

2. BRUGUIERA Savigny in Desrousseaux et al., Encycl. 4: 696. 1798.

木榄属 mu lan shu

Trees, producing kneelike pneumatophores. Trunk basally buttressed, often with a cone of stilt roots at base. Leaf scars showing evidence of 3 vascular bundles. Leaves entire. Inflorescences cymes, 1–5-flowered, pedunculate. Flowers generally nodding. Calyx accrescent, tube extending beyond ovary; lobes 8–14(–16), subulate-lanceolate. Petals as many as calyx lobes, usually 2-lobed, fringed with hairs and/or bristles. Stamens $2 \times$ as many as petals, in unequal pairs opposite petals, each pair enclosed by inrolled petal margins; anthers introrse, dehiscing lengthwise. Ovary inferior, 2–4-loculed; ovules 2 per locule; style lobes 2–4. Fruit campanulate. Seed usually solitary, viviparous; hypocotyl terete or obscurely ribbed.

Six species: E Africa, SE Asia, N Australia, Indian Ocean islands, Pacific islands; three species in China.

- 1a. Flowers 2 or 3 in pedunculate cymes, ca. 2 cm; bristles in sinus between petal lobes far exceeding lobes 3. *B. cylindrica*
1b. Flowers solitary, 3–4 cm; bristles in sinus between petal lobes not exceeding lobes.
2a. Petal lobes acute, spreading to ascending; bristles 3 or 4 per petal lobe, 2–3 mm, distinctly exceeding petal lobes; mature calyx red or pinkish red, ribbed only apically 1. *B. gymnorhiza*
2b. Petal lobes obtuse, reflexed; bristles 1 or 2(or 3) per petal, 0.5–1.2 mm, not or barely exceeding petal lobes; mature calyx yellow, distinctly ribbed at base 2. *B. sexangula*

1. *Bruguiera gymnorhiza* (Linnaeus) Savigny in Desrousseaux et al., Encycl. 4: 696. 1798.

木榄 mu lan

Rhizophora gymnorhiza Linnaeus, Sp. Pl. 1: 443. 1753;
Bruguiera conjugata (Linnaeus) Merrill; *R. conjugata* Linnaeus.

Trees 6–20 m tall, d.b.h. 30–60 cm. Bark gray, deeply fissured. Stipules often reddish, ca. 4 cm, interpetiolar, caducous. Petiole 2–4.5 cm; leaf blade elliptic-oblong, 8–21 \times 4–7(–9) cm, leathery, glabrous, base cuneate to rarely obtuse, apex acute. Pedicel 1–2.5 cm. Flowers in axils of upper leaves, solitary, red or pinkish red, ca. 3 cm. Calyx lobes 10–14, linear, 1.5–2 cm, glabrous. Petals 12–14, 1.3–1.5 cm, outer margin fringed with white silky hairs; sinus bristles 3 or 4 per petal, 2–3 mm, distinctly exceeding petals. Stamens twice as many as petals, 8–11 mm; filaments filiform; anthers linear to lanceolate, 4–5 mm. Disk cup-shaped. Ovary inferior, 3-loculed; style filiform, ca. 1.5 cm; stigma lobes 3 or 4. Fruit adnate to calyx tube, ca. 2.5 mm; persistent calyx on fruit or hypocotyls ribbed only apically. Seed 1, viviparous. Hypocotyl cigar-shaped, slightly angular, 15–25 \times 1.5–2 cm. Fl. May–Jun. $2n = 26$.

Mangrove forests; sea level. S Fujian, Guangdong, S Guangxi, Hainan, SW Taiwan (extinct) [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].

Bruguiera gymnorhiza and *Ceriops tagal* were originally found among the mangroves of Gaoxiong (Kaohsiung) lagoon, Taiwan. Both species completely disappeared after 12 years (1956–1968) of expansion and second-stage construction of the harbor (1967–1977). The last gathering records indicate that in 1959 only 22 individuals of *B. gymnorhiza* and one individual of *C. tagal* remained in the lagoon (C. F. Hsieh, pers. comm.). According to C.-I Peng (pers. comm.), *B. gymnorhiza* disappeared from Taiwan in the 1960s.

2. *Bruguiera sexangula* (Loureiro) Poirét, Encycl., Suppl. 4: 262. 1816.

海莲 hai lian

Rhizophora sexangula Loureiro, Fl. Cochinch. 1: 297. 1790;

Bruguiera eriopetala Wight & Arnott; *B. sexangula* var. *rhylichopetala* W. C. Ko.

Trees 6–8(–15) m tall, d.b.h. 15–35 cm. Bark gray to pale brown, smooth. Stipules green or yellowish, 3.5–4 cm. Petiole yellowish, 1.5–3.5 cm; leaf blade elliptic, elliptic-oblong, or rarely oblanceolate, 8–13(–16) \times 3–6 cm, base cuneate to rarely obtuse, apex acute. Pedicel 6–12 mm. Flowers solitary, yellow, 2.7–4 cm. Calyx tube 1–1.5 cm; lobes 9–13, ca. 2 cm. Petals 1–1.5 cm, margin with a tuft of hairs, apex 2-lobed; lobes obtuse, with 1 or 2 short bristles less than 1.5 mm, bristles not exceeding lobes. Stamens 0.7–1.4 cm. Style 1.5–2.2 cm, apical branches to 0.5 mm. Fruit 1.5–1.8 cm. Fruiting calyx tube \pm distinctly ribbed. Hypocotyl cigar-shaped, \pm angular, 6–8 cm. Fl. autumn, fr. spring.

Mangrove forests; sea level. Hainan [Cambodia, India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Pacific islands].

3. *Bruguiera cylindrica* (Linnaeus) Blume, Enum. Pl. Javae 1: 93. 1827.

柱果木榄 zhu guo mu lan

Rhizophora cylindrica Linnaeus, Sp. Pl. 1: 443. 1753;
Bruguiera caryophylloides (N. L. Burman) Blume; *Rhizophora*
caryophylloides N. L. Burman.

Trees 10–15 m tall, d.b.h. 15–25 cm. Bark gray, smooth, with few lenticels. Stipules 2.5–3.5 cm. Petiole 1–3.5 cm; leaf blade elliptic, 7–17 × 2–8 cm, thin, secondary veins abaxially remote and thin, reticulate veins mostly obscure, base cuneate, apex acute. Cymes pedunculate, 2- or 3-flowered. Pedicel 1–4 mm. Flowers greenish, less than 2 cm. Calyx tube 4–6 × ca. 2 mm, not ribbed, smooth; lobes 7 or 8, ± as long as tube. Petals white but soon turning brown, 3–4 mm, 2-lobed, outer margins usually basally fringed with white hairs. Stamens 1.5–2.5 mm. Disk in open flowers not entirely lining calyx tube. Style 3–4 mm. Fruiting calyx tube ca. 1 cm, slightly ribbed; lobes recurved. Hypocotyl cylindric, often curved, 8–15 × ca. 0.5 cm. Fl. autumn, fr. winter–spring (and sporadically year-round).

Mangrove forests; sea level. Hainan [India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, New Guinea, Pacific islands].

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