FRPS 43(2): 34. 1997.

*Fagara avicennae* Lam., Encycl. 2: 455. 1788.

*Zanthoxylum avicennae* var. *tonkinense* Pierre, Fl. For. Cochinch. 4, pl. 289B. 1893.

*Zanthoxylum lentiscifolium* Champ., Hooker's J. Bot. Kew Gard. Misc. 3: 329. 1851; FHK 58. 1861.

Deciduous tree, to 15 m. Stems with sharp, thick, pedate-spines. Bark dark grey to brownish grey, not fissured. Branches solid, shortly spiny. Leaf rachis narrowly winged adaxially; leaflets 13–18(–25), usually oblique rectangular, strongly asymmetrical, 4–7 × 1.5–2.5 cm, apex acute or obtuse, entire or sparsely dentate at upper half. Inflorescences terminal, many-flowered; rachis and pedicels sometimes purplish red. Male flower: pedicels 1–3 mm; sepals and petals 5; sepals broadly ovate, green; petals yellowish white; stamens 5; pistillode 2-fid. Female flower: petals longer than male ones, ca. 2.5 mm; staminodes very small; carpels 2(–3). Fruiting pedicels 3–6 mm. Follicles pale purplish red, 4–5 mm in diam., apex not awned, with many glandular dots. Seeds shorter than 4 mm.

Locality: Common in Hong Kong. *Y. S. Lau 1612*; *S. P. Lau 153*; *C. H. Tsou 1881*.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan, Yunnan.

Ecology: Secondary forests or thickets. Flowering: Jun.–Aug.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).

Notes: The type specimen of *Zanthoxylum lentiscifolium* was collected by J. G. Champion from Mount Gough, Hong Kong Island between 1847 and 1850.

### 5. *Zanthoxylum ailanthoides* Siebold & Zucc. 椿葉花椒(樗葉花椒)

(Photo 452)

Fl. Jap. 1: 30. 1846; Abh. Akad. Muchen 4(2): 138. 1846; Icon. Corm. Sin. 2: 542, fig. 2814. 1972; FTW 3: 531. 1977; FGD 2: 237. 1991; FTW ed. 2, 3: 537. 1993; FRPS 43(2): 35, pl. 10: 11. 1997.

*Fagara ailanthoides* (Siebold & Zucc.) Engl., Nat. Pflanzenfam. 3(4): 118. 1896.

Deciduous tree, up to 15 m tall, 30 cm d.b.h. Bark greyish brown to blackish brown, not fissured. Stems spiny, spines 2–5 mm, sharp, base to 3 cm wide. Inflorescence rachis and branchlets scattered with short and straight spines. Leaflets 11–27, opposite, narrowly lanceolate or subovate, 7–18 × 2–6 cm, base rounded, symmetrical or slightly asymmetrical, apex long acuminate, margin obviously

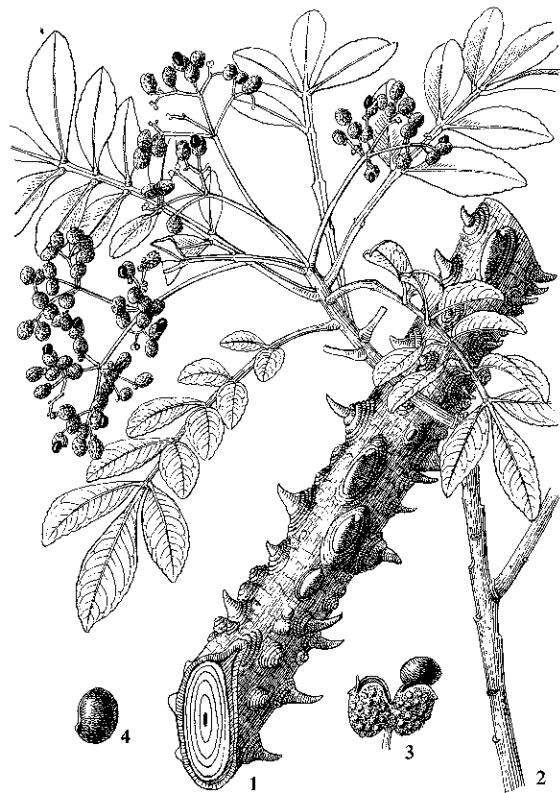


Figure 230. *Zanthoxylum avicennae* (Lam.) DC.

1. portion of stem; 2. fruiting branch; 3. fruit; 4. seed. (drawn by H. P. Yu)



dentate, glabrous on both surfaces, densely glandular-dotted, greyish green and glaucous abaxially; midveins impressed adaxially, lateral veins 11–16 pairs. Inflorescences terminal, many-flowered, subsessile. Sepals and petals 5. Petals pale yellowish white, ca. 2.5 mm. Male flower: stamens 5, pistillode very short, 2–3-lobed. Female flower: carpels 3(–4). Fruiting pedicels 1–3 mm. Follicles pale reddish brown, pale grey or brownish grey when dry, ca. 4.5 mm, apex not awned, with many glands. Seeds ca. 4 mm in diam.

Locality: Tsiu Hang, Chek Keng, Tai Long, Sai Wan, Lo Tsz Tin, Tai Po Kau, Ting Kok, Tai Mei Tuk. *Y. S. Lau 1687, 2786; Y. W. Lam 906.*

Distribution: Areas S of Changjiang River.

Ecology: Thickets and forests. Flowering: Aug.–Sep.; fruiting: Oct.–Dec.

**6. *Zanthoxylum myriacanthum* Wall. ex Hook. f. 大葉臭花椒**

(Photo 453)

Fl. Brit. India 1(3): 496. 1875; FKH 55. 1912; FRPS 43(2): 36, pl. 8: 1–3, 10: 9. 1997.

*Fagara myriacantha* (Wall. ex Hook. f.) Engl., Nat. Pflanzenfam. 3(4): 118. 1896.

*Zanthoxylum rhesoides* Drake, J. Bot. (Morot) 6(15–16): 275. 1892; FGD 2: 238. 1991.

*Fagara rhesoides* (Drake) Reeder & S. Y. Cheo, J. Arnold Arbor. 32(1): 69. 1951.

Deciduous tree, 2–4 m, rarely up to 15 m. Bark dark grey, not fissured. Stems spiny, spines sharp, base to 3 cm wide. Leaf rachis and leaflets without spines. Leaflets 7–17, opposite, broadly ovate, ovate-elliptic or oblong, 10–20 × 4–10 cm, base rounded or broadly cuneate, symmetrical or slightly asymmetrical, margin conspicuously shallowly crenate, glabrous on both surfaces, glands large and many; midvein impressed adaxially, lateral veins conspicuous. Inflorescences terminal, to 35 × 20 cm, many-flowered, branches pubescent. Sepals and petals 5. Petals white, ca. 2.5 mm. Male flower: sepals broadly ovate, ca. 1/3 mm; stamens 5, filaments longer than petals; pistillode 3-lobed at apex. Female flower: petals ca. 3 mm; staminodes very short; carpels (2–)3(–4). Follicles reddish brown, ca. 4.5 mm in diam., with many glands, apex not awned. Seeds ca. 4 mm in diam.

Locality: Bride's Pool, Pat Sin Leng, Nam Chung, Luk Keng, Tai Po. *Y. S. Lau 2611, 2810; HK sheet 4445.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Yunnan, Guizhou.

Ecology: Secondary forests, roadsides. Flowering: Jun.–Aug.; fruiting: Sep.–Nov.

Uses: Medicinal (folklore).

## 11. *Aegle* Corrêa 木橘屬

Deciduous small trees, armed with sharp spines. Leaves alternate, digitately 3-foliolate. Flowers bisexual, solitary or in few-flowered thyrses, white, fragrant, 5-merous. Sepals connate at base. Petals imbricate. Stamens many, sometimes united into a staminal tube, filaments short, apex subulate; anthers long. Disk small. Styles short, stigmas slightly thicker than styles, finely furrowed. Ovary terete, 8–20-locular, ovules many per locule. Fruit globose or pyriform. Pericarp woody, locular wall thick, fleshy. Seeds many, embedded in fragrant, viscid juice, ellipsoidal and slightly flattened; seed coat woolly hairy.

One species distributed in SE Asia; it is cultivated in Hong Kong.

**1. *Aegle marmelos* (L.) Corrêa 木橘(肖木蘋果)**

(Photo 454)

Trans. Linn. Soc. 5: 223. 1800; FRPS 43(2): 210, pl. 51. 1997.

*Crataeva marmelos* L., Sp. Pl. 1: 444. 1753.

Tree to 10 m tall. Bark grey. Spines many, thick and hard, straight, to 3 cm. Long branches with 1 normal leaf and 1 or 2 spines on each node. Short branches with 1 leaf and no spines on each node. Leaves various in size. Leaves of seedling simple, opposite or subopposite. Leaves on lower part of stems unifoliolate, on upper part of stems digitately 3-foliolate, sometimes 2-foliolate. Leaflets broadly ovate or long elliptic, 4–12 × 2–5 cm, central one larger and with 2 cm petiolule, lateral ones sessile, margin shallowly obtuse-dentate. Flowers solitary or few in axils, pedicellate. Sepals 4–5, finely hairy. Petals 4–5, white, slightly fleshy, with pellucid glandular dots, ca. 1 cm. Stamens up to 50, ± connate into many bundles, filaments very short, anthers linear and long. Fruiting pedicels 4–6 cm, as thick as the branches bearing fruit. Fruit 10–12 × 6–8 cm; pericarp pale greenish yellow, smooth, woody when dry, 3–4 mm thick, 10–15-locular. Seeds many, compressed ovoid, apex sharp.

Locality: Cultivated. *Y. S. Lau 1597; L. T. Lo 257.*

Distribution: Yunnan; India, Myanmar, Laos, Vietnam, Cambodia, Thailand, Malaysia, Indonesia.

Ecology: Fruiting: Oct.

Uses: Medicinal (folklore).

## 12. *Atalantia* Corrêa, *nom. cons.* 酒餅筋屬

Small trees or shrubs, armed with spines or unarmed. Leaves alternate, unifoliolate, entire or crenulate; stipulate scales often present. Flowers axillary, rarely terminal, fasciculate or in short racemose corymbs or panicles, rarely solitary. Calyx 3–5-lobed, lobes imbricate. Petals 3–5, imbricate. Stamens 8 or 10, distinct or connate into several bundles, equal or unequal; anthers ellipsoidal. Ovary 2–5-locular, ovules 1–2 per locule; style as long as ovary, rarely shorter, stigmas capitate or slightly enlarged. Fruit a berry, globose or ellipsoidal, red or bluish black, 1–5-seeded. Seeds ellipsoidal.

About 17 species distributed in tropical Asia and Australia; seven species in China; one species in Hong Kong.

1. *Atalantia buxifolia* (Poir.) Oliv.

酒餅筋

(Fig. 231; Photo 455)

J. Proc. Linn. Soc., Bot. 5(Suppl. 2): 26. 1861; FHK 51. 1861; FKH 56. 1912; FHN 3: 47, fig. 557. 1974; FGD 2: 261, fig. 173: 5–6. 1991; FRPS 43(2): 156, pl. 41. 1997.

*Citrus buxifolia* Poir., Encycl. 4: 580. 1797.

*Limonia monophylla* Lour., Fl. Cochchin. 1: 271. 1790, non L. (1767), *nom. illeg.*

*Severinia buxifolia* (Poir.) Ten., Index Sem. (Napoli) 3. 1840; FTW 3: 525. 1977; FTW ed. 2, 3: 529, pl. 273. 1993.

*Dumula sinensis* Lour. ex B. A. Gomes, Mem. Acad. Sci. Lisbon. Cl. Sci. Pol. Mor. Bel.-Let, n.s. 4(1): 29. 1868.

*Severinia monophylla* Tanaka, J. Bot. (Morot) 68: 232. 1930.

Shrub, to 2.5 m tall, multibranched. Branchlets green when young, greyish brown when old, internodes slightly flat, spines many, straight, to 4 cm, rarely nearly unarmed. Leaves hard leathery, fragrant; petiole 1–7 mm, robust; leaflet blade ovate, obovate, elliptic or suborbicular, 2–6(–10) × 1–5 cm, base obtuse or cuneate, apex rounded or obtuse, emarginate; midvein slightly prominent adaxially, lateral veins dense, subparallel. Flowers several-fasciculate in axils, rarely solitary, subsessile. Sepals 5. Petals 5, white, 3–4 mm, glandular-dotted. Stamens 10, filaments white, distinct, sometimes few connate at base. Styles as long as ovary, green. Fruit globose, compressed globose or subellipsoidal, 0.8–1.2 cm in diam.; pericarp smooth, with slightly raised glands, bluish black when mature, with persistent calyx; pulp translucent, (1–)2-seeded. Seed coat thinly membranous.

Locality: Hong Kong Island, Kowloon, Sai Kung, Lantau Island. *H. C. Tang 1294, 1849, 2268.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan.

Ecology: Thickets. Flowering: May–Dec.; fruiting: Sep.–Dec.

Uses: Medicinal (folklore).

Notes: The species was reported as *Severinia buxifolia* (Poir.) Ten. previously (Check List HK Plants 201. 2002; 71. 2004).

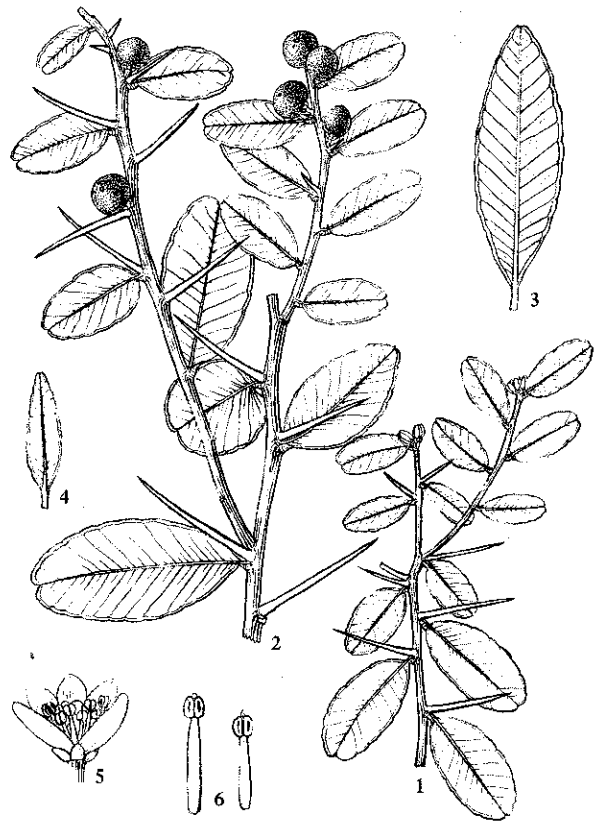


Figure 231. *Atalantia buxifolia* (Poir.) Ten.

1. flowering branch; 2. fruiting branch; 3–4. leaves; 5. flower; 6. stamens. (drawn by H. P. Yu)

13. *Fortunella* Swingle 金橘屬

Shrubs or small trees. Young branches green, slightly compressed and ridged, spines axillary or without spines. Leaves unifoliolate, rarely simple, with many glandular dots. Flowers solitary or several-fasciculate in leaf axils, bisexual. Calyx 4–5-lobed. Petals 5, imbricate. Stamens 3–4 times as many as petals, filaments connate into 4–5 bundles, with a few distinct. Disk slightly prominent. Ovary globose or ellipsoidal, 3–6(–8)-locular, ovules 1–2 per locule; styles long, stigmas large. Fruit globose, ovoid, ellipsoidal or pyriform; pericarp fleshy, glandular dots slightly prominent or not; pericarp and pulp acid or sweet. Seeds ovoid, base rounded, apex acute, smooth.

About six species distributed in SE Asia; five species in China; three species in Hong Kong.

- 1a. Leaflets rounded, rarely acute or obtuse at apex; fruit less than 1 cm in diam. .... 1. *F. hindsii*  
 1b. Leaflets obtuse or acute at apex; fruit more than 1.5 cm in diam.  
     2a. Fruit globose or broadly ovoid, 1.5–2.5 cm in diam. .... 2. *F. japonica*  
     2b. Fruit ellipsoidal or ovoid-ellipsoidal, 2–3.5 cm long ..... 3. *F. margarita*

1. *Fortunella hindsii* (Champ. ex Benth.) Swingle 山橘

(Fig. 232, Photo 456)

J. Wash. Acad. Sci. 5: 175. 1915; Icon. Corm. Sin. 2: 556, fig. 2841. 1972; FHN 3: 48. 1974; FGD 2: 266. 1991; FRPS 43(2): 172, pl. 45: 2–3. 1997.

*Sclerostylis hindsii* Champ. ex Benth., Hooker's J. Bot. Kew Misc. 3: 328. 1851.

*Atlanthia hindsii* Oliv. ex Benth., FHK 51. 1861; FKH 56. 1912.

Shrub, to 3 m tall, multibranched, shortly spiny. Leaves unifoliolate, sometimes simple; petiole 0.6–0.9 cm, winged; wings linear or conspicuous; blade elliptic or obovate-elliptic, 4–6 × 1.5–3 cm, base rounded or broadly cuneate, apex rounded, rarely acute or obtuse, margin denticulate near apex, rarely entire. Flowers solitary or few-fasciculate in axils; pedicels rather short. Calyx 4–5-lobed. Petals 5, shorter than 5 mm. Stamens ca. 20, filaments connate into 4–5 bundles, shorter than petals. Ovary 3–4-locular; styles as long as ovary. Fruit globose or slightly compressed globose, less than 1 cm in diam.; pericarp orange-yellow or red, smooth, pungent and slightly bitter; pulp acid. Seeds 3–4, broadly ovoid, apex acute, smooth and not ridged.

Locality: Hong Kong Island, Diamond Hill, Sai Kung, Tai Mo Shan, Ma On Shan, Fanling, Lantau Island. *W. J. Tutchter 9963*; *H. C. Tang 2135, 1471*.

Distribution: Guangdong, Guangxi, Jiangxi, Hunan, Fujian, Anhui.

Ecology: Secondary forests and thickets. Flowering: Apr. – May; fruiting: Oct. – Dec.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by R. B. Hinds from Hong Kong Island in 1841.

**2. *Fortunella japonica* (Thunb.) Swingle 金柑 (圓金橘)**

*J. Wash. Acad. Sci.* 5: 175. 1915; *FGD* 2: 266. 1991; *FRPS* 43(2): 172, pl. 45: 4–5. 1997.

*Citrus japonica* Thunb., *Nov. Act. Upsal.* 3: 199. 1780.

Small tree, 2–5 m tall. Branches spiny. Leaves unifoliolate; petioles 0.6–1 cm, winged; wings narrow to obvious; leaflets ovate-elliptic or oblong-lanceolate, 4–8 × 1.5–3.5 cm, base broadly cuneate, apex obtuse or acute. Flowers solitary or 2–3 in clusters; pedicels rarely longer than 6 mm. Calyx lobes 4–5. Petals 6–8 mm. Stamens 15–25, slightly shorter than petals, filaments connate into several bundles, few distinct. Ovary globose, 4–6-locular; styles nearly as long as ovary. Fruit globose, 1.5–2.5 cm in diam.; pericarp orange-yellow to orange-red, 1.5–2 mm thick, sweet; pulp sweet or acid. Seeds 2–5, ovoid, base rounded, apex acute or obtuse.

Locality: Cultivated.

Distribution: Guangdong, Hainan, Fujian, Zhejiang, Taiwan.

Ecology: Flowering: Apr. – Aug.; fruiting: Nov. – Feb.

Uses: Edible (fruit), ornamental.

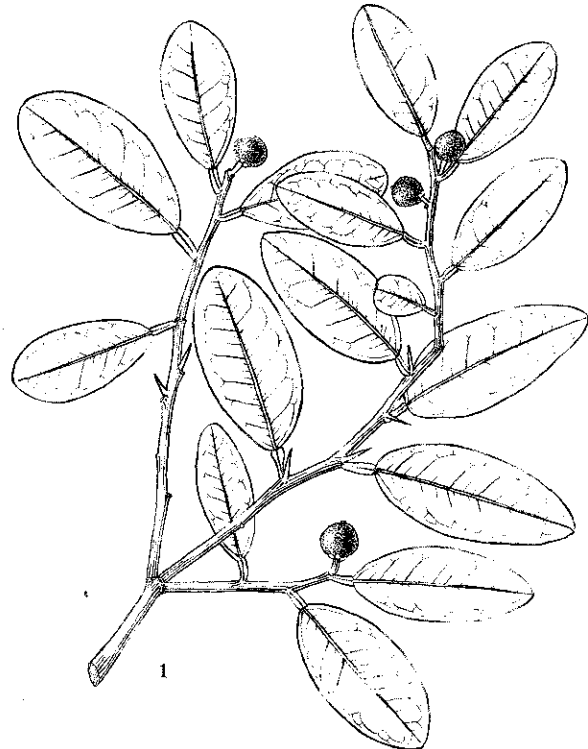


Figure 232. *Fortunella hindsii* (Champ. ex Benth.) Swingle  
1. fruiting branch. (drawn by H. P. Yu)

**3. *Fortunella margarita* (Lour.) Swingle 金橘**

(Photo 457)

*J. Wash. Acad. Sci.* 5: 170, fig. 2. 1915; *FHN* 3: 49. 1974; *FGD* 2: 267, fig. 177. 1991; *FRPS* 43(2): 173, pl. 45: 6–12. 1997.

*Citrus margarita* Lour., *Fl. Cochinch.* 2: 467. 1790.

*Citrus aurantium* var. *japonica* Hook. f., *Bot. Mag.* 3: 30, pl. 6128. 1874.

Shrub to 3 m tall. Branches spiny. Leaves unifoliolate, thick, dark green; petioles to 1.2 cm, with rather narrow wings; leaf blade ovate-lanceolate or long elliptic, 5–11 × 2–4 cm, base broadly cuneate to subrounded, apex slightly acute or obtuse. Flowers solitary or 2–3 in clusters. Pedicels 3–5 mm. Calyx 4–5-lobed. Petals 5, 6–8 mm. Stamens 20–25. Ovary ellipsoidal; styles slender, usually 1.5 times as long as ovary; stigmas slightly enlarged. Fruit ellipsoidal or ovoid-ellipsoidal, 2–3.5 cm, orange-yellow to orange-red; pericarp sweet, ca. 2 mm thick; segments 4–5; pulp acid. Seeds 2–5, ovoid, apex acute.

Locality: Cultivated.

Distribution: S China (cultivated).

Ecology: Flowering: Apr. – May; fruiting: Nov. – Jan.

Uses: Medicinal (folklore), ornamental.

**14. *Citrus* L. 柑橘屬**

Small trees, armed with spines. Young branches flat and ridged. Leaves alternate, unifoliolate, leathery, margin finely obtuse-dentate, rarely entire, densely pellucid glandular-dotted; petioles often winged. Flowers bisexual, axillary, solitary or in clusters, rarely in cymes. Calyx cupular or urceolate, 3–5-lobed. Petals 4–8, imbricate, often reflexed when full blooming. Stamens 20–60; filaments variously connate, compressed at base; anthers ellipsoidal. Ovary 7–many-locular, ovules 4–8 (–many) per locule, in 2 series; styles stout, deciduous; stigma capitate. Fruit a hesperidium, large, ellipsoidal or globose, fleshy; septa membranous. Seeds horizontal or pendulous, seed coat leathery or membranous.

About 20 species distributed in tropical and subtropical Asia, widely cultivated in the tropical and subtropical regions of the world; 15 species in China; five species commonly cultivated in Hong Kong.

In addition to the described species, *C. aurantiifolia* (Christm.) Swingle, *C. medica* L. var. *sarcodactylis* (Noot.) Swingle and *C. × paradisi* Macfad. (*Citrus maxima* × *Citrus sinensis*) are occasionally cultivated in Hong Kong.

- 1a. Leaves simple..... 1. *C. medica*  
1b. Leaves unifoliolate.  
2a. Young branches, abaxial surfaces of leaves, pedicels, calyx and ovary densely hairy; seeds many and large, obviously ridged

- ..... 2. *C. maxima*
- 2b. All parts glabrous or only calyx sparsely ciliate; seeds few, small or medium-sized, smooth or rarely finely ribbed.
- 3a. Fruit shortly papillate at apex at least when young ..... 3. *C. limonia*
- 3b. Fruit not papillate at apex.
- 4a. Pericarp easy to peel off ..... 4. *C. reticulata*
- 4b. Pericarp difficult to peel off ..... 5. *C. sinensis*

1. *Citrus medica* L. 香櫞(枸櫞) (Fig. 233; Photo 458)

Sp. Pl. 1: 782. 1753; FHN 3: 50. 1974; FGD 2: 270. 1991; FRPS 43(2): 184. 1997.

Shrub or small tree. Young branches and leaves usually dark purplish red. Stems armed with many thick spines; spines to 4 cm. Leaves simple, rarely unifoliolate. Petiole short, not winged; leaf blade elliptic or ovate-elliptic, 6–12 × 3–6 cm, apex rounded or obtuse, rarely acute, margin shallowly obtuse-dentate. Racemes 3–11-flowered, rarely flower solitary. Flowers bisexual, rarely unisexual. Petals 5, 1.5–2 cm. Stamens 30–60. Ovary terete, style thick and long. Fruit ellipsoidal, subglobose or fusiform, to 2 kg; pericarp pale yellow, rough, thick or thin, difficult to peel off, endocarp white or slightly pale yellow, soft, segments 10–15, pulp transparent or pale milky yellow, acid or slightly sweet, fragrant. Seeds small, smooth.

Locality: Cultivated. *HK sheet 4689*.

Distribution: Guangdong, Guangxi, Fujian, Taiwan, Yunnan (cultivated); Vietnam, Laos, Myanmar, India.

Ecology: Flowering: Apr.–May; fruiting: Oct.–Nov.

Uses: Medicinal (folklore).

2. *Citrus maxima* (Burm. ex Rumph.) Merr. 柚 (Photo 459)

Bur. Sci. Publ. Manil. Amboin. 46: 296. 1917; FRPS 43(2): 187, pl. 50: 1–3, 13–17. 1997.

*Aurantium maximum* Burm., Herb. Amboin. Auct. Index Univ. Sign. Z. 1, Verso. 1755.

*Citrus aurantium* var. *grandis* L., Sp. Pl. 2: 783. 1753.

*Citrus grandis* (L.) Osbeck, Dagbok Ost. Resa 98. 1757; FGZ 430, fig. 228. 1956; FHN 3: 52. 1974; FGD 2: 271. 1991.

Tree to 10 m tall, spiny or not. Young branches flat and ridged, together with abaxial surfaces of leaves, calyx and ovary densely pubescent. Leaves rather thick, dark green, broadly ovate or elliptic, 9–16 cm long including wings, 4–8 cm wide, base rounded, apex obtuse or rounded; wings 2–4 × 0.5–3 cm. Inflorescences a raceme, rarely flowers solitary. Flower buds pale purplish red, rarely milky white. Calyx irregularly 3–5-lobed. Petals 1.5–2 cm. Stamens 25–35, sometime partly sterile. Styles thick and long; stigma slightly larger than ovary. Fruit globose, compressed globose, pyriform or broadly conical, over 10 cm across, pale yellow or yellowish green; pericarp thick, spongy; the segments 10–15(–19), pulp white, pink or fresh red, rarely milky yellow. Seeds 0–200, often sub-rectangular, obviously ridged.

Locality: Cultivated. *Y. S. Lau 2460*.

Distribution: Areas S of Changjiang River (cultivated); widely cultivated in tropical and subtropical regions.

Ecology: Flowering: Apr.–May; fruiting: Sep.–Dec.

Uses: Fruit, medicinal (folklore).

3. *Citrus limonia* Osb. 黎櫞

(Photo 460)

Reise Ost. China 250. 1765; Icon. Corm. Sin. 2: 558, fig. 2845. 1972; FHN 3: 51, fig. 559. 1974; FGD 2: 273, fig. 178: 1. 1991; FRPS 43(2): 200, pl. 49: 4–6. 1997.

Small tree, with many spines. Young leaves and flower buds often dark purplish red. Spines long, sharp, ascending. Leaves unifoliolate; petioles winged; wings linear or very narrow; leaf blade broadly elliptic or ovate-elliptic, 6–12 × 3–5 cm, apex rounded or obtuse, margin obtusely dentate, bright yellow abaxially when dry. Flowers solitary or fasciculate in axils of leaves, sometimes in 3–5-flowered racemes. Petals 1–1.5 cm, pale purplish abaxially. Stamens 25–30, 4 or 5 in bundles. Ovary ovoid, styles 4 times as long as ovary. Fruit compressed globose or globose; pericarp rather thin, smooth, pale yellow or orange-red, slightly difficult to peel off; segments 9–11; pulp pale yellow or orange-red, acid. Seeds many or few, long ovoid, apex sharp or slightly obtuse, small, smooth and not ridged.

Locality: Cultivated. *Y. S. Lau 1593, 2073; HK sheet 4692*.

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Fujian, Taiwan.

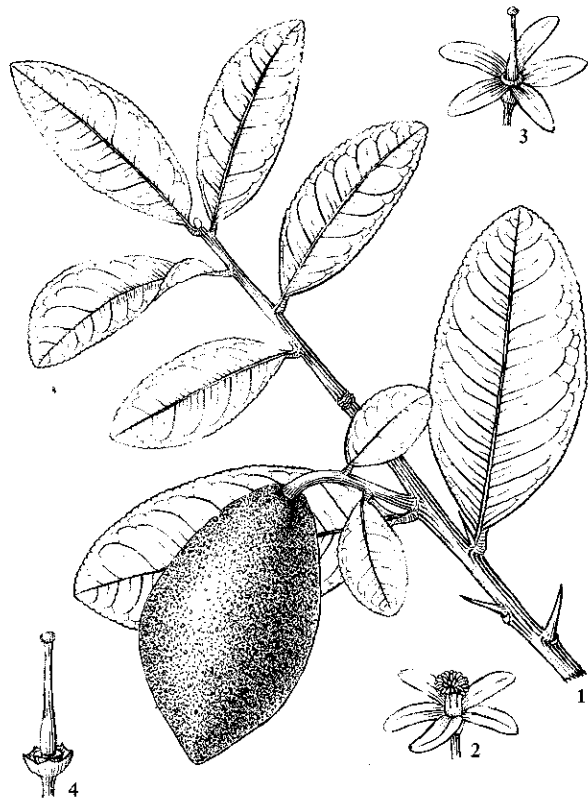


Figure 233. *Citrus medica* L.

1. fruiting branch; 2. male flower; 3. female flower; 4. pistil. (drawn by H. P. Yu)

Ecology: Flowering: Apr.–May; fruiting: Sep.–Oct.

Uses: Medicinal (folklore), edible.

4. *Citrus reticulata* Blanco 柑橘

(Photo 461)

Fl. Filip. 610. 1837; Icon. Corm. Sin. 2: 561, fig. mal. 1972; FHN 3: 54. 1974; FGD 2: 278, fig. 179. 1991; FRPS 43(2): 201. 1997.

*Citrus nobilis* Lour., Fl. Cochinch. 466. 1790.

Small tree, multibranched. Branches spreading and pendulous, with few spines. Leaves unifoliolate; petioles winged, wings usually narrow or rudimentary; leaf blade lanceolate, elliptic or broadly ovate, varied in size, apex often emarginate, margin at least dentate at upper half, rarely entire. Flowers solitary or 2–3-fasciculate. Calyx irregularly 3–5-lobed. Petals often 1.5 cm, reflexed when full blooming. Stamens 20–25. Styles slender; stigmas capitate. Fruit various in shape, often compressed globose to subglobose; pericarp thin and smooth, or thick and rough, pale yellow to red, easy to peel off; segments 7–14, rarely more; pulp sweet or acid, pale yellow to orange-red. Seeds many or few, often ovoid, base rounded, apex acute.

Locality: Cultivated. *Y. S. Lau* 1777, 2009, 2462.

Distribution: Areas S of Qinling Range (cultivated).

Ecology: Flowering: Apr.–May; fruiting: Oct.–Dec.

Uses: Fruit, medicinal (folklore).

5. *Citrus sinensis* (L.) Osb. 甜橙(橙)

(Photo 462)

Reise Ost. China 250. 1765; FHN 3: 53. 1974; FTW 3: 5. 1977; FGD 2: 275. 1991; FRPS 43(2): 196. 1997.

*Citrus aurantium* var. *sinensis* L., Sp. Pl. 2: 782. 1753.

*Aurantium sinense* Mill., Gard. Dict. (ed. 8). 1768.

Tree. Branches with a few spines or nearly unarmed. Leaves unifoliolate; petioles winged, wings narrow and long, conspicuous or rudimentary; leaf blade ovate or ovate-elliptic, rarely lanceolate, 6–10 × 3–5 cm. Flowers in few-flowered racemes or solitary. Calyx 3–5-lobed. Petals white, rarely pale purplish red abaxially, 1.2–1.5 cm. Stamens 20–25. Styles thick and strong; stigma capitate, enlarged. Fruit globose, compressed globose or ellipsoidal, orange-yellow to orange-red; pericarp difficult to peel off; segments 9–12; pulp pale yellow, orange-red or purplish red, sweet or slightly acid. Seeds few or wanting, slightly ribbed.

Locality: Cultivated. *Y. S. Lau* 2426.

Distribution: Areas S of Qinling Range (cultivated).

Ecology: Flowering: Mar.–May; fruiting: Oct.–Dec.

Uses: Fruit.

## 268. OXALIDACEAE 酢漿草科

HU Qi-ming 胡啟明

Annual or perennial herbs, rarely shrubs or trees. Leaves basal or alternate, pinnate or digitate, with entire leaflets. Flowers bisexual, actinomorphic, solitary or in axillary umbels or panicles. Sepals 5, free or united at the base. Petals 5, contorted in the bud, free or slightly connate at the base. Stamens 10, in 2 series, the outer 5 opposite to the petals and shorter than the others, or sometimes very small and without anthers; filaments united at the base; anthers versatile, opening by longitudinal slits. Ovary superior, 5-angled or 5-lobed nearly to the axis, 5-locular, with 1–many ovules in each locule; styles 5, free or united at the base, with terminal, entire or divided stigma. Fruit a capsule or a berry.

About eight genera with about 600 species widely distributed from tropical to temperate regions; three genera and ten species in China; two genera and three species in Hong Kong.

- 1a. Herbs; leaves digitate-trifoliolate; fruit a capsule ..... 1. *Oxalis*  
 1b. Small trees; leaves odd-pinnate; fruit a berry ..... 2. *Averrhoa*

### 1. *Oxalis* L. 酢漿草屬

Annual or perennial herbs, acaulescent or caulescent, often with underground tuberous or bulbous stem. Leaves basal or alternate, digitate; leaflets usually 3, sometimes 5 or more, entire; stipules very small or wanting. Flowers 1–several terminating axillary peduncles, forming simple or irregularly compound umbels or cymes. Sepals 5, free or slightly connate at the base. Petals 5, yellow, white, pink or red. Stamens 10, in 2 series, 5 long and 5 short, all bearing anthers. Ovary 5-locular; styles 5, free. Fruit a capsule, opening at the angles in valves.

About 500 species, cosmopolitan, but mainly in S America; seven species (3 introduced) in China; two species (introduced) in Hong Kong.

- 1a. Plants caulescent; leaves alternate; flowers yellow ..... 1. *O. corniculata*  
 1b. Plants stem-less; leaves basal; flowers purplish red ..... 2. *O. debilis* subsp. *corymbosa*

**1. *Oxalis corniculata* L. 酢漿草 (Fig. 234; Photo 463)**

Sp. Pl. 435. 1753; FHK 56. 1861; FKH 53. 1912; FHN 1: 416. 1964; FGD 2: 100. 1991; FTW ed. 2, 3: 401, pl. 209. 1993.

Perennial herb, sparsely pubescent throughout. Stems prostrate or ascending, 10–20 cm or longer. Leaves alternate, digitate-trifoliolate; petioles 2–8 cm; stipules small, adnate to the petiole; leaflets broadly obcordate, 5–17 × 6–18 mm. Peduncle axillary, longer than the petioles, bearing an umbel of 2–6 flowers. Pedicels 5–10 mm, lengthening to 10–15 mm in fruit. Flowers ca. 1.2 cm in diam. Sepals lanceolate, 3–4 mm. Petals yellow, obovate, 6–7 × 3.5–3.8 mm. Capsule column-like, 1.5–2 cm, 5-angled, pubescent.

Locality: Common in Hong Kong. *H. C. Tang* 2353; *Y. S. Lau* 89, 2136.

Distribution: Worldwide weed, origin obscure.

Ecology: Roadsides and wastelands.

Uses: Medicinal (folklore).

**2. *Oxalis debilis* subsp. *corymbosa* (DC.) O. Bolòs & Vigo  
紅花酢漿草 (Photo 464)**

Fl. Paisos Catalans, 2: 286. 1990.

*Oxalis corymbosa* DC., Prodr. 1: 696. 1828; FHN 1: 416. 1964; FGD 2: 101, fig. 69. 1991; FTW ed. 2, 3: 401. 1993.

*Oxalis martiana* Zucc., Denkschr. Konigl. Akad. Wiss. Munchen 9: 144. 1824; FHK 56. 1861; FKH 53. 1912.

Perennial stem-less herb, with a compound bulbous rhizome, covered with brown 3-ribbed scales. Leaves radical, digitate-trifoliolate; petioles 8–25 cm, sparsely villous; leaflets broadly obcordate, 1–3 × 1.5–3 cm, ciliate, glabrous or nearly so adaxially, pubescent, especially on veins abaxially. Cymes umbel-like, branched twice or thrice, each branch bearing 1 or 2 flowers. Peduncle radical, 10–30 cm, longer than the petioles, sparsely villous. Pedicels 6–18(–25) mm. Flowers 2–2.5 cm in diam. Sepals elliptic-lanceolate, 4.5–5.5 mm, apex obtuse, with 2 dark red minute glands at the tip. Petals spatulate, 12–15 × 5–6 mm, pale purplish red, with darker strips. Stamens 10, outer 5 longer than the pistils, inner 5 half as long, with very small anthers. Ovary puberulent, styles 5, free. Capsule unknown.

Locality: A common weed in Hong Kong. *Y. S. Lau* 1657, 1723.

Distribution: Native to S Brazil, now naturalized elsewhere in tropical and subtropical regions.

Ecology: Cultivated fields and wastelands. Flowering: Mar.–Dec.

Notes: The species was reported as *Oxalis corymbosa* DC. previously (Check List HK Plants 202. 2002; 71. 2004).

**2. *Averrhoa* L. 楊桃屬**

Small trees. Leaves alternate, odd-pinnate, without stipules; leaflets alternate or subopposite, entire. Flowers small, in small axillary panicles, often borne on stems or old branches. Sepals 5, united at the base, imbricate. Petals 5, purple or pink, contorted. Stamens 10, in 2 series, 5 long and 5 short, all antheriferous or the shorter ones without anthers. Ovary superior, 5-locular, with several ovules in each locule. Fruit a berry, with (3–)5(–7) ribs.

Two species native to tropical Asia, also cultivated in China; one species cultivated in Hong Kong.

**1. *Averrhoa carambola* L. 楊桃****(Photo 465)**

Sp. Pl. 428. 1753; FHK 56. 1861; FKH 54. 1912; FHN 1: 415, fig. 224. 1964; FGD 2: 100, fig. 68. 1991.

Evergreen small tree, usually 5–8 m tall. Branchlets dark brown, puberulent. Leaves alternate, 8–18 cm, with 5–11 leaflets; petioles and rachis puberulent; leaflets alternate or subopposite; petiolules ca. 2 mm; blade ovate to elliptic, 3–8 × 2–3.5 cm, apex shortly acuminate, base subrounded, very oblique, glabrous on both surfaces. Panicles axillary, sessile, 2.5–5 cm, pubescent. Sepals united and cup-shaped, 2.5–5 mm. Petals spatulate, 8–10 × 3–4 mm, initially dark red, becoming pink or whitish when in full blooming. Stamens 10, the 5 smaller ones usually very minute and without anthers. Fruit ellipsoidal or ovoid, succulent, with (3–)5(–8) ribs, transverse section stellate.

Locality: Cultivated. *S. P. Lau* 59; *Y. S. Lau* 3002; *HK sheet* 612.

Distribution: Native to Malesia, now cultivated throughout tropics.

Ecology: Flowering: May–Aug.; fruiting: Sep.–Dec.

Uses: Food (fruit).

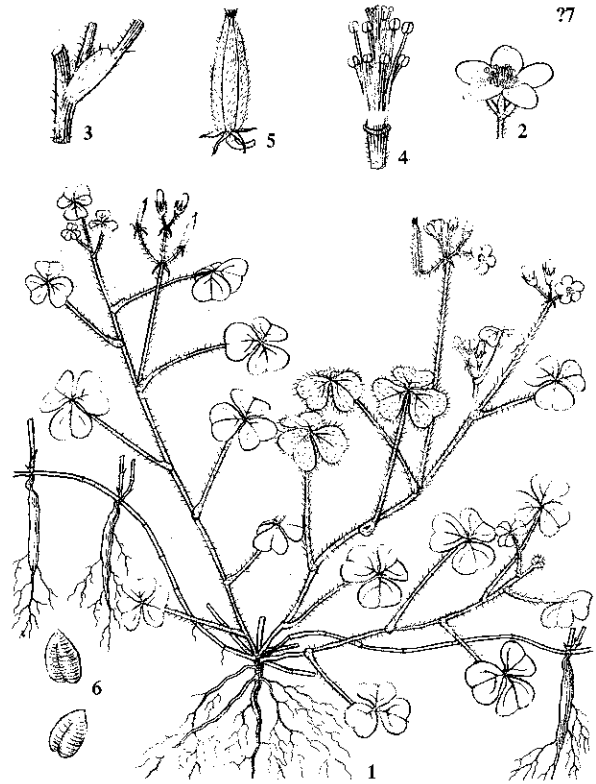


Figure 234. *Oxalis corniculata* L.

1. whole plant; 2. flower; 3. petiole; 4. flower with calyx and petals removed; 5. fruit; 6. seed; 7. tuber. (drawn by H. P. Yu)

## 269. GERANIACEAE 牻牛兒苗科

XIA Nian-he 夏念和

Herbs, rarely shrubs, often aromatic. Leaves alternate, sometimes opposite, often lobed, compound or dissected pinnately or palmately, rarely simple and  $\pm$  entire, stipulate. Flowers in cymes, sometimes solitary, usually bisexual, actinomorphic or zygomorphic. Sepals 5, usually distinct, imbricate or valvate, sometimes connate at base. Petals 5, rarely 4, 8 or absent, distinct, imbricate, rarely convolute, nectary-glands alternate with petals. Stamens 5–10, in 1–3 whorls, sometimes 1–2 whorls reduced to staminodes; filaments basally connate or distinct; anthers 2-celled, longitudinally dehiscent. Ovary superior, 5-carpellate, rarely 2-, 3- or 8-carpellate, plurilocular, placentation axile; ovules 1–2 per locule, pendulous, anatropous. Fruit a schizocarp with 5 one-seeded mericarps separating acropetally from beak and often opening to release seed, or a capsule or mericarps without a beak. Seeds 1–2, endosperm little or wanting; embryo curved.

About 14 genera and 730 species widely distributed in temperate, subtropical and tropical regions of the world; two genera and 54 species in China; one genus and one species cultivated in Hong Kong.

1. *Pelargonium* L'Hér. 天竺葵屬

Herbs, subshrubs or shrubs, aromatic. Stems slightly fleshy. Leaves simple, opposite or alternate, stipulate; blades unlobed or palmately lobed, margin undulate, serrate. Inflorescence a umbel, cyme, axillary and leaf-opposed, rarely flowers solitary. Flowers bracteate, zygomorphic, 5-merous. Sepals 5, imbricate, connate at base, the adaxial one elongated and forming a spur and connate to pedicel. Petals 5, imbricate, upper 2 larger and isomorphic, lower 3 isomorphic. Nectary-glands absent. Stamens 10, some or all without anthers, filaments usually connate. Ovary 5-carpellate, 5-locular, ovules 2 per locule, styles 5. Fruit a capsule, beaked, dehiscent into 5 valves; mature valves curved upward. Seed 1 per locule, endosperm wanting.

About 300 species distributed in tropical montane regions of the world; five species introduced to China; one species commonly cultivated in Hong Kong.

1. *Pelargonium hortorum* Bailey

天竺葵(洋葵)

(Fig. 235; Photo 466)

Stand. Cyl. Hort. 2531. 1916; FHN 1: 414. 1964; FFJ 2: 345, fig. 263. 1985; FYN 5: 97. 1991; FGD 2: 98. 1991; FRPS 43(1): 85, pl. 25: 4–8. 1998.

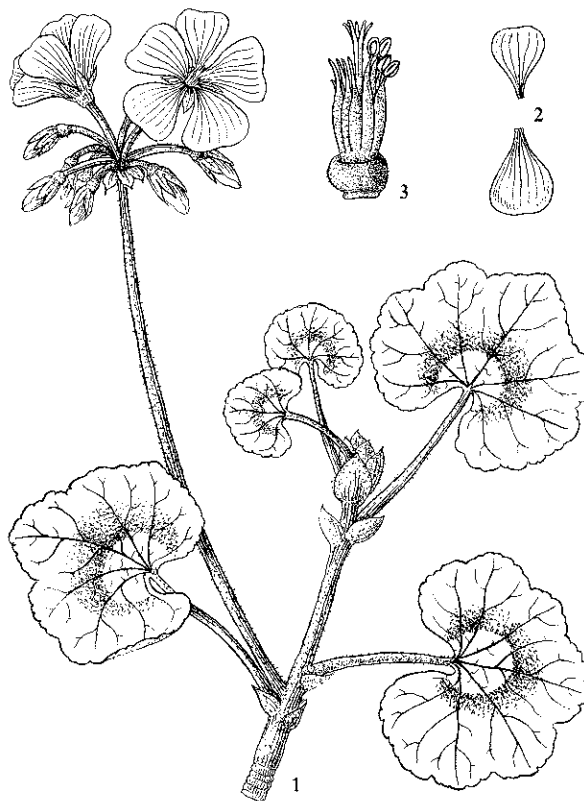
Perennial herb, 30–60 cm tall. Stems erect, base woody, upper part fleshy, multibranched or not branched, densely pubescent, pungent. Leaves alternate; stipules broadly triangular or ovate, 7–15 mm, pubescent and glandular-hairy; petiole 3–10 cm, finely pubescent and glandular-hairy; blade orbicular or reniform, 3–7 cm in diam., base cordate, margin shallowly undulate-lobed, crenate, transparently pubescent on both surfaces, with a dark red horseshoe-shaped patch adaxially. Umbels many-flowered, peduncles longer than leaves, pubescent. Bracts several, broadly ovate. Pedicels 3–4 cm, pubescent and glandular-hairy. Sepals narrowly lanceolate, 8–10 mm, densely glandular hairy and villous. Petals red, orange-red, pink or white, broadly obovate, 1.2–1.5  $\times$  0.6–0.8 mm, base clawed, apex obtuse, lower 3 often larger. Ovary densely pubescent. Capsule ca. 3 cm, pubescent.

Locality: Cultivated.

Distribution: Cultivated in China; native to S Africa.

Ecology: Flowering: May–Jul.; fruiting: Jun.–Sep.

Uses: Ornamental.

Figure 235. *Pelargonium hortorum* Bailey

1. flowering branch; 2. petals; 3. flower with sepals and petals removed. (drawn by H. P. Yu)

## 271. TROPAEOLACEAE 旱金蓮科

XIA Nian-he 夏念和

Herbs. Roots sometimes tuberous. Stems  $\pm$  succulent, often climbing. Leaves simple, peltate or palmately lobed or divided, alternate, stipulate. Flowers bisexual, zygomorphic, large, solitary, axillary. Sepals 5, imbricate, adaxial 1 (or 3) extended into a nectariferous spur. Petals 5, imbricate, the abaxial 3 often different, clawed. Stamens 8, in 2 whorls, distinct, unequal; anthers 2-celled, dehiscent by longitudinal slits. Ovary superior, 3-locular, placentation axile; ovule 1 per locule, pendulous from axile apex, anatropous. Style 1;

stigma 3-lobed. Fruits separating into 3 one-seeded mericarps, fleshy or dry. Seed without endosperm; embryo straight.

Three genera and about 90 species distributed in C and S America; one species cultivated and sometimes naturalized in China; it is also cultivated in Hong Kong.

### 1. *Tropaeolum* L. 早金蓮屬

Annual or perennial herbs. Roots sometimes tuberous. Stems slightly succulent. Leaves peltate, entire or sometimes lobed. Flowers yellow, orange or purple. Sepals 5, adaxial 1 extended into a spur. Petals 5, imbricate, the abaxial 3 often different, clawed. Stamens 8, in 2 whorls, distinct, unequal; anthers 2-celled, dehiscent by longitudinal slits. Ovary superior, 3-locular, placentation axile; ovule 1 per locule, pendulous from axile apex, anatropous. Style 1; stigma 3-lobed. Fruits separating into 3 one-seeded mericarps, fleshy or dry. Seed without endosperm; embryo straight.

#### 1. *Tropaeolum majus* L. 早金蓮 (Fig. 236; Photo 467)

Sp. Pl. 1: 345. 1753; FGZ 154. 1956; FFJ 2: 346, fig. 264. 1985; FRPS 43(1): 90, pl. 27. 1998.

Annual trailing herb, glabrous or sparsely pubescent. Petiole 9–16 cm; leaf blade suborbicular, 2–8 cm in diam., margin variously angled or sinuate but otherwise entire, usually papillose abaxially, 5–9 main veins radiating from petiole. Flowers axillary, solitary, yellow, red, creamy-white or varicolored, 2.5–5 cm in diam. Pedicel 6–13 cm. Receptacle cupular. Sepals connate at base, oblong-lanceolate, 1.7 cm, margin membranous; spur 2.5–4 cm, straight or curved. Petals mostly orbicular, apex sometimes acute or emarginate; upper 2 often entire, 2.5–5 × 1–1.8 cm; lower 3 smaller, clawed, claw finely fringed at margin. Fruit oblate.

Locality: Cultivated. *Y. S. Lau* 1796.

Distribution: Native to S America (Peru and Brazil), cultivated elsewhere.

Ecology: Flowering: Jun.–Oct.; fruiting: Jul.–Oct.

Uses: Ornamental.

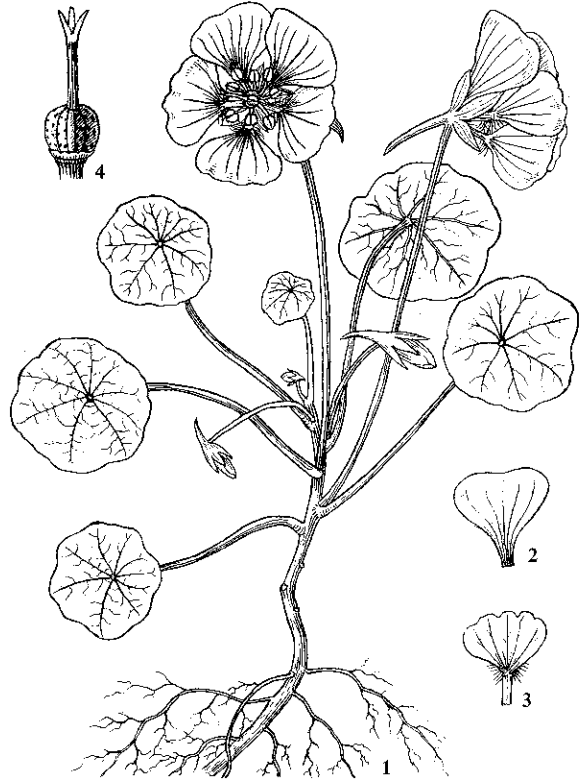


Figure 236. *Tropaeolum majus* L.

1. whole plant; 2. upper petal; 3. lower petal;  
4. gynoecium. (drawn by H. P. Yu)

## 272. BALSAMINACEAE 鳳仙花科

HU Qi-ming 胡啟明

Annual or perennial herbs. Stems watery, translucent or colored. Leaves simple, alternate, opposite or whorled, usually without stipules. Flowers bisexual, zygomorphic, solitary or in axillary umbelliform cymes, upside down hanging on the pedicels. Sepals usually 3, the 2 lateral small or aborted, the posterior one large, petaloid and often saccate, produced backward into a slender spur-nectary. Petals 5, unequal, the posterior free, flat or saccate, often bifid or emarginate, the 4 lower ones distinct or connate in 2 lateral pairs. Stamens 5, alternate with petals, with short and flat filaments; anthers introrse, ± united to form a cap over the ovary. Ovary superior, 5-locular, with numerous ovules on axile placentas. Fruit a capsule or rarely a berry.

Two genera with about 900 species distributed throughout temperate and tropical Eurasia, Africa, C and N America; two genera about 220 species in China; one genus and three species (2 cultivated) in Hong Kong.

### 1. *Impatiens* L. 鳳仙花屬

Characters of the family except the lower 4 petals united into 2 lateral pairs; fruit a capsule, bursting elastically in 5 valves.

About 900 species chiefly in tropical and subtropical regions of the Old World, with a few species in N America; more than 200 species in China; three species (included one cultivated) in Hong Kong.

- 1a. Leaves opposite, sessile or nearly so.....1. *I. chinensis*  
1b. Leaves alternate or spirally arranged, petiolate.  
2a. Plants glabrous throughout; peduncles 3–5–7 cm.....2. *I. hongkongensis*  
2b. Pedicels and capsules densely pubescent; peduncle absent.....3. *I. balsamina*



**1. *Impatiens chinensis* L. 華鳳仙**

(Photos 468–469)

Sp. Pl. 937. 1753; FHK 55. 1861; FKH 54. 1912; FHN 1: 419. 1964; FGD 4: 125, fig. 78. 2000; FRPS 47(2): 28, pl. 1: 10–16. 2001.

Annual herb, 30–60 cm tall. Stems slender, glabrous, erect from the decumbent base, rooting at nodes. Leaves opposite, firmly papery, sessile or nearly so; leaf blade linear or linear-lanceolate, rarely obovate, 2–10 × 0.5–1 cm, base subcordate or truncate, apex acute, margin remotely serrate, glabrous, glaucous abaxially. Flowers purplish red or white, solitary or 2–3-clustered in axils of leaves. Peduncle none. Pedicels slender, 2–4 cm, often hispid on one side. Posterior sepal funnel-shaped, ca. 1.5 cm, base gradually narrowed and incurved into a long spur; lateral sepals 2, linear, ca. 10 × 1 mm. Posterior petal orbicular, ca. 10 mm in diam., apex emarginate; lateral united petals 1.4–1.5 cm, 2-lobed, upper lobes broadly ovate, apex rounded, auriculate at the base on one side. Fruit ellipsoidal, 12–18 mm, glabrous.

Locality: Fanling, Ma On Shan, Chuen Lung, Pak Sha O, Bride's Pool, Tung Chung. *Y. S. Lau 1315, 2328; HK sheet 40514.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Anhui, Zhejiang, Fujian; Indochina, India, Myanmar, Thailand, Malesia.

Ecology: Wet places near ponds, ditches and paddy fields. Flowering: Summer.

Uses: Ornamental, medicinal (folklore).

**2. *Impatiens hongkongensis* Grey-Wilson**

香港鳳仙

(Fig. 237; Photo 470)

Kew Bull. 33(4): 551, fig. 1. 1979; FRPS 47(2): 42. 2001.

Perennial herb to 60 cm tall, glabrous throughout. Stems erect or decumbent at the base, rooting at nodes. Leaves spirally arranged; petioles 0.8–2.7 cm; leaf blade elliptic to elliptic-lanceolate, 8–11.5 × 2.5–5.5 cm, base cuneate, apex acuminate, margin very shallowly crenate. Racemes axillary, 4–7-flowered. Peduncle 3.7–6.6 cm. Pedicels slender, 2.1–3.4 cm. Flowers pale yellow, with red or reddish purple blotches at throat. Posterior sepal saccate, 1.7–2.4 cm, base abruptly constricted into an incurved, 1.5–2 cm spur; lateral sepals 4, the outer 2 ovate, 9–10 × 6–8 mm, the inner 2 linear oblong, membranous, 11–13 × 1.5–2.5 mm. Posterior petal semi-cucullate, broadly ovate or semi-orbicular, 10–13 × 12–14 mm, with a shallow crest on dorsal surface; lateral united petals 2.7–3 cm, 2-lobed; upper lobes oblong-obovate, ca. 0.9 × 0.45 cm, lower lobes obovate-spathulate, 1.8–2.1 × 0.9–1.2 cm. Fruit clavate, ca. 1.5 × 0.4 cm.

Locality: Tai Mo Shan, Tai Po Kau, Ng Tung Chai, Yuen Tun Ha, Ma On Shan. *P. S. Choi 327; Y. W. Lam 1148; F. W. Xing 7916.*

Distribution: Guangdong (Shenzhen).

Ecology: Wet places by streams and in ravines.

Uses: Ornamental.

Notes: The type specimen was collected by L. Gibbs from Tai Po in 1927. Listed in *Rare and Precious Plants of Hong Kong*.



Figure 237. *Impatiens hongkongensis* Grey-Wilson

1. flowering branch; 2. flower. (drawn by H. P. Yu)

**3. *Impatiens balsamina* L. 鳳仙花**

Sp. Pl. 938. 1753; FKH 54. 1912; FHN 1: 419. 1964; FGD 4: 125. 2000; FRPS 47(2): 29, pl. 1: 1–9. 2001.

Annual herb, 60–100 cm tall. Stems erect, glabrous or sparsely pubescent when young. Leaves alternate or sometimes subopposite at the lower portion; petioles 1–1.5(–3) cm; leaf blade lanceolate, narrowly elliptic or oblanceolate, 4–12 × 1.5–3 cm, base cuneate, apex acute or acuminate, margin sharply serrate, usually with a few pairs of black glands near the base. Flowers in many colors from white, pink to dark red or spotted, solitary or 2–3-clustered in axils of leaves. Peduncle none. Pedicels 2–2.5 cm, densely pubescent. Posterior sepal navicular, 1.3–1.9 cm, puberulent, base abruptly constricted and incurved into a 1–2.5 cm spur; lateral sepals 2, ovate to ovate-lanceolate, 2–3 cm. Posterior petal orbicular, ca. 1 cm, apex emarginate; lateral petals 2.3–3.5 cm, 2-lobed; upper lobes semi-orbicular, apex 2-lobed, auriculate at the base on one side, lower lobes small, obovate-oblong. Fruit fusiform, 1–2 cm, densely puberulent.

Locality: Cultivated. *Y. S. Lau 1669.*

Distribution: W Asia, Indian Subcontinent, widely cultivated.

Ecology: Flowering: Summer to autumn.

Uses: Ornamental, medicinal (folklore).

## 273. ARALIACEAE 五加科

DENG Yun-fei 鄧雲飛

Trees, shrubs, very rarely perennial herbs, sometimes climbers with aerial roots, prickly or not. Leaves alternate, petiolate, simple or compound; stipules present or absent. Inflorescence terminal, usually umbels, heads, spikes or racemes, solitary or racemously, paniculately or umbellately rearranged. Bracts usually small and deciduous. Flowers regular, mostly small, bisexual, polygamous or dioecious. Calyx-tube adnate to the ovary, lobes small or reduced to a rim, or rarely absent. Petals 5–10, valvate or imbricate, usually free. Stamens 5–10, alternate with and inserted on the petals at the edge of the disk; anthers versatile, 2-celled, introrse, longitudinally dehiscent. Disk epigynous, fleshy, annular. Ovary inferior or half inferior, 1–15-locular, the styles as many as the locules, free or connate; ovules solitary, anatropous. Fruit baccate or drupaceous; seeds solitary in pyrenes, the embryo small, the endosperm uniform or ruminate.

About 50 genera and more than 1350 species distributed in the tropic and temperate regions of both hemispheres; 22 genera and about 180 species in China; eight genera and ten species in Hong Kong.

- 1a. Plants armed with prickles or spines.  
 2a. Leaves pinnately compound ..... 1. *Aralia*  
 2b. Leaves palmately compound ..... 2. *Eleutherococcus*
- 1b. Plants unarmed.  
 3a. Leaves simple, entire or palmately lobed.  
 4a. Ovary 2-carpellate ..... 3. *Tetrapanax*  
 4b. Ovary 5–10-carpellate.  
 5a. Plant scandent or creeping, with aerial roots; leaves without glandular dots ..... 4. *Hedera*  
 5b. Erect shrubs or trees without aerial roots; leaves usually with red or yellow glandular dots ..... 5. *Dendropanax*
- 3b. Leaves palmately or pinnately compound.  
 6a. Leaves palmately compound ..... 6. *Schefflera*  
 6b. Leaves pinnately compound.  
 7a. Cultivated plants with a pungent aromatic odor; usually glabrous; leaves 1-pinnate (rarely 2–3-pinnate, and then leaflets less than 2 cm wide); ovary 5–8-carpellate; fruit ovoid or globose. .... 7. *Polyscias*  
 7b. Native plants without a pungent aromatic odor; usually pubescent when young; leaves 2–5-pinnate; ovary 2-carpellate; fruit laterally compressed or compressed-globose ..... 8. *Heteropanax*

1. *Aralia* L. 楸木屬

Shrubs, treelets or perennial herbs, glabrous or pubescent, often prickly. Leaves bipinnate, sometimes tripinnate, with serrate or nearly entire leaflets; stipules adnate to base of petioles. Inflorescence paniculate or umbellately paniculate, consisting of numerous umbels or occasionally heads, terminal or terminal and axillary. Flowers polygamo-monoecious, 5- or occasionally 6-merous. Calyx minutely 5-toothed. Petals 5, imbricate in the bud. Ovary 2–5-locular; styles 2–5, free or connate at base; disk fleshy, small, slightly raised at the margin. Fruit 2–5-celled, subglobose, 3–5-angular; seeds compressed; endosperm uniform.

About 40 species distributed in E to SE Asia and the Americas; 29 species in China; two species in Hong Kong.

- 1a. Leaflets echinulate along the veins above, rachis densely prickly; terminal umbels large, 2–4 cm in diam. .... 1. *A. finlaysoniana*  
 1b. Leaflets not echinulate; terminal umbels small, ca. 0.5 cm in diam. .... 2. *A. chinensis*

1. *Aralia finlaysoniana* (Wall. ex G. Don) Seem.

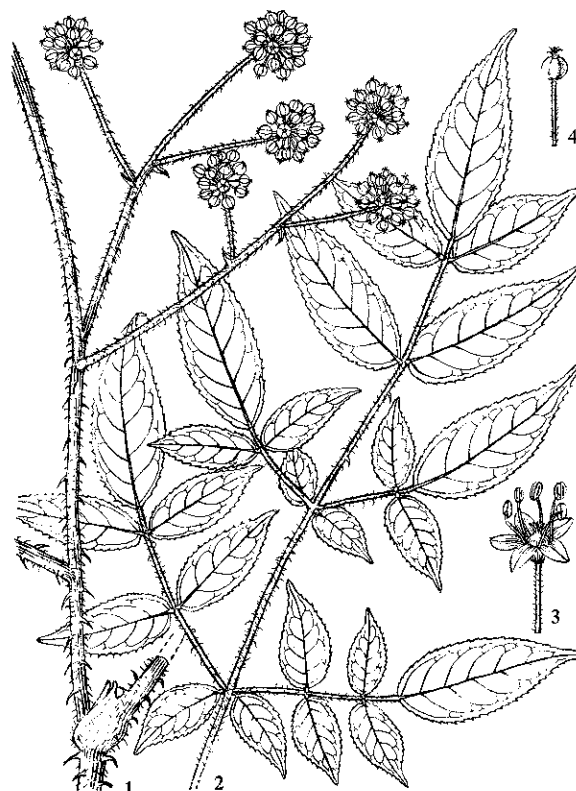
虎刺楸木

(Fig. 238)

J. Bot. 6: 134. 1868; J. Wen, Acta Phytotax. Sin. 38: 2. 2000.

*Aralia armata* auct. non Seem.: FRPS 54: 154. 1978; FGD 1. 292, 1987.*Aralia dasyphylla* auct. non Miq.: FKH 118. 1912.

Prickly shrub, 4 m tall; prickles conical, short, less than 4 mm, often recurved, the base broadened. Leaves usually tripinnate, with

Figure 238. *Aralia finlaysoniana* (Wall. ex Don) Seem.

1. portion of inflorescence; 2. upper part of pinnate leaf; 3. flower; 4. fruit. (drawn by H. P. Yu)

a pair of leaflets at each division of the rachis, the ultimate pinnules 5–9-foliolate, the rachis and partial rachises and petioles prickly; leaflets blade papery, subsessile, ovate-oblong, 4–11 × 2–5 cm, base rounded or cordate, apex acuminate, margin serrate, pilose on both surfaces especially along the veins; lateral veins 4–6 pairs on each side of midvein, the tertiary veins inconspicuous. Inflorescence a large, terminal panicle up to 50 cm, consisting of numerous, many-flowered umbels of 2–2.5 cm in diam. Pedicels 1–1.5 cm, pubescent. Calyx 2 mm, glabrous, distinctly 5-dentate. Petals 5, triangular-ovate, 2 mm, glabrous. Stamens 5. Ovary 5-locular, styles 5, distinct, erect. Fruit globose, 4 mm in diam., prominently 5-ridged when dry.

Locality: Hong Kong. *Y. S. Lau 1694*.

Distribution: Guangdong, Guangxi, Hainan, Guizhou, Yunnan; Vietnam.

Ecology: Forest. Flowering: Aug.–Sep.; fruiting: Nov.

Notes: A common species in S China, but it was misidentified as *A. armata* Seem. by most authors. *A. armata* Seem. is distributed in SW China (Yunnan Province), India, NW Myanmar and Thailand. The species was reported as *Aralia armata* (Wall.) Seem. previously (Check List HK Plants 72. 2004).

## 2. *Aralia chinensis* L. 楤木

Sp. Pl. 273. 1753; FHK 135. 1861; J. Wen, Acta Phytotax. Sin. 38: 1. 2000.

*Aralia planchoniana* Hance, J. Bot. 4: 172. 1866.

*Aralia decaisneana* auct. non Hance: Li, Sargentia 2: 111. 1942, p.p.; FRPS 54: 157. 1978; FGD 1. 293. 1987.

*Aralia spinosa* auct. non L.: FKH 118. 1912.

Prickly and tawny-tomentose shrub, ca. 3 m tall; prickles slender, short, straight, base slightly expanded. Leaves usually bipinnate, ca. 1.2 m, with a pair of leaflets at each division of the rachis, pinnae 7–11-foliolate; leaflets leathery, subsessile to short-petiolulate, ovate to oblong-ovate, 8–11 × 4–8 cm, base rounded or subcordate, apex acuminate, margin serrulate, tawny-tomentose on both surfaces, especially along the veins abaxially; lateral veins 6–8 pairs on each side of midvein, the tertiary veins obscure; petiolules 0–5 mm. Inflorescence consisting of numerous, 30–50-flowered umbels of 2.5 cm in diam., forming a large terminal panicle, 30–60 cm, branches up to 50 cm, villose-tomentose. Pedicels about 1 cm, tomentose; bracteoles 3 mm, persistent. Calyx 2 mm, glabrous, distinctly 5-dentate. Petals 5, triangular-ovate, 2 mm, glabrous. Stamens 5, filaments 2.5 mm long. Ovary 5-locular; styles 5, united at base. Fruit globose, 4 mm in diam., prominently 5-ridged when dry.

Locality: Common in Hong Kong. *L. Gibbs 7551*; *H. C. Tang 2159*; *HK sheet 12754*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Fujian.

Ecology: Sunny hillslopes. Flowering: Aug.–Sep.; fruiting: Nov.

Notes: This plant was misidentified by most Chinese authors as *Aralia decaisneana* Hance, which is endemic to Taiwan. The species was reported as *Aralia decaisneana* Hance previously (Check List HK Plants 204. 2002; 72. 2004).

## 2. *Eleutherococcus* Maxim. 五加屬

Deciduous shrubs, glabrous or hairy, usually prickly. Leaves digitately compound; stipules wanting or very weakly developed. Inflorescence of many-flowered umbels, solitary, few together, or forming large terminal panicles. Flowers perfect or polygamous; pedicels slightly or not articulate under the flower. Calyx-margin entire or with 5 minute teeth. Petals (4–)5, valvate in the bud. Stamens as many as petals. Ovary 2–5-locular; styles 2–5, distinct or connate at the base. Fruit laterally compressed or subglobose, 2–5-seeded; seeds compressed; endosperm uniform.

About 40 species in E Asian and Himalayan region, one extending to the Philippines, Malay Peninsula; 18 species in China; one species in Hong Kong.

### 1. *Eleutherococcus trifoliatus* (L.) S. Y. Hu

白筋 (Fig. 239; Photo 471)

J. Arnold, Arb. 61: 110. 1980; FTW ed. 2, 3: 994. 1993.

*Zanthoxylum trifoliatum* L., Sp. Pl. 270. 1753.

*Acanthopanax trifoliatus* (L.) Voss, Vilm. Blumengaert. (ed. 3) 1: 406. 1894; FRPS 54: 112, pl. 14: 9–11. 1978.

*Panax aculeatus* Aiton, Hort. Kew. ed. 1, 3: 448. 1789.

*Acanthopanax aculeatus* (Aiton) H. Witte, Ann. Hort. Bot. Pays.-Bas. 4: 89. 1860; FKH 119. 1912.

Scandent shrub or climber, 2–7 m tall. Branchlets and petioles prickly; prickles short, sharp-pointed, recurved at the tips, broadened and elongated at base. Leaves usually 3-foliolate, rarely 4–5-foliolate, long or short-petiolate; petioles glabrous, slightly prickly or not, 2–6 cm; petiolules 2–8 mm; leaflets papery,

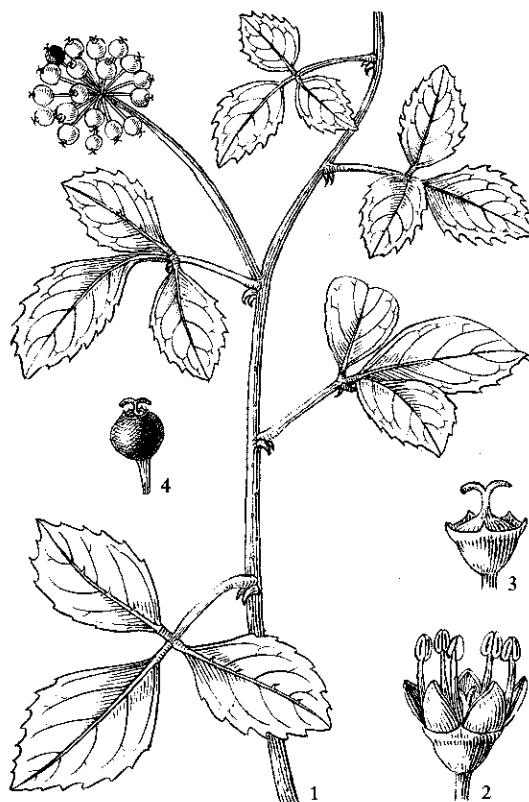


Figure 239. *Eleutherococcus trifoliatus* (L.) S. Y. Hu  
1. fruiting branch; 2. flower; 3. pistil; 4. fruit. (drawn by H. P. Yu)

elliptic-ovate to elliptic-oblong, 4–8 × 2.5–4.5 cm, base cuneate, lateral ones sometimes slightly oblique, apex acuminate, margin generally serrulate, glabrous, sometimes very slightly setose along the midvein and veins adaxially, lateral veins 5–7 on each side of midvein, conspicuous on both surfaces, tertiary veins inconspicuous. Umbels few–many-flowered, forming terminal racemes or compound umbels; peduncles glabrous, 2–7 cm; pedicels slender, glabrous, ca. 1 cm. Calyx glabrous, 1.5 mm, slightly 5-toothed. Petals 5, triangular, 2 mm, glabrous on both surfaces. Stamens 5, filaments 3 mm. Ovary 2-locular; styles 2, connate to middle. Fruit rounded, laterally compressed, 3–4 cm, style-column 1.5 mm, bifid to middle.

Locality: Common in Hong Kong. *H. C. Tang 1085, 2192; Y. S. Lau 1282.*

Distribution: Hunan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Japan, Philippines, Vietnam, India.

Ecology: Ravines, forests. Flowering: Aug.–Sep.; fruiting: Sep.–Dec.

### 3. *Tetrapanax* K. Koch 通脱木属

Unarmed shrubs or treelets, stoloniferous. Leaves simple, long-petiolate, palmately lobed; stipules 2, subulate, adnate to the base of petioles. Flowers bisexual, in umbels and forming large terminal panicles; pedicels not articulate. Calyx-margin entire or obscurely toothed. Petals 4–5, ovate, acute, valvate in the bud. Stamens 4–5. Ovary 2-locular; styles 2, erect, recurved at apices. Fruit baccate, drupaceous.

One species endemic to China; it also occurs in Hong Kong.

**1. *Tetrapanax papyrifera* (Hook.) K. Koch. 通脱木 (Fig. 240)**  
Wochenschr. Gartnerei Pflanzenk. 2: 371. 1859; FRPS 54: 13, pl. 2: 1–6. 1978; FTW ed. 2, 3: 1006, pl. 503. 1993.

*Aralia papyrifera* Hook., Hooker's J. Bot. Kew Gard. Misc. 4: 50, 53, pl. 1–2. 1852.

*Fatsia papyrifera* (Hook.) Benth. & Hook. f. ex Forbes & Hemsl., J. Linn. Soc. Bot. 23(156): 341. 1888.

Evergreen shrub or treelet, 1–3 m tall; branchlets and inflorescence densely tawny stellate-tomentose. Leaves large, crowded towards to apex of stems; petioles stout, 30–50 cm, glabrous; stipules subulate, ca. 7.5 cm, adnate to the base of petiole, densely tomentose; leaf blade suborbicular in outline, 50–75 cm in diam., papery to subleathery, glabrous adaxially, densely rusty stellate-tomentose abaxially, palmately 7–12-lobed; lobes ovate to elliptic-ovate, apex acuminate, margin entire to coarsely toothed. Umbels many-flowered, 12 cm in diam., forming large terminal, compound panicle, up to 50 cm. Pedicels 3–5 mm. Calyx densely tomentose, ca. 1 mm, margin entire or nearly so. Petals 4(–5), yellowish white, triangular-ovate, ca. 2 mm, tomentose abaxially. Stamens 4–5, filaments 3 mm. Ovary 2-locular, styles 2, distinct. Fruit ca. 4 mm in diam., black when mature.

Locality: Cultivated. *H. C. Tang 64; F. W. Xing 2348; Y. S. Lau 3044.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Shanxi, Hubei, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan.

Ecology: Flowering: Oct.–Dec.; fruiting: Jan.–Feb.

Uses: Medicinal (folklore).

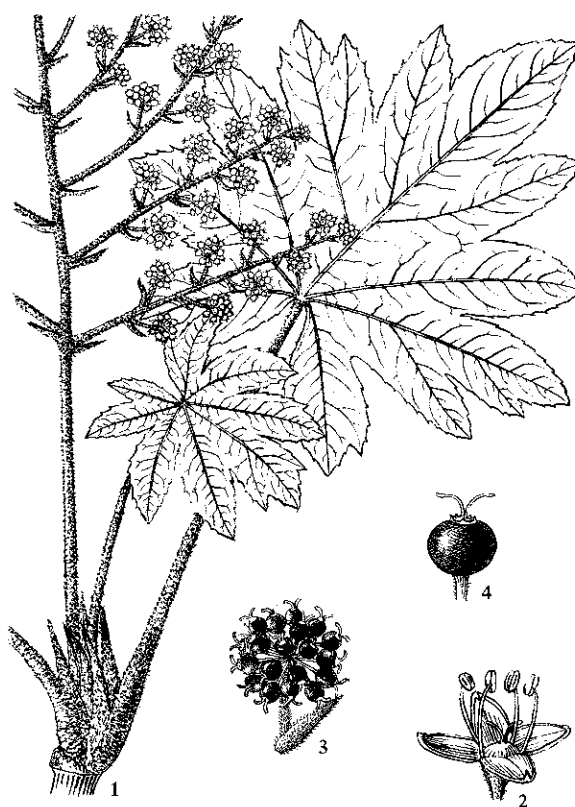


Figure 240. *Tetrapanax papyrifera* (Hook.) K. Koch  
1. fruiting branch; 2. flower; 3. infructescence; 4. fruit.  
(drawn by H. P. Yu)

### 4. *Hedera* L. 常春藤属

Evergreen scandent shrubs, climbing by aerial roots. Leaves simple, alternate, petiolate, coarsely dentate or lobed, but entire on flowering shoots; stipules absent. Inflorescence a compact raceme of umbellules, or occasionally umbellules solitary. Flowers bisexual. Pedicels not articulate under the calyx. Calyx margin subentire or 5-toothed. Petals 5, valvate in the bud. Stamens 5; anthers ovate. Ovary 5-locular; styles united into a short column. Fruit a drupe, globose. Seeds ovoid; endosperm ruminant.

About 15 species, N Africa, tropical and subtropical Asia, Europe; two species in China; one species cultivated in Hong Kong.

**1. *Hedera helix* L. 洋常春藤**

Sp. Pl. 1: 202. 1753; D. A. Webb., Fl. Euro. 2: 314. 1968.

(Photo 472)

Evergreen scandent shrub, climbing or creeping, to 30 m or longer, glabrous, except for apex of young branches, pedicels and abaxial surface of calyx with greyish white stellate hairs. Leaves dimorphic, those on sterile branches narrowly to broadly

triangular-ovate to nearly reniform in outline, 7–15 cm in diam., palmately 3–5-lobed, base usually cordate to truncate, dark green adaxially, veins often light colored; those on flowering branches narrowly ovate to rhombic, 6–10 × 2–12 cm, entire, base truncate to cuneate. Umbels globose, usually several forming a raceme on a slender peduncle. Petals 5, 3–5 mm, yellowish white. Fruit black, globose, ca. 6 mm in diam.

Locality: Cultivated. *Y. S. Lau* 2377; *S. P. Lau* 83, 84.

Distribution: N Africa, Europe, W Asia, widely cultivated.

Ecology: Climbing on rocks, walls or trunks.

Uses: Ornamental

### 5. *Dendropanax* Decne. & Planch. 樹參屬

Evergreen trees or shrubs, unarmed, usually glabrous. Leaves simple, entire or sometimes palmately 3–5(–7)-lobed, often with translucent glandular dots; stipules small, scarcely united with the petioles or absent. Flowers bisexual or polygamous, in simple or compound umbels, or in a small racemes of umbels; bracts small or absent; pedicels not articulate. Calyx margin entire or 5-toothed. Petals 5, valvate in the bud. Stamens 5; anthers oval or oblong. Ovary 5-locular; styles distinct or united wholly or partly. Fruit globose or ellipsoidal, distinctly or obscurely 5-ribbed; seeds laterally compressed; endosperm uniform.

About 80 species in tropical American and E to SE Asia; 14 species in China; two species in Hong Kong.

- 1a. Leaves with translucent glandular dots; styles distinct; fruit 5-ribbed..... 1. *D. dentigerus*  
 1b. Leaves without glandular dots; styles united into a column; fruit not ribbed..... 2. *D. proteus*

#### 1. *Dendropanax dentigerus* (Harms) Merr. 樹參

(Photo 473)

*Brittonia* 4: 132. 1941; *FRPS* 54: 64. 1978; *FTW* ed. 2, 3: 992, pl. 494. 1993.

*Gilbertia dentigera* Harms, *Bot. Jahrb. Syst.* 29(3–4): 487. 1900.

Shrub or small tree, ca. 8 m tall. Leaves alternate, polymorphic; petioles 5–12 cm; leaf blade generally oblong-ovate to linear-oblong or triangular-ovate, ca. 8–10 cm, base attenuate to broadly acute, apex acuminate, margin entire or often 2–3-lobed to middle, 2–3-veined, glabrous, with translucent dots. Umbels terminal, solitary or 2–5 together. Calyx obconical, slightly 5-toothed. Petals triangular, about 2 × 1 mm, reflexed. Fruit ovoid, about 7 × 6 mm, longitudinally ribbed, crowned with the persistent style.

Locality: Lantau Island. *Y. S. Lau* 1568, 3020; *Y. W. Lam* 23.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Vietnam, Laos and Cambodia.

Ecology: Forests and thickets in ravines. Flowering: Aug.; fruiting: Oct.–Nov.

Uses: Medicinal (folklore).

#### 2. *Dendropanax proteus* (Champ.) Benth.

變葉樹參 (Fig. 241; Photo 474)

*FKH* 136. 1861; *FKH* 119. 1912; *FRPS* 54: 71. 1978.

*Hedera protea* Champ. ex Benth., *Hooker's J. Bot. Kew Gard. Misc.* 4: 122. 1852.

*Hedera parviflora* Champ. ex Benth., *Hooker's J. Bot. Kew Gard. Misc.* 4: 122. 1852.

*Dendropanax parviflora* (Champ.) Benth., *FKH* 137. 1861; *FKH* 119. 1912.

Shrub, 2–3 m tall. Leaves alternate, polymorphic; petioles 0.5–5 cm; leaf blade papery or leathery, without translucent glandular dots, elliptic, ovate-elliptic, elliptic-lanceolate or narrow-lanceolate, 2.5–12 × 1–7 cm, base cuneate, apex acuminate, margin entire or palmately 2–5(–7)-lobed, 2–5(–7)-veined in the lobed leaves, pinnately-veined in the entire leaves. Umbels solitary or 2–3 together; peduncles 0.5–2 cm; pedicels 0.5–1.5 cm. Calyx glabrous, ca. 2 mm, slightly 4–5-toothed. Petals 5, triangular, 4–5 × 1.5–2 mm, glabrous. Stamens 5. Ovary 5-locular; styles united into a column, ca. 1 mm. Fruit globose, 5–6 mm in diam., not ribbed, crowned with the persistent styles.

Locality: Common in Hong Kong. *L. T. Lo* 450; *P. S. Choi* 401; *K. Y. Tam* 149.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian.

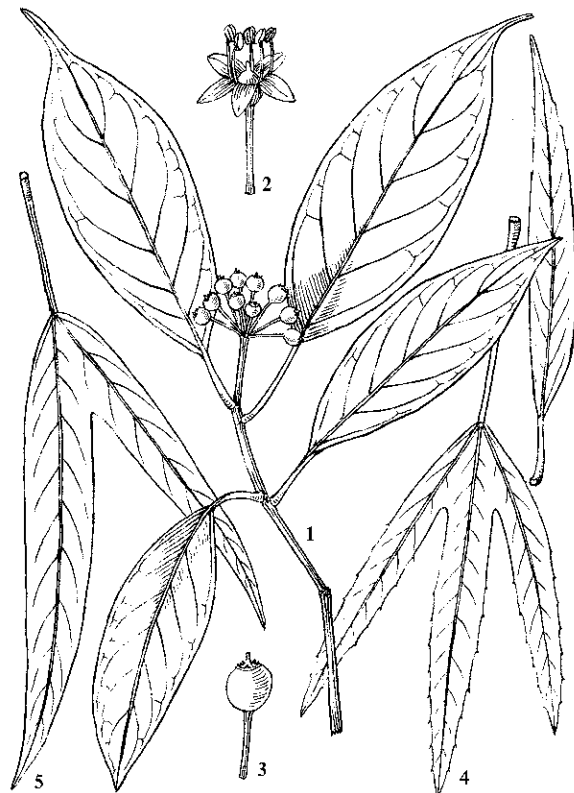


Figure 241. *Dendropanax proteus* (L.) S. Y. Hu

1. fruiting branch; 2. flower; 3. fruit; 4–5. leaves. (drawn by H. P. Yu)

Ecology: Forests of valleys. Flowering: Aug.; fruiting: Oct.–Nov.

Notes: The type specimen was collected by J. G. Champion from Mount Gough, Hong Kong between 1847 and 1850.

### 6. *Schefflera* J. R. & G. Forst. 鵝掌柴屬

Evergreen shrubs or trees, sometimes subscaudent, hermaphroditic or andro-monoecious, unarmed; branchlets glabrous or stellate-tomentose. Leaves digitately compound; stipules connate within petiole. Flowers in umbels, racemes, spikes or globose heads, rearranged in panicles or compound racemes, bracts hairy, deciduous or persistent, pedicels not articulate. Calyx-margin entire or minutely 5-toothed. Petals 5–7, valvate in the bud. Stamens as many as petals. Ovary 5–7-locular, rarely less or more; styles partly or completely united into a column or stigmas sessile. Fruit a drupe, globose or ovoid, 5–7-seeded, angled or not; seeds laterally compressed; endosperm uniform or slightly ruminant.

About 1100 species widely distributed in the tropical and subtropical regions of both hemispheres; 35 species in China; one species native to Hong Kong. Some ornamental species are cultivated in gardens.

#### 1. *Schefflera heptaphylla* (L.) Frodin

鵝掌柴 (鴨腳木)

(Fig. 242; Photo 475)

Bot. J. Linn. Soc. 104(3): 312. 1990.

*Vitis heptaphylla* L., Mant. Alt. 212. 1771.

*Schefflera octophylla* (Lour.) Harms, Nat. Pflanzenfam. 3(8): 38. 1894; FRPS 54: 50. 1978.

*Heptapleurum octophyllum* (Lour.) Benth. ex Hance, J. Linn. Soc. Bot. 13: 105. 1873; FKH 119. 1912.

*Aralia octophylla* Lour., Fl. Cochinch. 187. 1790.

*Paratropia cantoniensis* Hook. & Arn., Bot. Beechey Voy. 189. 1841; FHK 136. 1861.

Evergreen shrub or tree, up to 10 m tall; branchlets, petioles, petiolules, leaves and inflorescence tawny tomentose, with stellate scurfy hairs when young, glabrescent. Leaves digitately compound, generally 6–8-foliolate; petioles 15–30 cm; petiolules unequal in length, 3–6.5 cm; leaflet leathery, elliptic or ovate-elliptic, 7–17 × 3–7.5 cm, base broadly cuneate to nearly rounded, apex acute or shortly acuminate, margin entire; lateral veins ca. 8 on each side of midvein. Umbels many-flowered, 1–2 cm in diam., racemously arranged on the primary branches, forming a large terminal panicle up to 25 cm. Flowers small, fragrant; bracts triangular, small, 2–3 mm; pedicels 3–5 mm, with a small bracteole at base. Calyx pubescent, 5–6-dentate. Petals 5, fleshy, 2–3 mm. Stamens 5, filaments slightly longer than the petals. Ovary 5–8-locular; styles united into a very short but distinct column. Fruits globose, 3–4 mm in diam.; persistent style-column very short, less than 1 mm.

Locality: Common in Hong Kong. *Y. S. Lau 224, 2105; L. T. Lo 595.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Japan, Philippines, Vietnam, India.

Ecology: Forests. Flowering: Aug.–Sep.; fruiting: Dec.–Feb. of the following year.

Uses: Material (timber), medicinal (folklore).

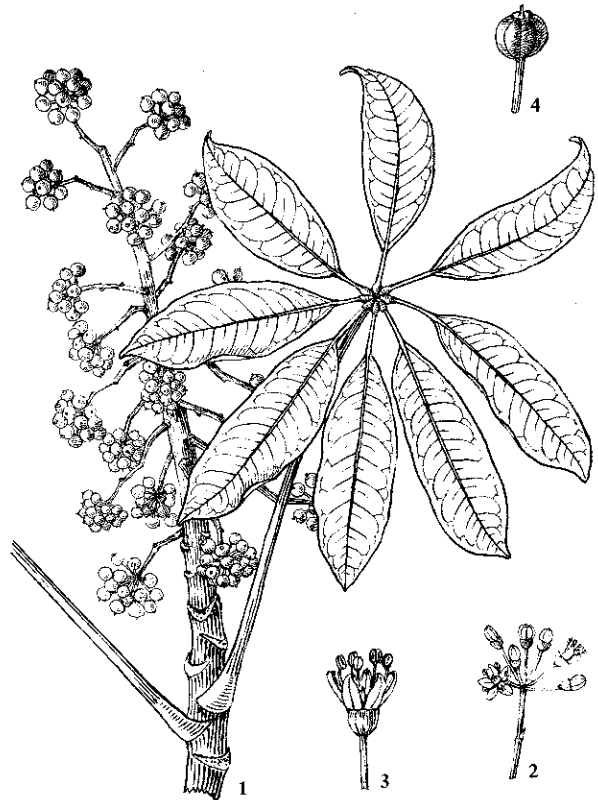


Figure 242. *Schefflera heptaphylla* (L.) D. G. Frodin

1. fruiting branch; 2. inflorescence; 3. flower; 4. fruit. (drawn by H. P. Yu)

### 7. *Polyscias* J. R. & G. Forst. 南洋參屬

Shrubs or trees, hermaphroditic, andro-monoecious or dioecious, unarmed, usually glabrous. Leaves 1–5-pinnately compound; stipules sometimes intrapetiolar and adnate to petiole or absent. Inflorescence of umbels or heads, sometimes in spikes, arranged in panicles or otherwise. Flowers (4–)5(–8)–merous; pedicels articulate. Calyx-margin truncate or minutely toothed. Petals valvate in the bud, free or coherent at apex. Stamens as many as petals. Ovary 5–8-locular; styles free or rarely connate at base. Disk flat or subconical. Fruit subglobose, ribbed when dry. Seeds compressed, endosperm smooth.

About 150 species in tropical regions of Indian and Pacific Oceans; five species cultivated in S China; one species widely cultivated in Hong Kong.

**1. *Polyscias fruticosa* (L.) Harms 南洋參**

(Photo 476)

Engel. Jahrb. 56: 412. 1921; FGD 1: 288. 1987.

*Panax fruticosa* L., Sp. Pl. (ed. 2) 2: 1513. 1763.

Shrub or small tree, 2–5 m tall, glabrous. Leaves 3–5-pinnately compound, 30–60 cm; petioles (2–)5–15 cm, clasping at base; petiolules 1–5 cm; leaflets subleathery, narrowly ovate or oblong-lanceolate, 2–10(–18) × 0.2–5 cm, base narrowly cuneate to attenuate, apex acute, margin spinulose-serrate, sometimes irregularly incised, inconspicuously 3-veined at base, lateral veins 5–10 pairs. Inflorescence a large terminal panicle, consisting of numerous umbels. Pedicels 1–5 mm. Ovary 2–3(–4)-locular; styles free nearly to base. Fruit orbicular to ovate-orbicular, 4–5 × 4.5–6 mm

Locality: Cultivated. *HK sheet* 12767, 34766, 34808.

Distribution: Native to Malaysia and Polynesia, widely cultivated in tropical regions. Flowering: Aug–Sep.

Uses: Ornamental.

**8. *Heteropanax* Seem. 幌傘楓屬**

Evergreen shrubs or treelets, unarmed, Leaves 2–5-pinnately compound; stipules connate to petioles; leaflets entire. Flowers polygamous, in terminal panicle of umbels, with bisexual flowers and male flowers in separate umbels; bracts and bracteoles persistent. Pedicels not articulate. Calyx-margin minutely dentate. Petals 5, valvate in the bud. Stamens 5. Ovary 2-locular; styles 2, free or united to middle. Fruit a drupe, laterally compressed. Seed compressed, endosperm ruminant.

About 5 species in S and SE Asia; five species in China; one species in Hong Kong.

**1. *Heteropanax fragrans* (Roxb. ex Candolle) Seem. 幌傘楓(火通木)**

(Photo 477)

Fl. Vit. 114. 1866; FRPS 54: 137. 1978; FGD 1: 290. 1987.

*Panax fragrans* Roxb. ex Candolle, Prodr. 4: 254. 1830.

Evergreen tree, usually 5–10 m tall, glabrous except for apex of branches and inflorescence; branches stout, with many V-shaped leaf scars. Leaves 3–5-pinnately compound, 50–100 cm, more or less crowded towards apex of stems and branches; petioles (10–)15–30 cm; leaflets opposite, papery, elliptic to elliptic-ovate, (3–)5.5–13 × (2–)3.5–6 cm, base cuneate, apex acute to acuminate, margin entire, glabrous, lateral veins 6–10 pairs, distinct on both surfaces. Inflorescence a terminal panicle of umbels, 30–40 cm, densely rusty stellate tomentose, glabrescent; pedicels 4–8 mm, lengthening after anthesis. Flowers pale yellowish white, fragrant. Calyx ca. 2 mm, minutely 5-toothed. Petals 5, ovate, ca. 2 mm. Stamens 5. Ovary 2-locular; styles 2, free. Fruit ovoid-globose, ± compressed laterally, 5–7 × 3–5 mm, black when mature.

Locality: Cultivated. *Y. S. Lau* 469, 2065; *HK sheet* 34698.

Distribution: Hainan, Fujian, Guangdong, Guangxi, Yunnan; Vietnam, Thailand, Myanmar, Bhutan, Nepal, India, Indonesia.

**274. APIACEAE (UMBELLIFERAE) 傘形科**

DENG Yun-fei 鄧雲飛

Perennial or annual herbs, rarely shrubs, usually with thick taproots; stems erect or creeping, or acaulescent. Leaves alternate, much dissected to divided or decompound; petioles frequently embracing young inflorescence with a dilated sheath-like base. Flowers bisexual or polygamous, in simple or compound umbels, sometimes capitate. Calyx 5-toothed or obsolete, forming a ring around the top of ovary. Petals 5, yellow, white, pink, purplish or violet, imbricate or valvate in buds. Stamens 5, opposite to petals, filaments filiform, incurved in bud. Ovary inferior, 2-locular, with an anatropous ovule in each locule; styles 2, usually swollen at the base forming a stylopodium which often secretes nectar. Fruit a schizocarp, bilocular, separating into 2 mericarps, these usually suspended from the top of the central column called carpophore, with 5 primary ribs and sometimes intermediate or secondary ones; vittae (oil-tubes) often present in the furrow and on the commissure face, rarely also in the pericarp, sometime obscure; each mericarp 1-seeded, splitting apart at maturity. Seeds face plane, concave to sulcate, with abundant endosperm and a small embryo.

About 200 genera and 3000 species widely distributed in the world; 100 genera and about 600 species in China; 16 genera, 18 species and 1 variety in Hong Kong.

- 1a. Stems creeping or ascending; leaves simple, reniform or rounded-cordate; umbels simple.
  - 2a. Stipules paired; petioles without sheaths; involucre absent; petals valvate; fruit without secondary ribs, surface smooth ..... 1. *Hydrocotyle*
  - 2b. Stipules absent; petioles sheathing at base; involucre conspicuous; petals imbricate; fruit with secondary ribs, surface prominently reticulate ..... 2. *Centella*
- 1b. Stems erect or acaulescent; leaves simple or compound; umbels compound or simple.
  - 3a. Leaves simple.
    - 4a. Flowers polygamous and some usually pedicellate, in simple umbels or heads; foliage not spinose; fruit with prickles or tubercles ..... 3. *Sanicula*
    - 4b. Flowers all perfect and sessile in heads; foliage usually spinose; fruit squamate or papillose, never with prickles ..... 4. *Eryngium*

- 3b. Leaves compound, rarely simple.
- 5a. Fruit with both primary and secondary ribs, secondary ribs winged ..... 5. *Daucus*
- 5b. Fruit with primary ribs, secondary ribs absent.
- 6a. Outer petals of umbellule usually conspicuously radiant.
- 7a. Fruit pubescent, cordate ..... 6. *Pimpinella*
- 7b. Fruit glabrous.
- 8a. Plants strongly aromatic throughout; vittae obscure ..... 7. *Coriandrum*
- 8b. Plants not aromatic throughout; vittae conspicuous ..... 8. *Oenanthe*
- 6b. Outer petals of umbellule not radiant.
- 9a. Fruit ribs wingless.
- 10a. Branches alternate; leaves 3–4-pinnatisect ..... 9. *Cyclospermum*
- 10b. Branches opposite or verticillate; leaves 2–3-pinnate ..... 10. *Petroselinum*
- 9b. Fruit ribs more or less winged.
- 11a. Fruit ovate-ellipsoidal, slightly flattened dorsally; lateral ribs more or less broader than the dorsal; stems green ..... 11. *Anethum*
- 11b. Fruit oblong, terete; ribs equal; stems grey-green ..... 12. *Foeniculum*
- 12a. Fruit ribs corky-thickened ..... 13. *Glehnia*
- 12b. Fruit ribs not corky-thickened.
- 13a. Calyx teeth conspicuous, triangular or ovate, persistent ..... 14. *Osterium*
- 13b. Calyx teeth obsolete or minute.
- 14a. Lateral wings ca. 2 times broader than dorsal wings ..... 15. *Angelica*
- 14b. Lateral wings less than 2 times broader than dorsal wings ..... 16. *Peucedanum*

### 1. *Hydrocotyle* L. 天胡荽屬

Perennial herbs, stems prostrate or creeping, usually rooting at the nodes. Leaves simple, base cordate, margin crenate to deeply lobed; stipules small, membranous; petioles not sheathing. Flowers bisexual, white, greenish or yellow, in simple, small heads or umbels, opposite to the leaves or axillary. Calyx-teeth minute or obsolete. Petals entire, ovate, valvate the bud. Stylopodium conic to depressed. Fruits orbicular or broader than long, laterally compressed, base cordate, dorsal surface rounded; dorsal and lateral ribs usually conspicuous; vittae inconspicuous. Seed face plane to concave; endocarp woody. Carpophore usually absent.

About 75–100 species widely distributed in tropical, subtropical and temperate regions, more numerous in the S hemisphere; 14 species in China; two species and one variety in Hong Kong.

- 1a. Leaves mostly 1.5–3 cm broad; umbels 10–15-flowered, peduncles longer than or equaling petioles. .... 1. *H. wilfordii*
- 1b. Leaves mostly 0.5–1.5 cm broad; umbels mostly 2–5(–10)-flowered; peduncles shorter than petioles.
- 2a. Leaves shallowly 5–7-lobed or nearly entire ..... 2. *H. sibthorpioides*
- 2b. Leaves deeply 3–5-divided, parted nearly to base, lobes obovate ..... 2a. *H. sibthorpioides* var. *batrachium*

#### 1. *Hydrocotyle wilfordii* Maxim. 腎葉天胡荽(惠氏天胡荽)

(Photo 478)

Bull. Acad. Imp. Sci. Saint-Petersbourg 31: 45. 1887; FKH 116. 1912; FRPS 55(1): 23. 1979; FGD 2: 328. 1991; FOC 14: 17. 2005.

Perennial prostrate herb, 14–45 cm tall, rooting at the nodes, glabrous or sparsely hirsutulous on leaf blades and petioles. Leaves alternate; petioles slender, 2.5–13 cm, more or less pubescent on distal part; leaf blade suborbicular to reniform, 1.5–3 cm in diam., glabrous or sparsely hirsute on veins of abaxial surface, base deeply cordate, margin shallowly 5–9-lobed; lobes crenate, subequal. Umbels simple, head-like, (5–)10–15(–20)-flowered; peduncles usually longer than the leaves, 1–5 cm. Flower greenish-white. Fruit suborbicular, 1–1.5 mm in diam., or broader than long.

Locality: Shing Mun, Lam Tsuen, Tai Mo Shan, Mau Ping. *H. C. Tang* 2503; *L. T. Lo* 431; *Y. S. Lau* 3306.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Japan, Korea, Vietnam.

Ecology: Streamsides, wet places in ravines. Flowering & fruiting: Sep.–Nov.

#### 2. *Hydrocotyle sibthorpioides* Lam. 天胡荽

(Photo 479)

Encycl. 3(1): 153. 1789; FRPS 55(1): 17. 1979; FGD 2: 328. 1991; FOC 14: 15. 2005.

*Hydrocotyle perexigua* Hance, Wailp., Ann. Bot. Syst. 2: 691. 1851–52.

*Hydrocotyle rotundifolia* Roxb. ex DC., Prodr. 4: 64. 1830; FHK 134. 1861; FKH 116. 1912.

Perennial prostrate herb; stems slender, glabrous or sparsely hairy, rooting at the nodes. Leaves alternate; petioles slender, 0.5–3 cm, glabrous or sparsely hairy on the distal part; leaf blade, suborbicular or reniform, 0.5–1.5 cm in diam., base cordate, margin shallowly 5–7-lobed; lobes crenately toothed, glabrous or sparsely hispid on veins of abaxial surface. Umbels head-like, simple, 2–5(–10)-flowered; peduncles 0.5–2 cm, usually shorter than petioles. Flower greenish, subsessile. Fruit suborbicular, 0.8–1.5 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang* 2469; *Y. S. Lau* 1790, 2665.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Jiangsu,



Fujian, Taiwan; Bhutan, India, Indonesia, Nepal, Philippines, Thailand, Vietnam, Japan, Korea, tropical Africa.

Ecology: Damp and half-shady places. Flowering & fruiting: May–Jul.

Uses: Medicinal (folklore).

**2a. *Hydrocotyle sibthorpioides* Lam. var. *batrachium* (Hance)**

Hand.-Mazz. ex R. H. Shan 破銅錢 (Fig. 243)

Sinensia 7: 480. 1936; FRPS 55(1): 18, pl. 2: 7–9. 1979; FGD 2: 328. 1991; FOC 14: 15. 2005.

*Hydrocotyle batrachium* Hance, Ann. Sc. Nat. 4. ser. 18: 220. 1862.

*Hydrocotyle rotundifolia* Roxb. var. *batrachium* (Hance) Chermeson, Bull. Soc. Bot. Fr. 68: 508. 1921.

Leaves deeply 3–5-divided, parted nearly to base; lobes obovate, margin crenate.

Locality: So Kwun Po, Tai Po. HK sheet 2058, 36137, 36141.

Distribution: Guangdong, Guangxi, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Philippines, Vietnam.

Ecology: Damp and half-shady places. Flowering & fruiting: Jun.–Aug.

Uses: Medicinal (folklore).

**2. *Centella* L. 積雪草屬**

Perennial prostrate herbs, glabrous or pubescent, rooting at the nodes. Leaves simple, long petiolate; stipules absent; petioles sheathing at base; blades entire or palmately-veined. Umbels solitary or fasciculate; peduncles axillary, few-flowered, rarely 1-flowered; involucre of 2–3 conspicuous bracts. Calyx-teeth obsolete. Petals white or rose-tinged, valvate in buds; narrow, inflexed at apex. Stylopodium absent. Styles short, equaling filaments. Fruits orbicular or ellipsoidal, reniform, base cordate to truncate, strongly laterally compressed; commissure narrow, constricted; the primary and the secondary ribs prominent, 7–9 per mericarp, filiform. Carpophore entire, very short.

About 20 species mostly in the tropical regions, especially in S Africa; one species in China; it also occurs in Hong Kong.

**1. *Centella asiatica* (L.) Urb.**

積雪草(崩大碗) (Fig. 244; Photo 480)

Fl. Bras. 11: 287, fig. 78, fig. 1. 1879; FRPS 55(1): 31, pl. 10. 1979; FGD 2: 329, fig. 217. 1991; FOC 14: 18. 2005.

*Hydrocotyle asiatica* L., Sp. Pl. 1: 234. 1753; FHK 134. 1861; FKH 116. 1912.

*Hydrocotyle lurida* Hance, Ann. Bot. Syst. (Walpers) 2: 690. 1852.

Perennial herb; stems long-creeping, glabrous or sparsely hairy, rooting at nodes. Leaves alternate or 2–3 congested at nodes; petioles 1.5–15 cm; leaf blade orbicular-reniform, entire, crenate or lobulate, 2.5–5 cm in diam., glabrous or nearly so. Umbels axillary 3–5-flowered; peduncles 2–8 mm; pedicels very short or obsolete; involucre bracts 2, ovate, membranous, persistent. Fruit ca. 3 × 3–4 mm, flattened, depressed, ovate-globose, loosely pubescent when young, soon glabrescent.

Locality: Common in Hong Kong. Y. S. Lau 2390, 2666; S. P. Lau 178.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan Shaanxi, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; widespread throughout tropical and subtropical regions worldwide.



Figure 243. *Hydrocotyle sibthorpioides* var. *batrachium* (Hance) Hand.-Mazz. ex Shan

1. whole plant; 2. flower; 3. fruit. (drawn by H. P. Yu)

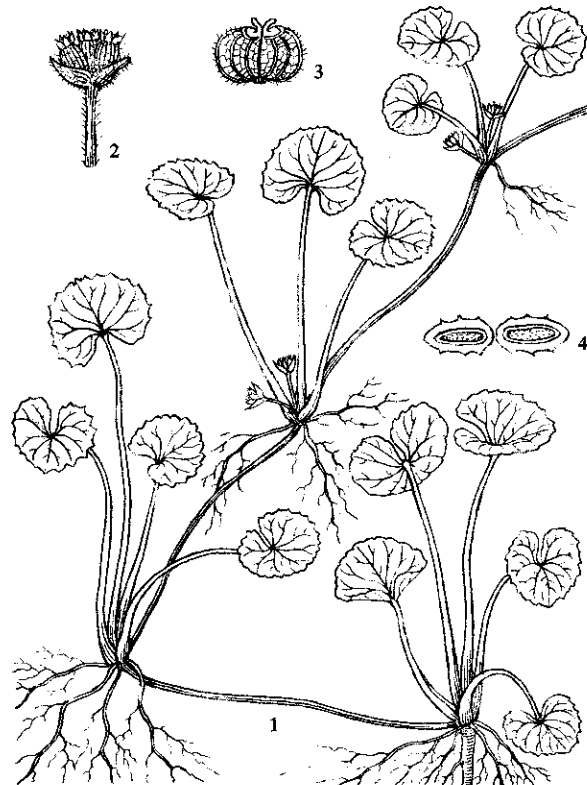


Figure 244. *Centella asiatica* (L.) Urban

1. whole plant; 2. umbel; 3. fruit; 4. vertical section of fruit. (drawn by H. P. Yu)

Ecology: Shady and wet places. Flowering & fruiting: Mar.–Aug.

Notes: The type specimen of *Hydrocotyle lurida* was collected from Hong Kong.

### 3. *Sanicula* L. 變豆菜屬

Biennial or perennial herbs, with rootstocks, tubers or fasciculate fibrous roots. Stems erect or ascending, or scapose, glabrous or pubescent. Leaves with sheathing petioles or subsessile; leaf blade orbicular, round-cordate or cordate-pentagonal, palmately 3–5-lobed, the segments toothed, lobed or dissected. Umbels simple or irregularly compound; involucre foliaceous; bracteoles longer or shorter than the rays. Flowers polygamous; bisexual flowers sessile or subsessile, in the center of the umbel; staminate flowers usually stalked, peripheral. Calyx-teeth prominent. Petals spatulate to ovate, with narrow inflexed apices. Styles filiform, shorter or longer than the calyx-lobes, spreading to recurved. Stylopodium lacking or flattened and disk-like. Fruit globose or oblong-ovoid, somewhat compressed laterally, densely covered with prickles, spines or tubercles; ribs obscure; carpophore wanting; carpels subterete. Vittae 5 or more, usually obscure. Seed-face plane or sulcate.

About 40 species, widely distributed throughout the world, except in Australia and New Zealand; 15 species and one variety in China; one species in Hong Kong.

#### 1. *Sanicula lamelligera* Hance

薄片變豆菜

(Fig. 245; Photo 481)

J. Bot. Brit. & For. 16: 11. 1878; FRPS 55(1): 48, pl. 20. 1979; FGD 2: 330, fig. 218. 1991; FOC 14: 21. 2005.

Perennial herb, glabrous; stems erect, 2–7-tufted, scapiform, 5–20 cm tall. Basal leaves several; petioles 5–15 cm, sheathing at base; leaf blade cordate-suborbicular, 2–5 × 3–9 cm, palmately 3-parted, often purplish red abaxially; central segment cuneate-obovate or rhombic-ovate, usually 2–3-lobed, base cuneate, margin irregularly and coarsely spinulate-toothed; cauline leaves small, 3-lobed, or undivided, sometimes wanting. Umbels 2–3-branched; peduncles 2–5 cm; involucre few, linear; umbellules 4–7-flowered. Staminate flowers 3–6; pedicels 1–2 mm; calyx-teeth persistent, about 1 mm; petals white, ovate, with narrow inflexed apices. Style of perfect-flower slender, reflexed, twice as long as the calyx. Fruit oblong-ovoid to ovoid, ca. 2.5 × 2 mm, densely spined; carpels terete in cross section. Vittae 5 in carpel. Seed-face plane.

Locality: Tai Mo Shan, Shing Mun, Tai Po, Sunset Peak. Y. S. Lau 1742; P. S. Choi 212; Y. W. Lam 1440.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Japan.

Ecology: Damp and shady places in ravines and forests. Flowering & fruiting: Mar.–Oct.

Uses: Medicinal (folklore).

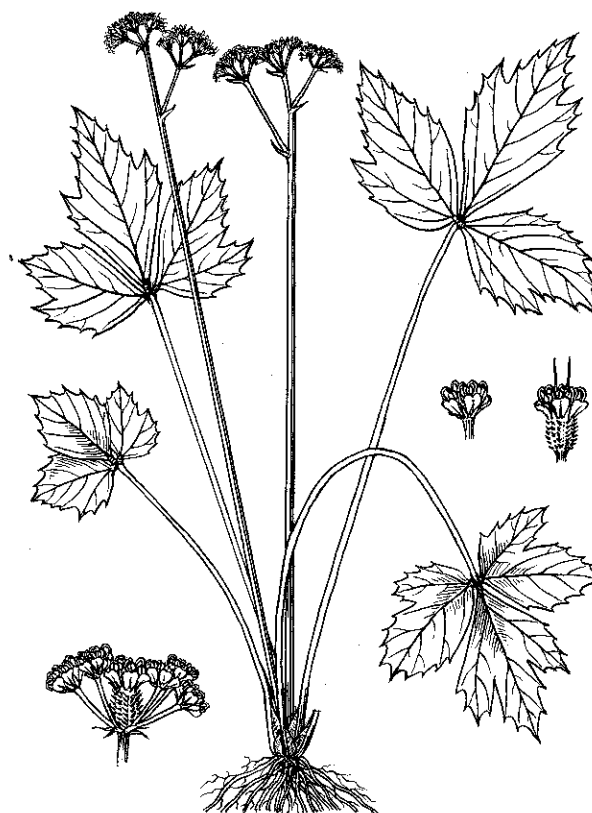


Figure 245. *Sanicula lamelligera* Hance

1. whole plant; 2. umbellule; 3. male flower; 4. bisexual flower. (drawn by H. P. Yu)

### 4. *Eryngium* L. 刺芹屬

Biennial or perennial herbs, usually glabrous; stems arising from stout taproots or rootstocks bearing fibrous roots. Leaves simple, entire or pinnately or palmately lobed or divided, often ciliate to spinose; petioles sheathing. Umbels simple, head-like, solitary, or in cymes or racemes. Involucre of one or more series of entire or lobed bracts. Flowers bisexual, sessile, each subtended by a bracteole. Calyx-teeth ovate to lanceolate, acute to obtuse, entire or rarely spinescent. Petals white to purple, ovate to oblong, with variously inflexed and lobed to fimbriate tips. Styles shorter than to extending sepals. Stylopodium and carpophore absent. Fruit globose to obovoid, scarcely flattened laterally, variously covered with scales or tubercles; ribs obsolete; commissure broad; vittae mostly 5, inconspicuous. Seed subterete in cross section, the face plane or slightly concave.

About 220 species widely distributed in tropical and temperate regions of both hemispheres; two species in China; one species in Hong Kong.

#### 1. *Eryngium foetidum* L. 刺芹(假茺菱)

(Fig. 246; Photo 482)

Sp. Pl. 232. 1753; FRPS 55(1): 64, pl. 28. 1979; FGD 2: 326, fig. 215. 1991; FOC 14: 24. 2005.

Biennial herb, glabrous, 5–60 cm tall. Basal leaves several forming a rosette; petioles short, broadly sheathing up to 3 cm; leaf blade subleathery, lanceolate or oblanceolate, 2–27 × 1–5 cm, base cuneate, apex obtuse, margin crenate to finely spinulose-serrate; the upper cauline leaves much reduced, sessile and usually opposite, deeply spinulose-serrate to parted. Inflorescence divaricately trifurcate, the lateral branches often continuing, to form a monochasium, heads numerous, small, short-pedunculate, flowers numerous; heads cylindrical,

7–11 mm; involucre 5–6, foliaceous, spreading and reflexed, lanceolate, 1–4 × 0.2–1 cm, margin 1–3-spinulose serrate; bracteoles linear or lanceolate, 2–3 mm, scarious-margined. Calyx-teeth lanceolate to ovate, ca. 0.5 mm, acute, weakly mucronate. Petals white or pale yellow, oblanceolate to ovate, 0.5 mm. Styles short, slightly extending the sepals. Fruit globose or slightly broader than long, about 1.5 mm, densely papillose with globose, tawny processes.

Locality: Yuen Tun Ha, Luk Keng, Sai Kung, Lantau Island. *L. T. Lo 54; HK sheet 27015.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan; widely distributed and naturalized in tropical and subtropical regions of Asia, S America and Africa.

Ecology: Shady and wet places in forests. Flowering & fruiting: Apr.–Aug.

Uses: Medicinal (folklore), flavoring.

### 5. *Daucus* L. 胡蘿蔔屬

Biennial herbs, usually pubescent, with thick taproot. Leaves pinnately decompose, the ultimate segments linear to linear-lanceolate; petioles sheathing. Inflorescence of lax compound umbels, terminal and axillary, many-flowered; involucre bracts numerous, pinnately dissected, rarely entire, usually reflexed; bracteoles numerous, toothed or entire. Pedicels unequal. Calyx teeth obsolete to conspicuous. Petals white or yellow, obcordate, with an inflexed apex; flowers at margin of umbellules with enlarged and radiant petals. Stylopodium conic; styles short. Fruit ellipsoidal, dorsally compressed; primary ribs filiform, bristly, secondary ribs winged; wings with glochidiate prickles; vittae 1 in furrows under the secondary ribs, 2 on commissure. Carpophore entire or bifid at apex.

About 20 species distributed in N Africa and SW Asia, Europe, cultivated and naturalized worldwide in temperate regions; one species cultivated in China; it also occurs in Hong Kong.

#### 1. *Daucus carota* L. var. *sativa* Hoffm. 胡蘿蔔(金筍)

(Photo 483)

Deutschl. Fl. 91. 1791; FGD 2: 332. 1991; FRPS 55(3): 225. 1992; FOC 14: 205. 2005.

Biennial herb, to 1.2 m tall. Taproot thick and fleshy, elongate terete or clavate, reddish, reddish-yellow, or yellow. Leaves oblong in outline, pinnately decompose; ultimate segments linear to linear-lanceolate, 2–15 × 0.5–4 mm, glabrous to hispid especially on the veins and margins. Inflorescence of compound umbels, terminal. Peduncles 10–55 cm, retrorsely hispid. Involucre bracts foliaceous, pinnate, rarely entire, lobes linear, 3–30 cm, margin scarious; bracteoles 5–7, linear, entire or 2–3-lobed, more or less scarious and ciliate, equaling or exceeding flowers. Petals white, sometimes yellow or pinkish. Fruit ovoid, 3–4 × ca. 2 mm.

Locality: Cultivated. *HK sheet 12676, 39854.*

Distribution: Widely cultivated in China; cultivated worldwide, originated from Europe.

Uses: Food (vegetable).

### 6. *Pimpinella* L. 茵苳屬

Perennial, biennial or annual herbs; stems erect, caulescent, branching, glabrous or pubescent. Basal leaves petiolate, sheathing at base; blades simple, ternate or pinnately compound; cauline leaves often heteromorphic. Umbels terminal and lateral; involucre bracts and bracteoles present or absent, usually entire. Calyx-teeth obsolete, sometimes conspicuous, lanceolate, minute. Petals white, rarely purple, with narrow inflexed apex, glabrous to hirsute. Stylopodium conical. Fruit ovoid or ellipsoidal, narrow at apex, rounded or cordate at base, slightly laterally compressed, glabrous to pubescent, the ribs filiform, prominent; carpophores 2-cleft to the middle or to the base; vittae 2–3 in each furrow, 2–4 on the commissure. Seeds subterete in cross section, the face concave to nearly plane.

About 150 species in the N hemisphere, a few in S Africa and S America; 44 species in China; one species in Hong Kong.

#### 1. *Pimpinella diversifolia* DC. 異葉茵苳

Prodr. 4: 122. 1830; FKH 117. 1912; FRPS 55(2): 70. 1985; FGD 2: 336, fig. 224. 1991; FOC 14: 96. 2005.

Perennial herb, 50–100 cm tall, with fibrous, fragrant roots; stems erect, branching on the upper part. Basal and lower stem leaves simple, undivided, or shallowly 3-lobed; petioles 2–10 cm, sheathing; leaf blade ovate-cordate, 2.5–8.5 × 2.5–7 cm; leaves on the middle of stem usually ternate, margin coarsely serrate, short-petiolate, the terminal one ovate, 4–6 × 1.5–3 cm; lateral ones oblique

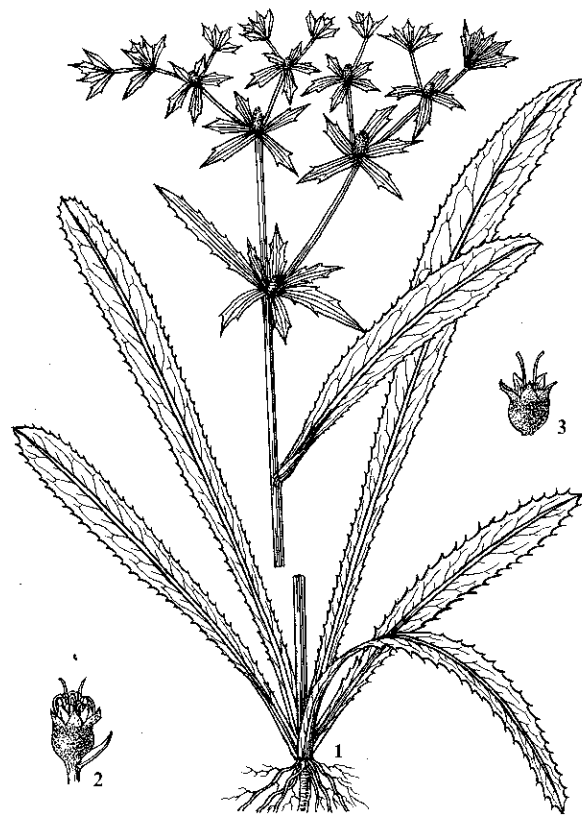


Figure 246. *Eryngium foetidum* L.

1. whole plant; 2. flower; 3. fruit. (drawn by H. P. Yu)

at base; upper stem leaves reduced, lanceolate, sessile. Inflorescence of compound umbels. Involucre wanting or of 1–2 linear bracts; bracteoles 1–8, linear. Pedicels 1–3 mm, unequal. Flowers white, with narrow inflexed apex; styles slender, reflexed; stylopodium conical. Fruit slightly laterally compressed, ovoid to globose, 1.5–2 mm, a little broader than long, glabrate to puberulent, the ribs filiform, evident. Vittae 3–4 in each furrow, 2–4 on the commissure. Seed-face plane.

Locality: Lantau Island. *HK sheet 12480*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Gansu, Shaanxi, Henan, Hubei, Hunan, Jiangsu, Anhui, Zhejiang, Fujian, Taiwan; Pakistan, India, Afghanistan, Nepal, Vietnam, Japan.

Ecology: Grassy hillslopes, forests. Flowering & fruiting: Jul.–Sep.

Uses: Medicinal (folklore), vegetable.

## 7. *Coriandrum* L. 芫荽屬

Annual herbs, strongly aromatic, glabrous throughout; taproot slender; stem erect, branched above. Leaves petiolate; blade pinnately dissected; ultimate segments very variable in shape. Inflorescence of compound umbels, terminal or opposite to the leaves; bracts absent, rarely 1; rays several, spreading, unequal; bracteoles several, linear. Calyx-teeth short, acute, often unequal. Petals white or rose-pink, obovate, apex deeply notched, outer petals enlarged (radiant). Stylopodium conic; styles slender, erect. Fruit globose, not readily separating at maturity; pericarp hard; primary and secondary ribs filiform, evident; vittae absent or solitary, obscure in mature fruits. Seed face concave. Carpophore deeply bifid at apex.

One species native to Mediterranean region; cultivated in China, it also occurs in Hong Kong.

### 1. *Coriandrum sativum* L. 芫荽

(Photo 484)

Sp. Pl. 1: 256. 1753; FHK 135. 1861; FKH 118. 1912; FRPS 55(1): 89, pl. 40. 1979; FGD 2: 337, fig. 225. 1991; FOC 14: 30. 2005.

Annual herb, to 60 cm tall. Basal and lower leaves pinnate to 2-pinnatisect; petioles to 13 cm, shortly sheathing at base; blades ovate in outline, to 14 × 8 cm; pinnae broadly ovate or flabelliform, 1–2 × 1–1.5 cm, variously toothed or incised; ultimate segments broad. Mid and upper cauline leaves ternate-2–3-pinnatisect, reducing upwards; ultimate segments linear to filiform, 2–15 × 0.5–1.5 mm, obtuse, entire. Peduncles 2–10 cm; rays 2–8, 1–2.5 cm; bracteoles 2–5, linear, entire; umbellules 3–9-flowered. Pedicels 2–5 mm. Calyx-teeth ovate-deltoid or ovate-lanceolate, unequal. Fruit 1.5–5 mm wide.

Locality: Cultivated. *Y. S. Lau 2698*; *HK sheet 12663*.

Distribution: Native to Mediterranean region; cultivated in China.

Uses: Vegetable.

## 8. *Oenanthe* L. 水芹屬

Perennial or biennial herbs, glabrous, with fibrous or tuberous roots; stems slender, decumbent and ascending or erect, rooting at basal nodes. Leaves 1–4-pinnate; ultimate segments ovate to linear, margin serrate to pinnatifid or sometimes reduced to fistulose phyllodes; petioles sheathing. Inflorescence of compound umbels; peduncles terminal or lateral; involucre wanting or of a few narrow bracts; rays many, spreading; bracteoles numerous, shorter than flowers. Flowers white. Calyx-teeth small, lanceolate, persistent. Petals obovate with a narrow inflexed apex; styles erect, elongate; stylopodium conic. Fruit glabrous, oblong or globose, nearly terete, very slightly compressed laterally, ribs low and obtuse. Vittae usually solitary in each furrow, 2 on the commissure. Carpophores wanting. Seeds subterete, the face plane.

About 30 species in N hemisphere, S Africa and Australia; 11 species in China; two species in Hong Kong.

- 1a. Rays of inflorescence 6–16, 1–3 cm; pedicels 3–9 cm; fruit 2–3.5 × 1–2 mm..... 1. *O. javanica*  
 1b. Rays of inflorescence 4–10, 0.5–1 cm; pedicels 0–3 cm; fruit ca. 1.5 × 1 mm ..... 2. *O. benghalensis*

### 1. *Oenanthe javanica* (Blume) DC. 水芹

Prodr. 4: 138. 1830; FRPS 55(2): 202, pl. 81: 1–4. 1985; FGD 2: 338, fig. 226. 1991; FOC 14: 131. 2005.

*Sium javanicum* Blume, Bijdr. Fl. Nederl. Ind. 15: 881. 1826.

*Dasyloma javanica* (Blume) Miq., Fl. Ind. Bat. 1(1): 741. 1856.

*Falcaria javanica* (Blume) DC., Prodr. 4: 110. 1830.

*Oenanthe stolonifera* (Roxb.) DC., Prodr. 4: 138. 1830; FKH 117. 1912.

Perennial herb, 10–80 cm tall, with fibrous roots; stems erect or decumbent at base, striate, glabrous or nearly so. Leaves basal and alternate on stems, blade oblong to ovate in outline, pinnate to tripinnate; ultimate segments ovate, or rhombic-ovate, 1–4 × 1–2 cm, margin irregularly serrate or sometimes lobed; petioles 2–10 cm, sheathing. Umbels compound; involucre lacking, or of a few linear bracts; rays 5–15, 0.5–3 cm; bracteoles 2–8, linear. Pedicels 1.5–4 mm. Calyx-teeth ca. 0.5 mm. Petals white, ca. 1 mm. Style 1.5–2 mm, persistent. Fruit glabrous, oblong, ca. 2.5 × 1.5–2 mm, the commissure broad, the ribs more or less corky-thickened.

Locality: Tai Tam, Wong Nai Chung, Ng Tung Chai, Sai Kung. *Y. S. Lau 2705*; *N. H. Li 55*; *P. S. Choi 130*.

Distribution: Widely distributed in China; Vietnam, Philippines, Malaysia, Indonesia and Australia.

Ecology: Borders of rice fields, ditches and other wet places. Flowering & fruiting: Mar.–Jun.

Uses: Medicinal (folklore).

2. *Oenanthe benghalensis* (Roxb.) Benth. & Hook. f.

短幅水芹(少花水芹) (Fig. 247)

Gen. Pl. 1: 906. 1867; FKH 117. 1912; FRPS 55(2): 200. 1985; FGD 2: 338. 1991; FOC 14: 131. 2005.

*Seseli benghalensis* Roxb., [Hort. Bengal. 22. 1814, *nom. nud.*]

Fl. Ind. ed. 2, 2: 94. 1832.

*Oenanthe benghalensis* (Roxb.) Kurz., J. Asiat. Soc. Bengal. 2: 115. 1877.

*Dasyloma benghalensis* (Roxb.) DC., Prodr. 4: 140. 1830.

Perennial herb, 15–60 cm tall; root fibrous; stems usually erect, angular, branched from base. Basal petioles 1–4 cm; leaf blades triangular-ovate in outline, 1–2-pinnate; ultimate segments rhombic-ovate, rarely lanceolate, 5–20 × 1–5 mm. Upper stem leaves smaller, sessile, 1-pinnate, pinnae rhombic-ovate or lanceolate. Umbels 0.5–3.5 cm across; peduncles short, 0.5–1(–2) cm, often leaf-opposed, or obsolete; involucrel bracts absent; rays 4–10, 0.5–1 cm; bracteoles numerous, linear, as long as pedicels, umbellules 8–15-flowered; pedicels 0.5–2 mm. Calyx-teeth ca. 0.4 mm. Petals white. Styles 1.4–1.8 mm. Fruit ovoid, 2.5–3 × 1.5–2 mm; dorsal and intermediate ribs slightly corky-thickened.

Locality: Pok Fu Lam, Luk Keng. *Y. S. Lau 2876; HK sheet 2045.*

Distribution: Sichuan, Yunnan, Guangdong; Japan, India.

Ecology: Forests by streams. Flowering & fruiting: Mar.–May.

Uses: Medicinal (folklore).

Notes: Most authors merged the species into *O. javanica* (Blume) DC., whereas Chinese authors treated it as a distinct species. Wu pointed that it might be a subspecies of *O. javanica*.

9. *Cyclospermum* Lag., *nom. et orth. cons.*

細葉旱芹屬

Annual herbs, stems ascending or erect, much branched, glabrous. Leaves basal and cauline; petioles sheathing; leaf blade blades 3–4-pinnatisect; cauline leaves usually numerous, reduced upward. Inflorescence of lax terminal or leaf-opposed compound umbels; peduncles usually short or abortive; involucre and involucrel lacking; rays rather few, spreading-ascending; umbellules few-flowered, the flowers pedicellate. Calyx-teeth obsolete. Petals white, greenish or pinkish, ovate, acute, apex not narrowed and inflexed, subequal. Stylopodium low conical; styles short to almost obsolete. Fruit ovoid to globose, rounded at both ends or slightly narrowed toward apex, slightly compressed laterally, somewhat constricted at commissure, glabrous, the mericarps subterete in transverse section, glabrous, the ribs prominent, somewhat corky; vittae 1 in each furrow, 2 on commissure. Carpophore shortly bifid at apex.

About three species in tropical and temperate America; one species widely naturalized in tropical and temperate region including China; it also occurs in Hong Kong.

1. *Cyclospermum leptophylla* (Pers.) Sprague ex Britton & P.

Wilson 細葉旱芹 (Fig. 248)

Bot. Porto Rico. 6: 52. 1925; FOC 14: 115. 2005.

*Pimpinella leptophylla* Pers., Syn. Pl. 1: 324. 1805.

*Apium leptophyllum* (Pers.) F. Muell. ex Benth., Fl. Austral. 3: 372. 1866; FKH 116. 1912; FRPS 55(2): 6. 1985; FGD 2: 341. 1991.

Annual herb, 30–130 cm tall. Basal leaves elliptic-ovate in

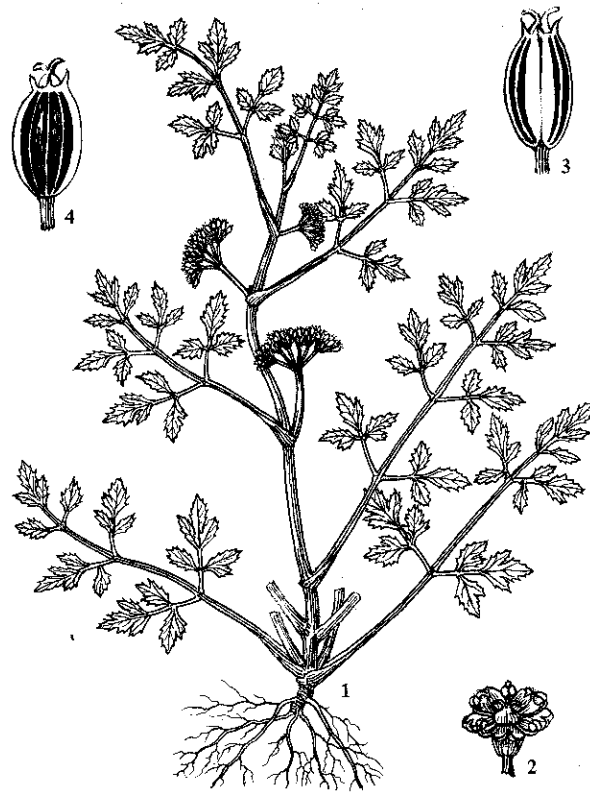


Figure 247. *Oenanthe benghalensis* (Roxb.) Benth. & Hook. f.  
1. whole plant; 2. flower; 3–4. fruit. (drawn by H. P. Yu)

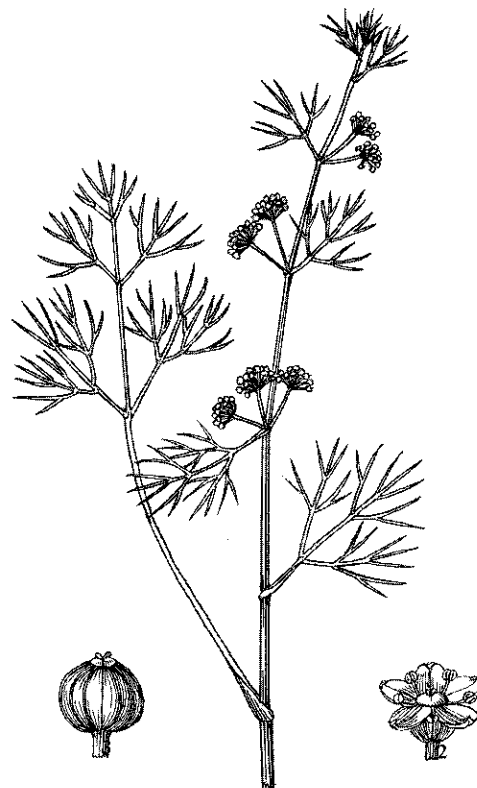


Figure 248. *Cyclospermum leptophylla* (Pers.) Sprag ex Britton & P. Wilson  
1. part of plant; 2. flower; 3. fruit. (drawn by H. P. Yu)

outline, 2–10 × 2–8 cm, 3–4-pinnatisect; the ultimate segments linear to filiform, 1.5–7 × 0.5–1 mm; petioles 10–20 cm. Cauline leaves ternate-pinnately decomposed, ultimate segments filiform. Inflorescence of compound umbels, terminal and axillary; peduncles 3–8 cm; involucre of a few inconspicuous, entire bracts or wanting; rays 10–20, subequal to unequal, 1–5 cm; involucre of 5 or 6 linear, acute, entire bracteoles shorter than the flowers; pedicels 2–5 mm. Fruit globose, 2–4 × 1.5–3 mm.

Locality: Victoria Peak, Shek O Rd. *U. A. On 8492*; *Y. S. Lau 1588*.

Distribution: Guangdong, Jiangsu, Fujian, Taiwan; America, Australia, Japan, Malaysia, Indonesia.

Ecology: Grassy fields along ditches and other damp places. Flowering: May.

Notes: The species was reported as *Apium leptophyllum* (Pers.) F. Muell. ex Benth. previously (Check List HK Plants 205. 2002; 72. 2004).

### 10. *Petroselinum* Hill 歐芹屬

Biennial or rarely annual glabrous herbs; stems erect, branching above. Leaves 2–3-pinnate; ultimate segments ovate to linear, toothed or lobed. Inflorescence of compound umbels, terminal and axillary; involucral bracts few or absent; bracteoles several. Calyx-teeth obsolete. Petals yellow or yellowish-green, obovate, apex emarginate, narrow, inflexed. Stylopodium low-conic; styles short, spreading. Fruit ovoid-oblong, slightly flattened laterally, mericarps subrounded in cross section, commissure constricted, glabrous, shiny; ribs 5, filiform, prominent; vittae 1 in each furrow, 2 on commissure. Seed face plane. Carpophore 2-cleft to base or to middle.

Two species native in S and W Europe, cultivated worldwide; one species (introduced) in China; also cultivated in Hong Kong.

#### 1. *Petroselinum crispum* (Mill.) Nyman ex A. W. Hill 歐芹 (洋芫荽)

Handlist Herb. Pl. Kew., ed. 3, 122. 1925; FRPS 55(2): 9. 1985; FOC 14; 76. 2005.

*Apium crispum* Mill., Gard. Dict., ed. 8, *Apium* no. 2. 1768.

*Petroselinum hortense* Hoffm. var. *crispum* (Mill.) L. H. Bailey, Man. Cult. Pl. 564. 1924.

Biennial herb, 30–100 cm tall. Basal petioles 3–7 cm, narrowly sheathing at base; leaf blade 5–8 × 4–7 cm, 2–3-pinnate, dark green, shining adaxially; ultimate segments narrowly elliptic or ovate, 4–12 × 1.5–9 mm, 3-parted or deeply toothed; stem leaves reduced upwards, 3-lobed; lobes lanceolate-linear, entire or 3-lobed. Umbels 3–6(–8) cm across; rays 10–25(–30), 1–2.5(–5) cm, subequal; involucral bracts 1–2 or absent, linear, 2–5 mm, apex acute, thin-leathery; bracteoles 6–8, linear or subulate, 1.5–2.5 mm, shorter than flowers; umbellules ca. 20-flowered; pedicels 1.5–4.5 mm. Fruit 2–4 × 1.5–3 mm, grey-brown.

Locality: Cultivated.

Distribution: Cultivated in some cities in China; possibly native to the W Mediterranean region.

Uses: Vegetable, medicinal (folklore).

### 11. *Anethum* L. 蒔蘿屬

Annual or biennial glabrous herbs; stem erect, branched. Leaves basal and cauline, 2–3-pinnately dissected, petiolate; ultimate segments filiform or linear. Inflorescence of loose compound umbels, pedunculate; involucral bracts and bracteoles absent; rays numerous, unequal. Calyx-teeth obsolete. Petals yellow, subcordate, apex strongly incurved. Stylopodium conic; styles short, erect when young, spreading or recurved after anthesis. Fruit ellipsoid or ovoid-ellipsoidal, conspicuously flattened dorsally; dorsal ribs filiform, slightly prominent, lateral ribs narrowly winged, tapering at both ends; vittae 1 in each furrow, 2 on commissure. Seed face plane. Carpophore 2-cleft to base.

One species native in Mediterranean region, cultivated and naturalized worldwide; it is also cultivated in Hong Kong.

#### 1. *Anethum graveolens* L. 蒔蘿

Sp. Pl. 1: 263. 1753; FRPS 55(2): 215, pl. 87: 1–4. 1985; FGD 2: 342, fig. 231. 1991; FOC 14: 134. 2005.

*Peucedanum graveolens* (L.) Hiern, Botany [Fortieth Parallel] 5: 129. 1871.

*Ferula marathrophylla* Walp., Nov. Act. Nat. Cur. 19(Suppl. 1): 347. 1843; FKH 117. 1912.

Annual herb, 30–75(–100) cm tall, glabrous, strongly aromatic. Petioles 5–6 cm, sheathing at base and scarious-margined; leaf blade broadly ovate in outline, 3–4-pinnately divided; ultimate segments filiform, 4–20 × ca. 0.5 mm; upper stem leaves smaller and less divided. Umbels terminal, 5–15 cm across; peduncle 3–14 cm; rays 10–25, 3–5 cm; umbellules 15–25-flowered; pedicels 6–10 mm. Fruit brown, 3–5 × 2–2.5 mm; lateral ribs grey-white, narrowly winged.

Locality: New Territories (cultivated).

Distribution: Native to the Mediterranean region, widely cultivated and adventive worldwide.

Uses: Medicinal (folklore), spice.

### 12. *Foeniculum* Mill. 茴香屬

Annual or perennial herbs, all parts strongly anise-scented; stem erect, grey-green, glabrous. Leaves petiolate, pinnately decomposed; ultimate segments filiform or linear. Inflorescence of compound umbels, terminal and lateral; bracts and bracteoles absent; rays numerous, upwards-spreading, unequal. Calyx-teeth obsolete. Petals yellow, obovate, midvein conspicuous, apex narrowly incurved. Stylopodium conic; styles very short, reflexed. Fruit oblong, laterally ± compressed, glabrous; ribs 5, acute or round-obtuse; vittae 1 in each furrow,

2 on commissure. Seed face plane or slightly concave. Carpophore 2-cleft to base.

One species in Mediterranean region, cultivated and naturalized worldwide; it is also cultivated in Hong Kong.

1. *Foeniculum vulgare* Mill. 茴香

(Photo 485)

Gard. Dict., ed. 8, *Foeniculum* no. 1. 1768; FKH 117. 1912; FRPS 55(2): 213, pl. 86. 1985; FGD 2: 340, fig. 229. 1991; FOC 14: 134. 2005.

*Anethum foeniculum* L., Sp. Pl. 1: 263. 1753.

Biennial herb, 0.4–2 m tall, glabrous and glaucous throughout; stems erect, much branched. Basal leaves tufted; petioles 5–15 cm, sheathing; leaf blade broadly triangular in outline, 4–30 × 5–40 cm, 4–5-pinnatisect; ultimate segments linear, 1–6 × 0.1–0.5 cm; upper stem leaves smaller and shortly petiolate. Umbels 5–15 cm across; peduncles 2–25 cm; rays 5–25(–40), unequal, 1.5–10 cm; umbellules 14–39-flowered; pedicels slender, 2–10 mm, unequal. Calyx-teeth obsolete. Petals yellow, obovate, ca. 1 mm, 1-veined. Stylopodium conic; styles very short, 2-cleft. Fruit oblong, 4–6(–10) × 1.5–2.2(–2.5) mm; ribs 5, acute or round-obtuse; vittae 1 in each furrow, 2 on commissure.

Locality: Cultivated. *L. T. Lo 80; Y. S. Lau 2722; HK sheet 12514.*

Distribution: Native to the Mediterranean region; cultivated and adventive worldwide.

Uses: Medicinal (folklore), food.

13. *Glehnia* F. Schmidt ex Miq. 珊瑚菜屬

Perennial hairy herbs, with long taproots and short stems. Leaves petiolate, ternate or ternate-pinnate, pinnae usually deeply 3-lobed, margins serrate; petioles sheathing. Inflorescence of compound umbels, terminal or axillary; involucre of a few narrow bracts or wanting; rays many, spreading; bracteoles several, linear-lanceolate. Calyx-teeth minute, conspicuous. Petals white, ovate-lanceolate, apex incurved; stylopodium short-conic; styles very short. Fruit ovoid-oblong, densely pubescent or glabrate, dorsally compressed, lateral and dorsal wings conspicuous, thickened at base. Vittae 1–3 in each furrow, 2–6 on commissure. Seeds flattened dorsally, the face concave.

Two species in E Asia and N America; one species in China; it also occurs in Hong Kong.

1. *Glehnia littoralis* F. Schmidt ex Miq.

珊瑚菜

(Fig. 249; Photo 486)

Ann. Mus. Bot. Lugd.-Bat. 3: 61. 1867; FGD 2: 345, fig. 234. 1991; FRPS 55(3): 77. 1992; FOC 14: 173. 2005.

*Phellopterus littoralis* Benth., Gen. Pl. 1: 905. 1867; FKH 117. 1912.

Perennial herb, 5–20 cm tall, densely white-pubescent except leaf blade; roots slender, to 40 cm long, fleshy; stems short, usually simple, 5–30 cm, often buried in sand with apical part emerged above ground. Petioles 5–15 cm, sheathed; leaf blade usually deltoid or ovate deltoid in outline, 10–20 cm, once or twice ternate; leaflets rather thick, elliptic, obovate-elliptic or ovate-orbicular, 2–5 × 1–3 cm, apex obtuse to rounded, often partly tinged with red, often glabrous except on the veins, margin irregularly denticulate. Umbels 3–6 cm across; peduncles 2–6 cm; rays more than 10, 4–6 cm; bracteoles linear, not exceeding the flowers. Calyx-teeth 0.5–1 mm. Styles 1.5–2 mm. Fruit ovoid-oblong, 0.5–1.3 × 0.3–0.9 cm, villose, ribs all equally winged, thick.

Locality: Ham Tin Wan, Tai Wan. *Y. W. Lam 1420; HK sheet 39280, 40314.*

Distribution: Coastal areas of Hainan, Guangdong, Taiwan, Fujian, Zhejiang, Jiangsu, Shandong, Hebei, Liaoning; Japan, Korea, Russia.

Ecology: Sandy beaches. Flowering & fruiting: Apr.–Jul.

Uses: Medicinal (folklore).

Notes: Listed in *Rare and Precious Plants of Hong Kong*.

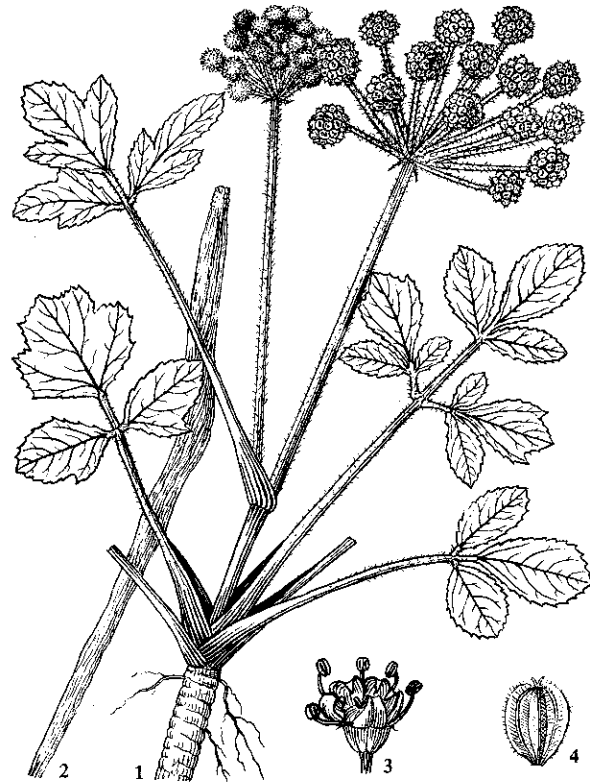


Figure 249. *Glehnia littoralis* F. Schmidt ex Miq.

1. upper part of plant; 2. root; 3. flower; 4. fruit. (drawn by H. P. Yu)

14. *Osterium* Hoffm. 山芹屬

Perennial herbs, with stout taproots; stems erect and tall, usually hollow, glabrous or hairy. Leaves basal and cauline; petiole sheaths inflated; leaf blade 2–3-ternate-pinnate or pinnately compound; pinnae serrate to lobed. Inflorescence of loose compound umbels; rays few to many; involucre bracts few, lanceolate or linear-lanceolate; bracteoles several, linear to linear-lanceolate. Calyx-teeth triangular-ovate, conspicuous. Petals white, pink, purplish or violet, ovate to obovate, with a narrowly inflexed apex. Fruit oblong-ovoid,

strongly flattened dorsally, pubescent or glabrous, the lateral ribs broadly thin or corky-winged, the dorsal ribs also prominent but not winged; carpophore 2-cleft to the base. Vittae 1 or 2 in each furrow, 2–many on the commissure. Seed strongly compressed dorsally, the inner face plane to concave.

About ten species in E Asia; six species in China; one species in Hong Kong.

**1. *Osterium citriodorum*** (Hance) C. Q. Yuan & R. H. Shan  
 隔山香(檸檬香鹹草) (Fig. 250; Photo 487)  
 Bull. Nanjing Bot. Gard. Mem. Sun Yatsen 1984–1985: 3. 1985  
 [“1984”]; FRPS 55(3): 67. 1992; FOC 14: 170. 2005.

*Angelica citriodora* Hance, J. Bot. 131. 1871; FKH 117. 1912;  
 FGD 2: 343, fig. 232. 1991.

Perennial herb, 0.5–1.3 m, glabrous, with thick taproot. Stems 2–5 mm thick, branched above, surrounded at base by fibrous remnant leaf-sheaths. Petioles 5–30 cm, sheaths triangular-ovate, 0.5–1.5 cm; leaf blade oblong-ovate to broadly triangular-ovate in outline, 15–22 × 13–20 cm, 2–3-ternate-pinnate; leaflets subsessile, oblong-lanceolate to lanceolate, 3–6.5 × 0.4–2.5 cm, apex acute and mucronate, margin inconspicuously serrate. Umbels compound; peduncles 6–9 cm; involucre bracts 6–8, lanceolate, ca. 4 mm, multi-striate; rays 5–12; bracteoles 5–8, linear, 2–3 mm, reflexed. Calyx-teeth conspicuous, triangular-ovate. Petals white, obovate, apex inflexed. Fruit ellipsoid to broad-ovoid, 3–4 × 3–3.5 mm, yellowish brown; dorsal ribs prominent, lateral ribs broad-winged; vittae 1–3 in each furrow, 2 on commissure.

Locality: Tai Mo Shan, Tin Fu Tsai, Lam Tsuen, Ma On Shan.  
*Y. S. Lau 2767; P. S. Choi 287; K. L. Yip 4492.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Thickets, margins of forests. Flowering & fruiting: Sep.–Oct.

Uses: Medicinal (folklore).

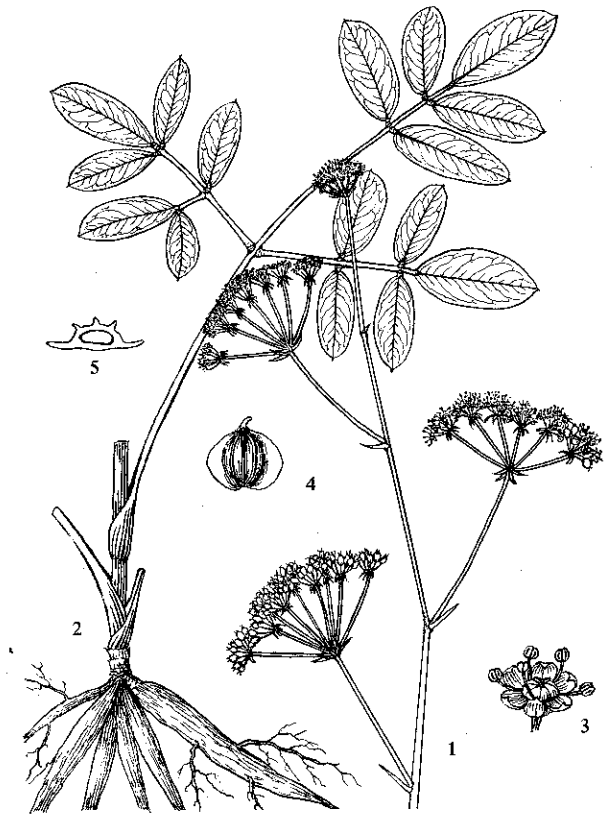


Figure 250. *Osterium citriodorum* (Hance) Yuan & Shan

1. upper part of plant; 2. lower part of plant; 3. flower;  
 4. schizocarp; 5. cross section of schizocarp. (drawn by  
 H. P. Yu)

## 15. *Angelica* L. 當歸屬

Biennial or perennial herbs, usually with stout, conic or cylindrical taproot. Leaves basal and cauline petiolate, with conspicuously inflated petiole-sheath; leaf blades 1–4-pinnate or 1–3-ternate-pinnate. Inflorescence of compound umbels, terminal or lateral; involucre bracts many, rarely absent; rays many to several; bracteoles many to a few, entire. Calyx-teeth obsolete or ovate-triangular. Petals white, rarely pink or dark purple, ovate to obovate, apex incurved. Stylopodium short-conic. Fruit ovoid to orbicular, dorsally compressed; dorsal ribs filiform, lateral ribs broad- or narrow-winged, separated when mature; vittae often 1–2 in each furrow, 2–4 on commissure. Seed face plane or slightly concave. Carpophore 2-cleft to base.

Over 90 species in N temperate zone; 45 species in China; one species in Hong Kong.

**1. *Angelica decursiva*** (Miq.) Franch. & Sav. 紫花前胡  
 Enum. Pl. Jap. 1: 187. 1875; FRPS 55(3): 28. 1992; FOC 14: 164. 2005.

*Porphyroscias decursiva* Miq., Ann. Mus. Bot. Lugduno-Batavi 3: 62. 1867.

*Peucedanum decursivum* (Miq.) Maxim., Mel. Biol. 12: 472. 1886; FKH 118. 1912; FGD 2: 344, fig. 233. 1991.

Perennial herb, 1–2 m high. Taproot conic, 1–2 cm thick, strongly aromatic. Stems often purplish, ribbed, glabrous. Petioles 10–35 cm, sheaths purple, elliptic. Leaf blades triangular to ovate in outline, 10–25 cm, 1–2-ternate-pinnate; rachis winged; pinnae 3–5, again 3–5-lobed; ultimate lobes ovate or oblong-lanceolate, 5–12.5 × 2.5–6 cm, apex acute, margin cuspidate-serrate, midveins often purple-green, hispidulous along veins adaxially; upper stem leaf reduced into a inflated petiole-sheath. Peduncles 2–8 cm, pubescent; involucre bracts 1–3, purplish, ovate, sheath-like, reflexed; rays 7–14(–22), 2–4 cm, pubescent; bracteoles 3–8, linear to lanceolate, green or purple; pedicels pubescent. Calyx-teeth triangular-subulate. Petals dark purple, obovate or ellipsoidal-lanceolate, apex incurved but not notched. Fruit oblong to ovoid-orbicular, 4–7 × 3–5 mm; dorsal ribs filiform, acute, lateral ribs thick narrow-winged; vittae 1–3 in each furrow, 4–6 on commissure.

Locality: Hong Kong Botanical Gardens. *HK sheet 12630, 12631.*

Distribution: Guangdong, Guangxi, Sichuan, Hubei, Shaanxi, Hebei, Henan, Jiangxi, Anhui, Jiangsu, Zhejiang, Taiwan, Liaoning; Japan, Korea, Russia, Vietnam.

Ecology: Grassy hillslopes. Flowering: Aug.

Uses: Medicinal (folklore).



16. *Peucedanum* L. 前胡屬

Perennial herbs, with thick rootstock surrounded by fibrous of remnant leaf-sheath; stems striate, branched above. Leaves ternately or pinnately compound, petiole sheaths inflated. Inflorescence of compound umbels; involucre bracts wanting or few; rays few to many; bracteoles few to numerous or wanting. Calyx-teeth prominent to obsolete. Petals ovate to obovate with narrower inflexed apex, white or reddish, rarely yellow. Stylopodium low-conic. Fruit ellipsoidal, oblong to suborbicular, the dorsal ribs filiform, not winged, the lateral ribs usually winged; vittae solitary to several in each furrow, 2–several on the commissure. Seeds dorsally compressed, slightly concave to plane.

About 100–200 species in Europe, Asia and Africa; 40 species in China; one species in Hong Kong.

1. *Peucedanum praeruptorum* Dunn

前胡 (白花前胡)

(Fig. 251; Photo 488)

J. Linn. Soc. Bot. 35: 497. 1903; FGD 2: 345. 1991; FRPS 55(3): 147. 1992; FOC 14: 186. 2005.

Perennial herb, 30–120 cm tall; stems solitary, branched above, puberulous. Petioles 6–20 cm, inflated at base. Basal and lower stem leaf suborbicular to broadly ovate in outline, 2–3-ternate; pinnae long-petiolulate, pinnules long-ovate, 3–5-lobed, 1.5–6 × 1.2–4 cm, base cuneate, apex acuminate, margins irregular serrate, both surfaces glabrous, occasionally puberulous. Inflorescence of compound umbels; umbels 3.5–9 cm across; involucre bracts absent or few, linear; rays 6–15, unequal, 0.5–4.5 cm; bracteoles 8–12, ovate-lanceolate, shorter than flowers, puberulous; umbellules 15–20-flowered. Calyx-teeth obsolete. Petals white. Fruit ovoid, ca. 4 × 3 mm, sparsely pubescent; lateral ribs winged, wings rather thick; vittae 3–5 in each furrow, 6–10 on commissure.

Locality: Clear Water Bay, Sai Kung. *Y. S. Lau* 902; *F. W. Xing* 9255.

Distribution: Guangdong, Guangxi Guizhou, Sichuan, Gansu, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Grassy hillslopes, roadsides. Flowering & fruiting: Aug.

Uses: Medicinal (folklore).



Figure 251. *Peucedanum praeruptorum* Dunn

1. flowering branch; 2. basal leaf; 3. root; 4. involucre bracteole; 5. schizocarp; 6. cross section of schizocarp. (drawn by H. P. Yu)

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**LIST OF CONTRIBUTORS (VOLUME 2)** (*in alphabetical order*)

- DENG Yun-fei<sup>1</sup> 鄧雲飛 : Apiaceae (Umbelliferae), Araliaceae, Caesalpiniaceae, Podostemaceae
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- HU Shiu-ying<sup>3</sup> 胡秀英 : Aquifoliaceae
- HU Qi-ming<sup>1</sup> 胡啟明 : Balsaminaceae, Buxaceae, Crassulaceae, Elaeagnaceae, Haloragidaceae, Oxalidaceae, Proteaceae, Rhamnaceae
- LAI Chuen-chi, Patrick<sup>4</sup> 黎存志 : Vegetation of Hong Kong
- LI Ping-tao<sup>2</sup> 李秉滔 : Pandaceae, Euphorbiaceae
- TANG Wing-sze<sup>4</sup> 鄧詠詩 : Sonneratiaceae
- WEN Xiang-ying<sup>1</sup> 文香英 : Melastomataceae
- Winnie P. W. KWOK<sup>4</sup> 郭碧雲 : Sonneratiaceae
- WU De-lin<sup>1</sup> 吳德鄰 : Fabaceae (Papilionaceae), Celastraceae, Icacinaceae, Lythraceae, Mimosaceae
- XIA Nian-he<sup>1</sup> 夏念和 : Aceraceae, Alangiaceae, Anacardiaceae, Balanophoraceae, Burseraceae, Caesalpiniaceae, Combretaceae, Connaraceae, Cornaceae (incl. Nyssaceae), Geraniaceae, Grossulariaceae, Hydrangeaceae (incl. Philadelphaceae), Ixonanthaceae, Loranthaceae, Malpighiaceae, Meliaceae, Myrtaceae, Olacaceae, Onagraceae, Opiliaceae, Pittosporaceae, Podostemaceae, Polygalaceae, Punicaceae, Rhizophoraceae, Rosaceae, Rutaceae, Santalaceae, Sapindaceae, Saxifragaceae, Simaroubaceae, Staphyleaceae, Thymelaeaceae, Tropaeolaceae, Viscaceae, Vitaceae, Xanthophyllaceae
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- YIP Kwok-leung<sup>4</sup> 葉國樑 : Sonneratiaceae; Vegetation of Hong Kong

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Burmanniaceae	水玉簪科	387	4	Ginkgoaceae	銀杏科	G1	1
Burseraceae	橄欖科	260	2	Gnetaceae	買麻藤科	G17	1
Buxaceae	黃楊科	234	2	Goodeniaceae	草海桐科	315	3
Cactaceae	仙人掌科	72	1	Gramineae (see Poaceae)	禾本科	358	4
Caesalpiniaceae	蘇木科	184	2	Grossulariaceae	鼠刺科	169	2
Callitrichaceae	水馬齒科	294	3	Guttiferae (see Clusiaceae)	山竹子科	100	1
Calycanthaceae	臘梅科	15	1	Haloragaceae	小二仙草科	189	2
Campanulaceae	桔梗科	311	3	Hamamelidaceae	金縷梅科	45	1
Cannabaceae	大麻科	52	1	Hernandiaceae	蓮葉桐科	18	1
Cannaceae	美人蕉科	369	4	Hydrangeaceae (incl. Philadelphaceae)	繡球花科	167	2
Capparaceae	白花菜科	136	1	Hydrocharitaceae	水蘆科	327	4
Caprifoliaceae	忍冬科	318	3	Icacinaceae	茶茱萸科	229	2
Caricaceae	番木瓜科	127	1	Illiciaceae	八角科	23	1
Caryophyllaceae	石竹科	78	1	Iridaceae	鳶尾科	376	4
Casuarinaceae	木麻黃科	66	1	Ixonanthaceae	黏木科	243	2
Celastraceae	衛矛科	223	2	Juglandaceae	胡桃科	59	1
Cephalotaxaceae	三尖杉科	G9	1				

Family		Family No.	Volume No.	Family		Family No.	Volume No.
Juncaceae	燈心草科	355	4	Polemoniaceae	花蔥科	287	3
Labiatae (see Lamiaceae)	唇形科	292	3	Polygalaceae	遠志科	250	2
Lamiaceae (Labiatae)	唇形科	292	3	Polygonaceae	蓼科	79	1
Lardizabalaceae	木通科	34	1	Pontederiaceae	雨久花科	372	4
Lauraceae	樟科	17	1	Portulacaceae	馬齒莧科	75	1
Lemnaceae	浮萍科	345	4	Potamogetonaceae	眼子菜科	331	4
Lentibulariaceae	狸藻科	308	3	Primulaceae	報春花科	158	1
Liliaceae (incl. Amaryllidaceae)	百合科	375	4	Proteaceae	山龍眼科	187	2
Loganiaceae	馬錢科	275	3	Punicaceae	安石榴科	200	2
Loranthaceae	桑寄生科	215	2	Ranunculaceae	毛茛科	30	1
Lythraceae	千屈菜科	192	2	Rhamnaceae	鼠李科	238	2
Magnoliaceae	木蘭科	6	1	Rhizophoraceae	紅樹科	205	2
Malpighiaceae	金虎尾科	246	2	Rosaceae	薔薇科	177	2
Malvaceae	錦葵科	105	1	Rubiaceae	茜草科	316	3
Marantaceae	竹芋科	370	4	Ruppiaceae	川蔓藻科	332	4
Melastomataceae	野牡丹科	203	2	Rutaceae	芸香科	266	2
Meliaceae	楝科	265	2	Sabiaceae	清風藤科	37	1
Menispermaceae	防己科	35	1	Salicaceae	楊柳科	134	1
Menyanthaceae	苜蓿科	286	3	Santalaceae	檀香科	213	2
Mimosaceae	含羞草科	183	2	Sapindaceae	無患子科	257	2
Molluginaceae	粟米草科	77	1	Sapotaceae	山欖科	151	1
Moraceae	桑科	53	1	Sargentodoxaceae	大血藤科	33	1
Musaceae	芭蕉科	365	4	Saururaceae	三白草科	20	1
Myoporaceae	苦檻藍科	301	3	Saxifragaceae	虎耳草科	176	2
Myricaceae	楊梅科	60	1	Schisandraceae	五味子科	24	1
Myrsinaceae	紫金牛科	157	1	Scrophulariaceae	玄參科	299	3
Myrtaceae	桃金娘科	199	2	Simaroubaceae	苦木科	263	2
Najadaceae	茨藻科	333	4	Smilacaceae	菝葜科	384	4
Nelumbonaceae	蓮科	25	1	Solanaceae	茄科	282	3
Nepenthaceae	豬籠草科	108	1	Sonneratiaceae	海桑科	191	2
Nyctaginaceae	紫茉莉科	69	1	Staphyleaceae	省沽油科	253	2
Nymphaeaceae	睡蓮科	26	1	Stemonaceae	百部科	383	4
Nyssaceae	藍果樹科	202	2	Sterculiaceae	梧桐科	103	1
Olaceae	鐵青樹科	211	2	Strelitziaceae	旅人蕉科	363	4
Oleaceae	木犀科	298	3	Stylidiaceae	花柱草科	312	3
Onagraceae	柳葉菜科	201	2	Styracaceae	安息香科	153	1
Opiliaceae	山柑子科	212	2	Symplocaceae	山礬科	155	1
Orchidaceae	蘭科	389	4	Taccaceae	蒟蒻薯科	382	4
Orobanchaceae	列當科	302	3	Tamaricaceae	檉柳科	119	1
Oxalidaceae	酢漿草科	268	2	Taxodiaceae	杉科	G5	1
Palmae (see Arecaceae)	棕櫚科	340	4	Theaceae	山茶科	88	1
Pandaceae	攀打科	236	2	Thymelaeaceae	瑞香科	197	2
Pandanaceae	露兜樹科	342	4	Tiliaceae	椴樹科	102	1
Papaveraceae	罌粟科	38	1	Triuridaceae	霉草科	339	4
Papilionaceae (see Fabaceae)	蝶形花科	185	2	Tropaeolaceae	旱金蓮科	271	2
Passifloraceae	西番蓮科	125	1	Typhaceae	香蒲科	361	4
Pedaliaceae	胡麻科	305	3	Ulmaceae	榆科	51	1
Pentaphragmataceae	五列木科	91	1	Umbelliferae (see Apiaceae)	傘形科	274	2
Philydraceae	田蔥科	371	4	Urticaceae	蕁麻科	55	1
Phytolaccaceae	商陸科	67	1	Verbenaceae	馬鞭草科	291	3
Pinaceae	松科	G3	1	Violaceae	堇菜科	118	1
Piperaceae	胡椒科	21	1	Viscaceae	槲寄生科	216	2
Pittosporaceae	海桐花科	165	2	Vitaceae	葡萄科	240	2
Plantaginaceae	車前草科	296	3	Xanthophyllaceae	黃葉樹科	251	2
Platanaceae	懸鈴木科	44	1	Xyridaceae	黃眼草科	347	4
Plumbaginaceae	白花丹科	80	1	Zamiaceae	澤米蘇鐵科	G14	1
Poaceae (Gramineae)	禾本科	358	4	Zingiberaceae	薑科	367	4
Podocarpaceae	羅漢松科	G8	1	Zosteraceae	大葉藻科	337	4
Podostemaceae	川苔草科	188	2				