Fl. China 23: 151–152. 2010.

14. ARENGA Labillardière, Bull. Sci. Soc. Philom. Paris 2: 162. 1800, nom. cons.

桄榔属 guang lang shu

Blancoa Blume (1843), not Lindley (1840); *Didymosperma* H. Wendland & Drude; *Gomutus* Corrêa; *Saguerus* Steck.

Understory shrubs to large trees. Stems clustered, sometimes spreading by stolons, less often solitary, usually covered with persistent, fibrous leaf bases. Leaves 5–30, pinnate, seldom undivided; leaf sheaths open, fibrous, commonly persisting on stems; petioles usually covered with distinctive scales; pinnae linear to rhomboid, sometimes lobed on margins, always jagged at apices, bases sometimes with an ear-shaped projection overlapping rachis; pinnae regularly or irregularly arranged, basal few borne in clusters, silvery gray abaxially. Plants usually semelparous; flowering proceeding from top of stem downward (basipetal), rarely in opposite direction (acropetal). Inflorescences branched to 2 orders, rarely spicate, borne among leaves, usually unisexual by suppression of either female or male flowers, solitary or rarely several at a node, covered with several persistent bracts, female inflorescences commonly produced first at apex of stem, and male ones later, below; rachillae 1–100 or more; flowers borne in triads with a central female flower and 2 lateral male flowers. Fruits red, yellowish, or purplish, large, ellipsoid, globose, ovoid, or oblong, 1–3-seeded; mesocarp with irritant crystals of calcium oxalate; endosperm homogeneous; germination remote; eophylls undivided or bifid with jagged margins.

Twenty-one species: from India through SE Asia reaching to New Guinea and Australia; six species (two endemic, one introduced) in China.

1a. Pinnae fewer, to 10 per side of rachis, variously shaped, often rhomboid or lobed, less often linear, without ears at bases.
  2a. Inflorescences with 2–8 rachillae ..... 5. *A. longicarpa*
  2b. Inflorescences with 1(–3) rachillae ..... 6. *A. caudata*
1b. Pinnae many, to 150 per side of rachis, linear, usually with ears at bases.
  3a. Stems clustered ..... 1. *A. engleri*
  3b. Stems solitary.
    4a. Stems to 20 m tall; pinnae irregularly arranged and spreading in different planes; cultivated ..... 2. *A. pinnata*
    4b. Stems to 12 m tall; pinnae regularly arranged and spreading in same plane; naturally occurring.
      5a. Stems to 12 m tall (lowland forests, usually below 600 m) ..... 3. *A. westerhoutii*
      5b. Stems to 8 m tall (montane forests, 1400–2200 m) ..... 4. *A. micrantha*

1. Arenga engleri Beccari, Malesia 3: 184. 1889.

山棕 shan zong

Didymosperma engleri (Beccari) Warburg.

Stems clustered, to 4 m tall, 10–15 cm in diam. Leaf petioles to 1.8 m; rachis to 3 m; pinnae 38–41 per side of rachis, linear, very briefly lobed along margins, without ears at bases, regularly arranged and spreading in same plane except for basal few pinnae; middle pinnae 43–49 cm, ca. 2 cm wide at mid-point. Inflorescences to 60 cm; male rachillae many, 9–27 cm; male flowers 8–14 mm; sepals 2–3 mm; petals 9–14 mm; stamens 25–37; female rachillae many, 27–32 cm; female flowers ca. 3 mm; sepals ca. 2.5 mm; petals ca. 3 mm. Fruits orange or red, globose, ca. 1.5 cm in diam.

● Open places or lowland rain forests; below 900 m. Taiwan; cultivated in other areas.

2. Arenga pinnata (Wurmb) Merrill, Interpr. Herb. Amboin. 119. 1917.

砂糖椰子 sha tang ye zi

Saguerus pinnatus Wurmb, Verh. Batav. Genootsch. Kunst. 1: 351. 1779; *Arenga gamuto* Merrill; *A. griffithii* Seemann ex H. Wendland; *A. saccharifera* Labillardière; *Borassus gomutus* Loureiro; *Caryota onusta* Blanco; *Gomutus rumphii* Corrêa; *G. saccharifer* (Labillardière) Sprengel; *G. vulgaris* Oken; *S. gamuto* Houttuyn; *S. rumphii* (Corrêa) Roxburgh; *S. saccharifer* (Labillardière) Blume; *Sagus gomutus* (Loureiro) Perrottet.

Stems solitary, to 20 m tall, 40–60 cm in diam. Leaf petioles to 1.5 m; rachis to 5 m; pinnae to 150 per side of rachis, linear, with ears at bases, irregularly arranged and spreading in different planes; middle pinnae 120–160 cm, 5–9 cm wide at mid-point. Inflorescences to 2.5 m; male rachillae 40–50, to 40 cm; male flowers 12–15 mm; sepals ca. 5 mm; petals ca. 12 mm; stamens 60–120; female rachillae 40–50, ca. 30 cm; female flowers 10 mm; sepals ca. 2 mm; petals ca. 4 mm. Fruits greenish, yellowish, or orangish, globose to ovoid, to 7 × 6 cm.

Cultivated near villages or in towns. Fujian (Xiamen), Guangdong (Guangzhou), Hainan, Yunnan [native to NE India (Assam), Indonesia, Malaysia, Myanmar, Philippines, and Thailand; introduced elsewhere].

Arenga pinnata, the "sugar palm," was formerly an important source of sugar derived from tapping the inflorescences, especially in Malaysia and Indonesia. Tapping is still carried out on a local scale. There are many other minor uses. It is relatively rare in China and only occasionally planted.

3. Arenga westerhoutii Griffith, Calcutta J. Nat. Hist. 5: 474. 1845.

桄榔 guang lang

Saguerus westerhoutii (Griffith) H. Wendland & Drude.

Stems solitary, to 12 m tall, 40–60 cm in diam. Leaf peti-

oles 1–1.8 m; rachis 3–4 m; pinnae 80–150 per side of rachis, linear, with ears at bases, regularly arranged and spreading in same plane except for basal few pinnae; middle pinnae to 130 cm, to 9.5 cm wide at mid-point. Inflorescences to 3 m; male rachillae 60–70, to 60 cm; male flowers 20–25 mm; sepals 4–6 mm; petals 20–25 mm; stamens 200–300; female rachillae ca. 40, 80–120 cm; female flowers to 10 mm; sepals ca. 5 mm; petals ca. 10 mm. Fruits greenish black, globose, to 7 cm in diam.

Lowland rain forests; below 600(–1400) m. Guangxi, Hainan, Yunnan [Cambodia, Laos, Malaysia (Peninsular), Myanmar, Thailand, Vietnam].

Arenga westerhoutii is quite common in Yunnan, where it can be easily identified by its large size and regularly arranged leaflets. The leaves are used for thatching, and the palm heart is occasionally eaten.

4. Arenga micrantha C. F. Wei, Acta Phytotax. Sin. 26: 404. 1988.

小花桄榔 xiao hua guang lang

Stems solitary, 2–8 m tall, to 15 cm in diam. Leaf petioles to 1 m; rachis to 2 m; pinnae many per side of rachis, linear-lanceolate, very briefly lobed along margins, with ears at bases, regularly arranged and spreading in same plane except for basal few pinnae; middle pinnae 30–36 cm, 3–4 cm wide at mid-point. Inflorescences 80–100 cm; male rachillae to 100, to 17 cm; male flowers 4–5.5 mm; sepals ca. 2 mm; petals ca. 5.5 mm; stamens 9–23; female inflorescences not known. Fruits not known.

Montane rain forests; 1400–2200 m. Xizang [Bhutan, India].

5. Arenga longicarpa C. F. Wei, Acta Bot. Austro Sin. 4: 7. 1989.

长果桄榔 chang guo guang lang

Stems clustered, 2–3 m tall, to 7 cm in diam. Leaf petioles 2–2.5 m; rachis to 2 m; pinnae few per side of rachis, rhomboid, lobed along distal margins, without ears at bases, regularly arranged and spreading in same plane except for basal few pinnae; middle pinnae to 40 cm, to 5 cm wide at mid-point. Inflorescences to 50 cm; male rachillae 2–8, to 20 cm; male flowers 8–9 mm; sepals to 3 mm; petals ca. 15 mm; stamens 6–20; female rachillae 2–8, to 35 cm; female flowers not known. Fruits red to purple, ovoid to oblong, curved, ca. 1.8 × 1 cm.

● Lowland rain forests or secondary forests; below 800 m. Guangdong.

6. Arenga caudata (Loureiro) H. E. Moore, Principes 4: 114. 1960.

双籽棕 shuang zi zong

Borassus caudatus Loureiro, Fl. Cochinch. 2: 619. 1790 [*"caudata"*]; *Arenga hookeriana* (Beccari) Whitmore; *Blancoa caudata* (Loureiro) Kuntze; *Didymosperma caudatum* (Loureiro) H. Wendland & Drude; *D. caudatum* var. *stenophyllum* Beccari; *D. caudatum* var. *tonkinense* Beccari; *D. hookerianum* Beccari; *D. tonkinense* (Beccari) Beccari ex Gagnepain; *Wallichia caudata* (Loureiro) Martius.

Stems clustered, to 1.5 m tall, 1–2 cm in diam. Leaf petioles to 0.4 m; rachis to 0.5 m; pinnae to 10 per side of rachis, linear to rhomboid (rarely blade undivided), briefly lobed along margins and with elongate apices, without ears at bases, regularly arranged and spreading in same plane except for basal few pinnae; middle pinnae to 20 cm, to 7 cm wide at mid-point. Inflorescences to 50 cm; male rachillae 1(–3), 16–20 cm; male flowers 5–8 mm; sepals ca. 1 mm; petals 5–8 mm; stamens 13–15; female rachilla 1, to 30 cm; female flowers ca. 5 mm; sepals ca. 1 mm; petals 2–3 mm. Fruits red, ellipsoid to oblong, ca. 1.5 × 0.8 cm.

Lowland rain forests or deciduous forests, sometimes on limestone outcrops; below 700 m. Guangxi, Hainan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

The leaves are used to weave hats.

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