

## 18. PINANGA Blume, Bull. Sci. Phys. Nat. Néerlande 1: 65. 1838.

山槟榔属 shan bin lang shu

*Pseudopinanga* Burret.

Stems clustered or less often solitary, ringed with prominent leaf scars, tall to short or subterranean. Leaves 5–11, pinnate or occasionally undivided; leaf sheaths closed, forming a prominent, yellowish to reddish green crownshaft (rarely open and not forming crownshafts), usually covered with variously colored scales; pinnae regularly arranged along rachis, spreading in same plane, linear to sigmoid, 1- to several veined, at leaf apex pinnae joined with only a short split at tip, giving pinnae a lobed appearance. Inflorescences branched to 1 order, with a few rachillae, sometimes spicate, borne below crownshaft, rarely among leaves, covered initially with prophyll; rachillae becoming pendulous, seldom remaining erect, usually smooth, sometimes hairy; flowers unisexual, borne throughout in triads of 1 female flower flanked by 2 male flowers, these arranged distichously along rachillae, or less often tristichously or spirally. Fruits red, orange, or black, small, ellipsoid to globose or spindle-shaped, commonly beaked, 1-seeded, ripening through a series of colors, commonly from green to pink to red to black; endosperm ruminant, rarely homogeneous; germination adjacent; eophylls bifid.

About 137 species: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Thailand, Vietnam; five species (one endemic) in China.

The record in FRPS (13(1): 140. 1991) of *Pinanga hexasticha* (Kurz) Scheffer is probably based on a misidentification. *Pinanga hexasticha* is restricted to Myanmar.

- 1a. Inflorescences with 1 rachilla; flower triads and fruits spirally or tristichously arranged along rachilla.
  - 2a. Rachilla triangular in cross section; flowers and fruits tristichously arranged along rachilla ..... 1. *P. gracilis*
  - 2b. Rachilla rounded in cross section; flowers and fruits spirally arranged along rachilla ..... 2. *P. acuminata*
- 1b. Inflorescences with more than 1 rachilla, rarely with 1 rachilla; flower triads and fruits distichously arranged along rachillae.
  - 3a. Rachillae ca. 30 ..... 3. *P. tashiroi*
  - 3b. Rachillae 1–8.
    - 4a. Pinnae 10–28 per side of rachis; rachillae 3–8 ..... 4. *P. sylvestris*
    - 4b. Pinnae 3–6 per side of rachis, or rarely leaf undivided; rachillae 1–4 ..... 5. *P. baviensis*

### 1. *Pinanga gracilis* Blume, Rumphia 2: 77. 1839.

纤细山槟榔 xian xi shan bin lang

*Areca gracilis* Roxburgh, Fl. Ind., ed. 1832, 3: 619. 1832, not Buchanan-Hamilton (1826); *Nenga gracilis* (Blume) Baccari; *Pinanga patula* Blume var. *gracilis* (Blume) Scheff.; *Seaforthia gracilis* (Blume) Martius.

Stems clustered, to 4 m tall, ca. 1.5 cm in diam., reddish brown. Leaves pinnate, rarely undivided; sheaths closed and forming crownshafts, 21–34 cm, green with reddish brown scales; petioles 9–13 cm; rachis 40–60 cm; pinnae (1)–3–8 per side of rachis, green abaxially, sigmoid, regularly arranged, distantly spaced; middle pinnae to 55 × 3–10 cm. Inflorescences spicate, pendulous; peduncles 1.4–4 × 0.5–0.6 cm; rachis absent; rachilla 1, 12–17 cm, straight, triangular in cross section, glabrous; triads tristichously arranged, superficial on rachilla; male flowers to 8 mm, deciduous; sepals to 1 mm, connate at base into a 3-lobed cupule; petals to 8 mm, valvate; stamens ca. 35; female flowers to 2.5 mm; sepals to 2.5 mm, rounded at apex, ciliate; petals to 2.5 mm, ciliate. Fruits red, ellipsoid, to 1.8 × 1 cm.

Lowland to montane rain forests; below 1200 m. Xizang [Bangladesh, Bhutan, India, Myanmar, Nepal].

### 2. *Pinanga acuminata* A. J. Henderson, Makinoa, n.s., 6: 2. 2007.

滇缅山槟榔 dian mian shan bin lang

Stems clustered, to 5 m tall, 1.5–2 cm in diam., yellowish. Leaves pinnate; sheaths closed and forming crownshafts, to 25 cm, yellowish green with reddish brown scales; petioles to 30 cm; rachis 45–65 cm; pinnae 6–9 per side of rachis, green abaxially, sigmoid, multi-veined, regularly arranged, distantly spaced; middle pinnae 30–39 × 2.5–4 cm. Inflorescences spicate, pendulous or rarely erect; peduncles 1.5–2 × 0.4–0.5 cm; rachis absent; rachilla 1, 11–19 cm, straight, rounded in cross section, glabrous; triads spirally arranged, sunken in rachilla; male flowers to 6 mm, semipersistent; sepals to 1.5 mm, connate at base into a 3-lobed cupule; petals to 6 mm, triangular, valvate; stamens not seen; female flowers ca. 3 mm; sepals ca. 3 mm, acuminate, scarcely ciliate; petals ca. 3 mm, ciliate. Fruits red, ellipsoid, to 1.8 × 1 cm.

Lowland rain forests; below 1000 m. Yunnan [Myanmar].

### 3. *Pinanga tashiroi* Hayata, Icon. Pl. Formosan. 3: 196. 1913.

兰屿山槟榔 lan yu shan bin lang

*Pseudopinanga tashiroi* (Hayata) Burret.

Stems clustered or solitary, to 5 m tall, to 5 cm or more in diam., swollen at bases. Leaves pinnate; sheaths closed and forming crownshafts, to 1 m, green with reddish brown scales; petioles to 60 cm; rachis to 1.5 m; pinnae many per side of rachis, green abaxially, linear, multi-veined, regularly arranged; middle pinnae to 60 × 2–2.5 cm. Inflorescences branched, pendulous; peduncles not seen; rachis not seen; rachillae ca. 30, to

21 cm, glabrous; triads distichously arranged, superficial on rachillae; male flowers 10–11 mm, deciduous; sepals connate into a 3-lobed calyx; petals to 10 mm; stamens 36–42; female flowers ca. 5 mm; sepals ca. 3 mm, rounded at apex, ciliate; petals ca. 3 mm, ciliate. Fruits red, ovoid to globose, to 1.8 × 1.2 cm.

- Lowland rain forests; below 500 m. Taiwan (Lan Yu).

The seeds are chewed as a substitute for betel nut.

**4. *Pinanga sylvestris* (Loureiro) Hodel, Palm J. 139: 55. 1998.**

华山竹 hua shan zhu

*Areca sylvestris* Loureiro, Fl. Cochinch. 2: 568. 1790; *Pinanga chinensis* Beccari; *P. macroclada* Burret; *Ptychosperma sylvestre* (Loureiro) Miquel; *Seaforthia sylvestris* (Loureiro) Blume ex Martius.

Stems clustered, to 6 m tall, 1.5–3.5 cm in diam., reddish brown. Leaves pinnate; sheaths closed and forming crownshafts, 17–45 cm, green or yellowish with reddish scales; petioles 10–25 cm; rachis 1–1.3 m; pinnae 10–28 per side of rachis, green abaxially, linear, distantly spaced, regularly arranged; middle pinnae 39–60 × 2–5 cm. Inflorescences branched, pendulous, occasionally erect; peduncles 2.5–6 × ca. 0.7 cm; rachis 0.5–2.5 cm; rachillae 3–8, 9–26 cm, zigzag, triangular in cross section, glabrous; triads distichously arranged, superficial on rachillae; male flowers not seen; female flowers to 3 mm; sepals to 3 mm, rounded at apex, ciliate; petals to 3 mm, ciliate. Fruits red, ellipsoid, 1.4–1.8 × 0.5–0.7 cm.

*Archontophoenix* H. Wendland & Drude (假槟榔属 jia bin lang shu). One species is cultivated in tropical and subtropical areas of Fujian, Guangdong, Guangxi, Hainan, Taiwan, and Yunnan: *A. alexandrae* (F. Mueller) H. Wendland & Drude (Linnaea 39: 212. 1875; *Ptychosperma alexandrae* F. Mueller, Fragm. 5(33): 47. 1865; 假槟榔 jia bin lang), native to Australia.

*Borassus* Linnaeus (糖棕属 tang zong shu). One species is cultivated in S Yunnan (Xishuangbanna): *B. flabellifer* Linnaeus (Sp. Pl. 2: 1187. 1753; 糖棕 tang zong), native to Bangladesh, Cambodia, India, Indonesia, Laos, Myanmar, Sri Lanka, Thailand, and Vietnam.

*Butia* (Beccari) Beccari (布迪椰子属 bu di ye zi shu). One species is cultivated as an ornamental: *B. capitata* (Martius) Beccari (Agric. Colon. 10: 507. 1916; *Cocos capitata* Martius, Hist. Nat. Palm. 2: 114. 1826; 布迪椰子 bu di ye zi), native to Brazil and Uruguay.

*Corypha* Linnaeus (贝叶棕属 bei ye zong shu). One species is cultivated in S Yunnan (Xishuangbanna): *C. umbraculifera* Linnaeus (Sp. Pl. 2: 1187. 1753; 贝叶棕 bei ye zong), native to India and Sri Lanka.

*Dypsis* Noronha ex Martius (散尾葵属 san wei kui shu). One species is cultivated in S China: *D. lutescens* (H. Wendland) Beentje & J. Dransfield (Palms Madagascar, 212. 1995; *Chrysalidocarpus lutescens* H. Wendland, Bot. Zeitung 36: 117. 1878; 散尾葵 san wei kui), native to Madagascar.

*Elaeis* Jacquin (油棕属 you zong shu). One species is cultivated in Hainan, Taiwan, and Yunnan: *E. guineensis* Jacquin (Select. Stirp. Amer. Hist. 280. 1763; 油棕 you zong), native to W Africa but now very widely grown for its oil-rich fruits.

Lowland and montane rain forests; 100–1700 m. Yunnan [Cambodia, Laos, Myanmar, Thailand].

**5. *Pinanga baviensis* Beccari, Webbia 3: 193. 1910.**

变色山槟榔 bian se shan bin lang

*Pinanga discolor* Burret; *P. sinii* Burret; *P. viridis* Burret.

Stems clustered, to 5 m tall, 0.8–2.5 cm in diam., reddish brown. Leaves pinnate, rarely undivided; sheaths closed and forming crownshafts, 18–34 cm, green or yellowish green, with brown scales; petioles 7–33 cm; rachis 32–100 cm; pinnae (1–)3–12 per side of rachis, gray-green abaxially, falcate, not contracted at bases, multi-veined, regularly arranged, closely spaced; middle pinnae 30–39 × 3–7 cm. Inflorescences branched, pendulous; peduncles 2–3 cm, ca. 0.4 cm wide; rachis 0–0.5 cm; rachillae (1 or)2–5, 10–15 cm, zigzag, rectangular in cross section, glabrous; triads distichously arranged, superficial on rachillae; male flowers to 13 mm, deciduous; sepals to 3.5 mm, connate into a 3-lobed, flat, membranous calyx; petals to 12 mm, unequal, triangular, fleshy, acute; stamens 20 or 21; female flowers to 3 mm; sepals to 3 mm, imbricate, rounded at apices or briefly acuminate, smooth or ciliate; petals to 3 mm, smooth or ciliate. Fruits red, ellipsoid, to 2.5 × 0.8–1 cm.

Lowland rain forests. Fujian, Guangdong, Guangxi, Hainan, Yunnan [Vietnam].

**Cultivated taxa**

*Hyophorbe* Gaertner (酒瓶椰子属 jiu ping ye zi shu). One species is becoming a common street tree in Hainan: *H. lagenicaulis* (L. H. Bailey) H. E. Moore (Principes 20: 119. 1976; *Mascarena lagenicaulis* L. H. Bailey, Gentes Herb. 6: 74. 1942; 酒瓶椰子 jiu ping ye zi), native to Round Island, Mauritius.

*Raphia* P. Beauvois (酒椰属 jiu ye shu). One species is recorded as cultivated in China: *R. vinifera* P. Beauvois (Fl. Oware 1: 77. 1806; 酒椰 jiu ye), native to W Africa.

*Roystonea* O. F. Cook (王棕属 wang zong shu). Two species are recorded as cultivated in China: *R. oleracea* (Jacquin) O. F. Cook (Bull. Torrey Bot. Club 28: 554. 1901; *Areca oleracea* Jacquin, Select. Stirp. Amer. Hist. 278. 1763; 菜王棕 cai wang zong) and *R. regia* (Kunth) O. F. Cook (Science, n.s., 12: 479. 1900; *Oreodoxa regia* Kunth in Humboldt et al., Nov. Gen. Sp. 1, ed. 4<sup>o</sup>: 305. 1816; 大王椰子 da wang ye zi), both native to the Caribbean region.

*Sabal* Adanson (箬棕属 ruo zong shu). Two species are recorded as cultivated in China: *S. minor* (Jacquin) Persoon (Syn. Pl. 1: 399. 1805; *Corypha minor* Jacquin, Hort. Bot. Vindob. 3: 8. 1776; *Chamaerops acaulis* Michaux; 小箬棕 xiao ruo zong) and *S. palmetto* (Walter) Loddiges ex Schultes & J. H. Schultes (Syst. Veg. 7: 1487. 1830; *Corypha palmetto* Walter, Fl. Carol. 119. 1788; 箬棕 ruo zong), both native to SE United States.

*Syagrus* Martius (金山葵属 jin shan kui shu). One species is cultivated in S China: *S. romanzoffiana* (Chamisso) Glassman (Fieldiana, Bot. 31: 382. 1968; *Cocos romanzoffiana* Chamisso, Chor. Voy. Pittor. 5. 1822; 皇后葵 huang hou kui), native to Brazil.

*Washingtonia* Rafinesque (华盛顿棕属 hua sheng dun zong shu).

One species is cultivated in Fujian, Guangdong, Taiwan, and Yunnan: *W. filifera* (Linden ex André) H. Wendland (Bot. Zeitung (Berlin) 37: lxi, 68. 1880; *Pritchardia filifera* Linden ex André, Ill. Hort. 24: 32. 1877; 毛华盛顿棕 mao hua sheng dun zong), native to Mexico (Baja California) and the United States (Arizona, California); and one species is cultivated in S China: *W. robusta* H. Wendland (Gart.-Zeitung (Berlin) 2: 198. 1883; 华盛顿棕 hua sheng dun zong), native to Mexico (Baja California, Sonora).

There are many newly introduced palm species cultivated in China as ornamental and indoor plants.

