

## MORACEAE

桑科 sang ke

Zhou Zhekun (周浙昆)<sup>1</sup>; Michael G. Gilbert<sup>2</sup>

Trees, shrubs, vines, or rarely herbs, frequently with milky or watery latex, sometimes spiny. Stipules present, frequently caducous. Leaves alternate, rarely opposite; petiole often present and well-defined; leaf blade simple, sometimes with cystoliths, margin entire or palmately lobed, venation pinnate or palmate. Inflorescences axillary, frequently paired, racemose, spicate, capitate, or rarely cymose, sometimes a fig or syconium with flowers completely enclosed within a hollow receptacle. Flowers unisexual (plants monoecious or dioecious), small to very small. Calyx lobes (1 or)2–4(–8), free or connate, imbricate or valvate. Corolla absent. Male flowers: stamens as many as and opposite to calyx lobes (except in *Artocarpus*), straight or inflexed in bud; anthers 1- or 2-loculed, crescent-shaped to top-shaped; pistillode (rudimentary sterile pistil) often present. Female flowers: calyx lobes usually 4; ovary superior, semi-inferior, or inferior, 1(or 2)-loculed; ovules 1 per locule, anatropous or campylotropous; style branches 1 or 2; stigmas usually filiform. Fruit usually a drupe, rarely an achene, enveloped by an enlarged calyx and/or immersed in a fleshy receptacle, often joined into a syncarp. Seed solitary; endosperm present or absent.

Between 37 and 43 genera and 1100–1400 species: widespread in tropical and subtropical areas, less common in temperate areas; nine genera and 144 species (26 endemic, five introduced) in China.

Economically, the most important species are those of *Morus* and *Maclura* associated with the production of silk. Some species in *Broussonetia*, *Maclura*, and *Morus* are important for paper making; some species in *Artocarpus*, *Ficus*, and *Morus* have edible fruit; and some species of *Artocarpus* and *Broussonetia* are used for furniture or timber.

Chang Siushih, Wu Chengyih & Cao Ziyu. 1998. Moroideae. In: Chang Siushih & Wu Chengyih, eds., Fl. Reipubl. Popularis Sin. 23(1): 1–219.

- 1a. Herbs, without latex; inflorescences a lax cyme ..... 1. *Fatoua*
- 1b. Trees, shrubs, or vines, with latex; inflorescences usually very compact, occasionally spikelike, very rarely a cyme.
  - 2a. Inflorescences a fig with many minute flowers completely enclosed within a hollow receptacle opening by an apical pore closed by scale-like bracts ..... 9. *Ficus*
  - 2b. Inflorescences a capitulum, spike, or raceme, rarely a cyme, or with flowers inserted on a discoid receptacle.
    - 3a. Material with male flowers.
      - 4a. Stamens straight in flower buds, rarely inflexed.
        - 5a. Male flower calyx tubular ..... 6. *Artocarpus*
        - 5b. Male flower calyx lobes free or nearly so.
          - 6a. Plants often armed with axillary spines, at least when young, often climbing, sometimes a small tree; flowers in a globose head ..... 7. *Maclura*
          - 6b. Plants unarmed, a large freestanding tree; flowers inserted on a discoid receptacle ..... 8. *Antiaris*
      - 4b. Stamens inflexed in flower buds.
        - 7a. Plant sometimes spiny, particularly on juvenile growth; bisexual inflorescences sometimes present; pistillode absent ..... 5. *Streblus*
        - 7b. Plant unarmed; bisexual inflorescences absent; pistillode often present.
          - 8a. Male flower calyx lobes imbricate ..... 2. *Morus*
          - 8b. Male flower calyx lobes valvate.
            - 9a. Leaf blade clearly 3–5-veined at base, often lobed, margin conspicuously toothed ..... 3. *Broussonetia*
            - 9b. Leaf blade strictly pinnately veined, never lobed, margin entire or inconspicuously toothed ..... 4. *Malaisia*
  - 3b. Material in fruit or with female flowers.
    - 10a. Inflorescences with an involucre of several overlapping bracts.
      - 11a. Large tree; infructescences with a single (rarely 2) drupe ± enclosed within a fleshy receptacle ..... 8. *Antiaris*
      - 11b. Climber; infructescences with drupe clearly exerted from an almost cupule-like infructescence .. 4. *Malaisia*
    - 10b. Inflorescences subtended by a few bracts, very small relative to flowers, or without any bracts.
      - 12a. Inflorescences 1–8-flowered; mature drupe usually surrounded by persistent, ± free sepals ..... 5. *Streblus*
      - 12b. Inflorescences many-flowered; fruit enclosed within a syncarp or fleshy perianth.
        - 13a. Leaf margins clearly toothed, rarely subentire and then with a long, slender infructescence.
          - 14a. Stigmas 2, equal (rarely subequal); calyx lobes imbricate ..... 2. *Morus*
          - 14b. Stigma solitary or with a vestigial second lobe; calyx lobes valvate ..... 3. *Broussonetia*
        - 13b. Leaf margin entire or shallowly crenate.

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MORACEAE

- 15a. Trees to 40 m high, rarely less than 8 m, without spines; bracteoles and perianth without glands; mature syncarp (3–)5–15 or more cm ..... 6. *Artocarpus*
- 15b. Plants climbing or if erect, a shrub or small tree less than 7 m high, often with axillary spines, at least when young; bracteoles and perianth with yellow glands; mature syncarp 1.5–2.5(–5) cm ..... 7. *Maclura*

**1. FATOUA Gaudichaud-Beaupré, Voy. Uranie, Bot. 509. 1830.**

水蛇麻属 shui she ma shu

Herbs, annual or perennial, without latex; monoecious. Stipules free, lateral, caducous. Leaves alternate, distichous; leaf blade margin toothed. Inflorescences axillary, usually bisexual, cymose, racemose, or spicate, shortly pedunculate, bracteate. Male flowers: calyx campanulate, 4-lobed, valvate; stamens inflexed in bud. Female flowers: sessile; calyx boat-shaped, 4–6-lobed, valvate; ovary free; style lateral; stigma 2-branched, filiform. Fruit free, not fleshy. Achenes small, oblique globose, ± compressed, enclosed by an enlarged calyx. Seed with a membranous coat; endosperm absent; cotyledon wide; embryo incurved.

Two species: Asia, Australia, Pacific Islands; two species in China.

- 1a. Annual herbs; petiole puberulous; leaf blade membranous, base decurrent; style 1–1.5 mm ..... 1. *F. villosa*
- 1b. Perennial herbs; petiole hairs spreading; leaf blade papery, base not decurrent; style 2–2.5 mm ..... 2. *F. pilosa*

**1. *Fatoua villosa*** (Thunberg) Nakai, Bot. Mag. (Tokyo) 41: 516. 1927.

水蛇麻 shui she ma

*Urtica villosa* Thunberg, Syst. Veg., ed. 14, 851. 1784; *Fatoua japonica* Blume; *U. japonica* Thunberg.

Herbs, annual, 30–80 cm tall. Stem erect, few branched or unbranched, green when young, dark with age, puberulous. Petiole puberulous; leaf blade ovate to broadly ovate, 5–10 × 3–5 cm, membranous, appressed hirsute, base cordate to truncate and decurrent on petiole, margin crenate-toothed, apex acute; secondary veins 3 or 4 on each side of midvein. Inflorescences bisexual, cymose, ca. 5 mm wide. Male flowers: calyx lobes ca. 1 mm; stamens exerted. Female flowers: ovary ± depressed globose; style filiform, 1–1.5 mm, 2 × as long as ovary. Achenes ovoid, 3-angled, ca. 1 mm. Fl. May–Aug.

Scrub, grassy areas in wastelands, trail sides, rocks. Anhui, Fujian, Guangdong, Guangxi (Longzhou), Guizhou, Hainan, Hebei, Henan, Hubei, Jiangsu, Jiangxi, Taiwan, Yunnan (Bijiang), Zhejiang [Indonesia, Japan, Korea, Malaysia, New Guinea, Philippines; Australia].

**2. *Fatoua pilosa*** Gaudichaud-Beaupré, Voy. Uranie, Bot. 509. 1830.

细齿水蛇麻 xi chi shui she ma

Herbs, perennial, to 60 cm tall. Stem branched; branchlets densely pubescent. Petiole 4–5 mm, hairs spreading; leaf blade triangular-ovate, 2.5–7.5 × 0.8–4 cm, papery, abaxially spreading pubescent, adaxially with sparse appressed hairs, base truncate to ± cordate and not decurrent on petiole, apex acuminate to acute; basal veins 2, secondary veins 4 or 5 on each side of midvein. Inflorescences 1 or 2 per axil, cymose, ca. 6 mm wide; peduncle ca. 4 mm. Flowers green. Male flowers: pedicel short; calyx campanulate, sparsely covered with short pubescence, lobes triangular boat-shaped; anthers globose; pistillode conic. Female flowers: sessile; calyx pubescent; ovary globose, oblique, somewhat depressed, apically 3-ridged; style 2–2.5 mm, 3–4 × as long as ovary. Achenes reddish brown, compressed, 3-angled, ca. 1 mm. Fl. Jun–Nov.

Grassy areas in wastelands, trail sides. Taiwan [Indonesia, New Guinea, Philippines; Pacific Islands (New Caledonia)].

**2. MORUS Linnaeus, Sp. Pl. 2: 986. 1753.**

桑属 sang shu

Trees or shrubs, deciduous, with latex; monoecious or dioecious. Winter buds with 3–6 bud scales; scales imbricate. Stipules free, sublateral, caducous. Leaves alternate; leaf blade simple to deeply palmately lobed, margin toothed; primary veins 3–5 from base, secondary veins pinnate. Male inflorescences axillary, spicate, many-flowered, shortly pedunculate. Female inflorescences shortly spicate to capitate. Male flowers: calyx lobes 4, imbricate; stamens inflexed in bud; pistillode top-shaped. Female flowers: sessile; calyx lobes 4, imbricate, fleshy in fruit; ovary 1-loculed; style present or not; stigma 2-branched, abaxially pubescent or papillose. Fruit with enlarged, succulent calyx usually aggregated into juicy syncarp. Syncarp with achenes enclosed by enlarged and succulent calyx; endocarp shell-like; exocarp fleshy. Seed ± globose; endosperm fleshy; embryo incurved; cotyledon elliptic.

About 16 species: widespread in all temperate areas, also in the mountains of tropical Africa, Indonesia, and South America; 11 species (five endemic, one introduced) in China.

*Morus* species are cultivated in many temperate and tropical countries. The leaves are used as food for silkworms and the fruit for human consumption. Male material is often very difficult to name.

*Morus calva* H. Léveillé is *Coriaria sinica* Maximowicz (Coriariaceae) and *M. mairei* H. Léveillé is *Acalypha mairei* (H. Léveillé) Schneider (Euphorbiaceae).

- 1a. Female flowers with style long and conspicuous.

- 2a. Leaf blade marginal teeth each with subulate apiculum or seta; stigmas with a nipple-like protuberance ..... 10. *M. mongolica*  
 2b. Leaf blade marginal teeth without subulate apiculum or seta; stigmas without a nipple-like protuberance.  
 3a. Syncarp less than 2.5 cm ..... 11. *M. australis*  
 3b. Syncarp 3–6 cm.  
 4a. Leaf blade not lobed, veins abaxially prominent; stigmas glabrous ..... 8. *M. notabilis*  
 4b. Leaf blade deeply 3–5-lobed, veins abaxially not prominent; stigmas abaxially pubescent ..... 9. *M. trilobata*
- 1b. Female flowers with style very short or absent.  
 5a. Infructescences longer than 2.5 cm.  
 6a. Infructescences with fruit joined into a syncarp, 2.5–3.7 cm; leaf blades elliptic to narrowly elliptic ..... 5. *M. liboensis*  
 6b. Infructescences with fruit ± free, 6–16 cm; leaf blade ovate, broadly ovate, oblong, or broadly elliptic.  
 7a. Leaf blade oblong to broadly elliptic, margin subentire or toothed toward apex only; infructescences 10–16 cm, apparently not fleshy ..... 6. *M. wittiorum*  
 7b. Leaf blade ovate to broadly ovate, margin minutely and densely serrate; infructescences 6–12 cm, fleshy ..... 7. *M. macroura*
- 5b. Infructescences usually shorter than 2.5 cm.  
 8a. Leaf blade sparsely pubescent along midvein or in tufts in axil of midvein and primary lateral veins; stigmas with mastoidlike protuberance ..... 1. *M. alba*  
 8b. Leaf blade pubescence not as above; stigmas without mastoidlike protuberance.  
 9a. Leaves irregularly toothed ..... 2. *M. serrata*  
 9b. Leaves regularly toothed.  
 10a. Syncarp 1.5–2.5 cm in diam.; stigma long pubescent ..... 3. *M. nigra*  
 10b. Syncarp less than 1 cm in diam.; stigma shortly pubescent ..... 4. *M. cathayana*

**1. *Morus alba*** Linnaeus, Sp. Pl. 2: 986. 1753.

桑 sang

Shrubs or trees, 3–10 m tall. Bark gray, shallowly furrowed. Branches finely hairy. Winter buds reddish brown, ovoid, finely hairy. Stipules lanceolate, 2–3.5 cm, densely covered with short pubescence. Petiole 1.5–5.5 cm, pubescent; leaf blade ovate to broadly ovate, irregularly lobed, 5–30 × 5–12 cm, abaxially sparsely pubescent along midvein or in tufts in axil of midvein and primary lateral veins, adaxially bright green and glabrous, base rounded to ± cordate, margin coarsely serrate to crenate, apex acute, acuminate, or obtuse. Male catkins pendulous, 2–3.5 cm, densely white hairy. Female catkins 1–2 cm, pubescent; peduncle 5–10 mm, pubescent. Male flowers: calyx lobes pale green, broadly elliptic; filaments inflexed in bud; anthers 2-loculed, globose to reniform. Female flowers: sessile; calyx lobes ovoid, ± compressed, with marginal hairs; ovary sessile, ovoid; style absent; stigmas with mastoidlike protuberance, branches divergent, papillose. Syncarp red when immature, blackish purple, purple, or greenish white when mature, ovoid, ellipsoid, or cylindrical, 1–2.5 cm. Fl. Apr–May, fr. May–Aug.

• Originally endemic to C and N China, now cultivated throughout China [widely cultivated throughout the world].

The leaves provide food for silkworms, the bark fiber is used for textiles and paper, and the bark is also used for medicine.

- 1a. Leaf blade thin, 5–15 cm; syncarp blackish purple when mature, ovoid to ellipsoid ..... 1a. var. *alba*  
 1b. Leaf blade thick, to 30 cm; syncarp greenish white to purple when mature, cylindrical ..... 1b. var. *multicaulis*

**1a. *Morus alba* var. *alba***

桑(原变种) sang (yuan bian zhong)

*Morus alba* var. *atropurpurea* (Roxburgh) Bureau; *M. alba* var. *bungeana* Bureau; *M. atropurpurea* Roxburgh.

Leaf blade 5–15 cm, thin, flat. Syncarp blackish purple when mature, ovoid to ellipsoid, 1–2.5 cm.

• Originally endemic to C and N China, now cultivated throughout China [widely cultivated throughout the world].

**1b. *Morus alba* var. *multicaulis*** (Perrottet) Loudon, Arbor. Frutic. Brit. 3: 1348. 1838.

鲁桑 lu sang

*Morus multicaulis* Perrottet, Mém. Soc. Linn. Paris 3: 129. 1823–1824 [“1825”]; *M. alba* var. *latifolia* (Poiret) Bureau; *M. chinensis* Loddiges ex Loudon; *M. latifolia* Poiret.

Leaf blade ca. 30 cm, thick, wrinkled. Syncarp greenish white to purple when mature.

• Cultivated. Jiangsu, Shaanxi, Sichuan, Zhejiang.

**2. *Morus serrata*** Roxburgh, Fl. Ind., ed. 1832, 3: 596. 1832.

吉隆桑 ji long sang

*Morus alba* Linnaeus var. *serrata* (Roxburgh) Bureau; *M. gyirongensis* S. S. Chang; *M. pabularia* Decaisne.

Trees to 15 m tall. Branchlets densely pubescent. Stipules lanceolate-ovate, 1.5–2 cm. Petiole 4–6 cm, densely white pubescent; leaf blade broadly ovate, unlobed, 10–14 × 6–10 cm, abaxially densely white pubescent along midvein and basal lateral veins, adaxially glabrous, base cordate, margin toothed with teeth triangular and apically shortly acuminate, apex acuminate to caudate; basal lateral veins 2, extending to basal half. Female inflorescences axillary, single; peduncle 0.5–1.5 cm. Female flowers: calyx lobes ovate-orbicular, adaxially pubescent; style absent; stigmas without mastoidlike protuberance, 2-branched, pubescent. Syncarp red when mature, shortly cylindrical. Achenes ovoid, ± compressed, glabrous. Fl. and fr. May–Jun.

Mountain forests; ca. 2300 m. S Xizang (Gyirong) [NW India, Nepal].

**3. *Morus nigra*** Linnaeus, Sp. Pl. 2: 986. 1753.

黑桑 hei sang

Trees to 10 m tall; monoecious or dioecious. Bark dark brown. Branchlets pale brown pubescent. Stipules lanceolate, membranous, brown pubescent. Petiole 1.5–2.5 cm, pubescent; leaf blade broadly ovate, unlobed, 6–12(–20) × 7–11 cm, thick, abaxially pale green, shortly pubescent, and tomentose, adaxially dark green and coarse, base cordate, margin regularly and coarsely serrate, apex acute to shortly acuminate. Male catkins cylindrical, 2–4 cm, pubescent. Female catkins ellipsoid, 2–2.5 cm; peduncle short. Female flowers: style inconspicuous; stigmas without mastoidlike protuberance, 2-branched and pubescent. Syncarp blackish purple when mature, elliptic, 2–2.5 × 1.5–2.5 cm.

Cultivated. Hebei, Shandong, Xinjiang (mainly) [native to W Iran; widely cultivated elsewhere].

This species is a valuable fruit tree in some countries.

**4. *Morus cathayana*** Hemsley, J. Linn. Soc., Bot. 26: 456. 1894.

华桑 hua sang

Small trees or shrubs; monoecious. Bark grayish white, smooth. Branchlets pubescent when young, glabrescent, conspicuously lenticellate. Stipules lanceolate. Petiole 2–5 cm, pubescent; leaf blade broadly ovate to ± orbicular, sometimes lobed, 8–20 × 6–13 cm, thick papery, abaxially densely white or yellowish gray pubescent, adaxially scabrous, sparsely covered with short hairs, and basally pubescent along veins, base cordate to truncate and ± oblique, margin shallowly to coarsely serrate or basally entire and apically shallowly serrate, apex acute to shortly acuminate. Male catkins 3–5 cm. Female catkins 1–3 cm. Male flowers: calyx lobes yellowish green, narrowly ovate, adaxially pubescent; stamens 4; pistillode small. Female flowers: calyx lobes obovate, apically pubescent; styles short; stigmas without mastoidlike protuberance, 2-branched, abaxially pubescent. Syncarp white, red, or dark purple when mature, cylindrical, 2–3 cm. Fl. Apr–May, fr. May–Jun.

Sunny slopes or valleys, high mountains; 900–1300 m. Anhui, N Fujian, N Guangdong, Hebei, Henan, Hubei, Hunan, S Jiangsu, S Shaanxi, Sichuan, NW Yunnan, Zhejiang [Japan, Korea].

- 1a. Leaf blade abaxially white pubescent, margin shallowly to coarsely serrate ..... 4a. var. *cathayana*  
 1b. Leaf blade abaxially yellowish gray pubescent, margin basally entire and apically shallowly serrate ..... 4b. var. *gongshanensis*

**4a. *Morus cathayana* var. *cathayana***

华桑(原变种) hua sang (yuan bian zhong)

*Morus cathayana* var. *japonica* (Makino) Koidzumi; *M. chinlingensis* C. L. Min; *M. rubra* Linnaeus var. *japonica* Makino; *M. tiliifolia* Makino.

Branchlets pubescent. Leaf blade abaxially white pubescent, margin shallowly to coarsely serrate.

Sunny slopes or valleys; 900–1300 m. Anhui, N Fujian, N

Guangdong, Hebei, Henan, Hubei, Hunan, S Jiangsu, S Shaanxi, Sichuan, Zhejiang [Japan, Korea].

**4b. *Morus cathayana* var. *gongshanensis*** (Z. Y. Cao) Z. Y. Cao, Acta Bot. Yunnan. 17: 154. 1995.

贡山桑 gong shan sang

*Morus gongshanensis* Z. Y. Cao, Acta Phytotax. Sin. 29: 264. 1991.

Branchlets glabrous when young. Leaf blade whitish green when dry, abaxially yellowish gray pubescent, margin basally entire and apically shallowly serrate.

- High mountains. NW Yunnan.

**5. *Morus liboensis*** S. S. Chang, Acta Phytotax. Sin. 22: 66. 1984.

荔波桑 li bo sang

Trees 6–15 m tall, d.b.h. 16–20 cm. Branches gray-brown, cylindrical. Winter buds ovoid, ca. 3 mm, sparsely pubescent. Stipules pubescent. Petiole 2–3 cm, sparsely pubescent; leaf blade elliptic to narrowly elliptic, 6–12 × 4–8 cm, papery, abaxially whitish green and basally sparsely white pubescent, adaxially dark green, densely white pubescent, and with pointed cystoliths, base cordate to rounded, margin crenate on apical 1/3, apex acute to shortly acuminate with a 7–10 mm acumen; midvein abaxially prominent and adaxially impressed, basal lateral veins extending to 2/3 of leaf blade length, secondary veins 3 or 4 on each side of midvein. Peduncle ca. 1 cm, pubescent. Female flowers: calyx lobes broadly ovate, margin pubescent; stigma 2-branched, abaxially papillose. Syncarp red when mature, cylindrical, 2.5–3.7 cm × 4–5 mm; achenes dense.

- Limestone areas; ca. 700 m. Guizhou (Libo).

**6. *Morus wittiorum*** Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 88. 1921.

长穗桑 chang sui sang

*Morus jinpingensis* S. S. Chang.

Trees or shrubs, 4–12 m tall, deciduous; dioecious. Bark grayish white, smooth. Branchlets pale brown, conspicuously lenticellate. Winter buds ovoid. Stipules narrowly ovate, ca. 4 mm. Petiole 1.5–3.5 cm, shallowly grooved; leaf blade oblong to broadly elliptic, 8–12 × 5–9 cm, papery, glabrous or young leaves abaxially with short soft hairs along midvein and lateral veins, abaxially pale green, adaxially green, base rounded to broadly truncate, margin subentire or toothed toward apex only, apex acuminate; basal lateral veins 3 pairs, extending to 1/2 of leaf blade length, secondary veins 3 or 4 on each side of midvein. Male catkins axillary; peduncle short. Female catkins 9–15 cm; peduncle 2–3 cm. Male flowers: calyx lobes green, ± orbicular. Female flowers: sessile; calyx lobes yellowish green, imbricate; ovary 1-loculed; style very short; stigma 2-branched. Syncarp cylindrical, 10–16 cm; achenes ovoid. Fl. Apr–May, fr. May–Jun.

- Forested slopes, beside streams; 900–1400 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan.

The leaves provide food for silkworms and the bark fibers are used for making textiles and paper.

**7. *Morus macroura*** Miquel, Pl. Jungh. 1: 42. 1851.

奶桑 nai sang

*Morus alba* Linnaeus var. *laevigata* Wallich ex Bureau; *M. laevigata* Wallich ex Brandis; *M. macroura* var. *mawu* (Koidzumi) C. Y. Wu & Z. Y. Cao; *M. wallichiana* Koidzumi; *M. wittiorum* Handel-Mazzetti var. *mawu* Koidzumi.

Trees 7–12 m tall, d.b.h. 10–20 cm; dioecious. Branchlets pubescent when young. Winter buds ovoid-ellipsoid to ovoid, white pubescent. Stipules small. Petiole 2–4 cm; leaf blade ovate to broadly ovate, 5–15 × 5–9 cm, membranous, abaxially pale green and with short soft hairs along midvein and lateral veins when young, adaxially dark green and with soft hairs along veins, base rounded, ± cordate, or truncate, margin minutely and densely serrate, apex acuminate to shortly acuminate; secondary veins 4–6 on each side of midvein. Male catkins axillary, paired, 4–8 cm; peduncle 1–1.5 cm. Female inflorescences cylindric, 6–12 cm; peduncle 1–1.5 cm. Male flowers: calyx lobes ovate, adaxially pubescent; filament ca. 2.5 mm; anther globose. Female flowers: calyx lobes pubescent; ovary ovoid, declinate, ± compressed, pubescent; style absent; stigma 2-branched, papillate. Syncarp yellowish white when mature, 6–12 cm; achenes ovoid. Fl. Mar–Apr, fr. Apr–May.

Mountain forests, tropical forests; (300–)1000–1300(–2200) m. E Xizang, S Yunnan [Bhutan, Indochina, Malaysia, Myanmar, Sikkim, Thailand].

This species is used for paper making and the wood and leaves are used in dyeing.

**8. *Morus notabilis*** C. K. Schneider in Sargent, Pl. Wilson. 3: 293. 1916.

川桑 chuan sang

Trees 9–15 m tall; dioecious. Bark grayish brown. Branches spreading, subglabrous. Winter buds ovoid, ca. 8 mm, subglabrous. Petiole 2–3 cm, glabrous; leaf blade ± orbicular, 7–15 × 6–12 cm, abaxially pale green and glabrous or pubescent along midvein and lateral veins, adaxially dark green, glabrous, and slightly coarse, base ± cordate, margin narrowly triangular serrate and without subulate apiculum or seta, apex shortly acuminate to obtuse; basal lateral veins 2 and extending to 2/3 of leaf blade length, secondary veins 4–6 on each side of midvein and joined together near margin. Inflorescences axillary. Male catkins green, paired, 4–5 cm. Female inflorescences cylindric, 3–4 cm, densely flowered; peduncle 3–4.5 cm. Female flowers: calyx lobes glabrous or adaxially sparsely pubescent, margin membranous; ovary ovoid, declinate, ± compressed, pubescent; style long; stigma abaxially papillate. Syncarp white when mature, 3.5–4 cm. Fl. Apr–May, fr. May–Jun.

- Evergreen broad-leaved forests. Sichuan, Yunnan.

**9. *Morus trilobata*** (S. S. Chang) Z. Y. Cao, Acta Phytotax. Sin. 29: 265. 1991.

裂叶桑 lie ye sang

*Morus australis* Poir. var. *trilobata* S. S. Chang, Acta Phytotax. Sin. 22: 66. 1984.

Trees to 3.5 m tall. Branchlets reddish brown, glabrous or subglabrous. Petiole 2–2.5 cm, sparsely hairy; leaf blade deeply

3–5-lobed, 10–13 × 7–10 cm, papery, glabrous or abaxially sparsely pubescent along midvein and lateral veins, base rounded to truncate, margin entire or apically coarsely toothed, teeth apically acute to acuminate and without subulate apiculum or seta; middle lobe narrowly lanceolate, 6–8 × 1–1.5 cm; lateral lobes shorter, lanceolate. Female inflorescences cylindric, 2–4 × ca. 0.5 cm, pubescent; peduncle 8–10 mm, sparsely pubescent. Female flowers: calyx lobes ovate, ca. 2 mm, margins hairy; pistil 4–5 mm; ovary ca. 2 mm; style ca. 1 mm; stigma 2-branched, ca. 2 mm, abaxially pubescent. Achenes ± compressed. Fl. May–Jun.

- Slopes; ca. 800 m. Guizhou (Kaili).

**10. *Morus mongolica*** (Bureau) C. K. Schneider in Sargent, Pl. Wilson. 3: 296. 1916.

蒙桑 meng sang

*Morus alba* Linnaeus var. *mongolica* Bureau in Candolle, Prodr. 17: 241. 1873; *M. barkamensis* S. S. Chang; *M. deqinensis* S. S. Chang; *M. mongolica* var. *barkamensis* (S. S. Chang) C. Y. Wu & Z. Y. Cao; *M. mongolica* var. *diabolica* Koidzumi; *M. mongolica* var. *hopeiensis* S. S. Chang & Y. P. Wu; *M. mongolica* var. *longicaudata* Z. Y. Cao; *M. mongolica* var. *rotundifolia* Y. B. Wu; *M. mongolica* var. *vestita* Rehder; *M. mongolica* var. *yunnanensis* (Koidzumi) C. Y. Wu & Z. Y. Cao; *M. yunnanensis* Koidzumi.

Small trees or shrubs; dioecious. Bark grayish brown, furrowed. Old branches grayish black; branchlets dark red. Winter buds grayish brown, ovoid. Stipules 2.5–3.5 cm. Leaf blade elliptic-ovate, 8–15 × 5–8 cm, papery, glabrous, base cordate, margin triangular serrate with a few teeth double serrate, each tooth with subulate apiculum or seta, and apical serrations with long spines, apex shortly acuminate. Male catkins ca. 3 cm. Female inflorescences shortly cylindric, 1–1.5 cm; peduncle 1–1.5 cm. Male flowers: calyx lobes dark yellow, margin adaxially hairy; anthers 2-loculed, longitudinally dehiscent. Female flowers: calyx lobes glabrous or adaxially sparsely pubescent; style long; stigma with a nipple-like protuberance, 2-branched, abaxially densely papillate. Syncarp red to purple when mature, ca. 1.5 cm. Fl. Mar–Apr, fr. Apr–May.

Mountain slopes, high mountains, forests; 500–3500 m. N Anhui, NE Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, NW Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, SE Xizang, Yunnan [Japan, Korea, Mongolia].

The very distinctive leaf margin makes this species easy to recognize, in contrast to the varieties that have been proposed within it. Formal recognition of these varieties does not seem justified because they are based on features of indumentum and leaf shape, which vary more or less continuously.

**11. *Morus australis*** Poir. in Desrousseaux et al., Encycl. 4: 380. 1797.

鸡桑 ji sang

*Morus acidosa* Griffith; *M. alba* Linnaeus var. *indica* Bureau; *M. alba* var. *nigriformis* Bureau; *M. alba* var. *stylosa* Bureau; *M. australis* var. *hastifolia* (F. T. Wang & T. Tang ex Z. Y. Cao) Z. Y. Cao; *M. australis* var. *incisa* C. Y. Wu; *M.*

*australis* var. *inusitata* (H. Léveillé) C. Y. Wu; *M. australis* var. *linearipartita* Z. Y. Cao; *M. australis* var. *oblongifolia* Z. Y. Cao; *M. bombycis* Koidzumi; *M. bombycis* var. *angustifolia* Koidzumi; *M. bombycis* var. *bifida* Koidzumi; *M. bombycis* var. *longistyla* Koidzumi; *M. bombycis* var. *tiliifolia* Koidzumi; *M. cavaleriei* H. Léveillé; *M. formosensis* Hotta; *M. hastifolia* F. T. Wang & T. Tang ex Z. Y. Cao; *M. inusitata* H. Léveillé; *M. longistyla* Diels; *M. nigriformis* (Bureau) Koidzumi; *M. stylosa* Seringe var. *ovalifolia* Seringe.

Small trees or shrubs. Bark grayish brown. Winter buds conic to ovoid, large. Stipules linear-lanceolate. Petiole 1–1.5 cm, pubescent; leaf blade lanceolate to broadly ovate, simple or (2 or) 3–5-lobed, lobes rounded to linear, 5–14 × 1–12 cm, abaxially sparsely covered with thick hairs, adaxially scabrous and densely covered with short hairs, base cuneate to cordate, margin serrate or entire and without subulate apiculum or seta, apex acute to caudate. Male catkins 1–1.5 cm, pubescent. Female inflorescences globose, ca. 1 cm, densely white pubescent;

peduncle short. Male flowers: calyx lobes green, ovate; anther yellow. Female flowers: calyx lobes dark green, oblong; style long; stigma 2-branched, abaxially pubescent. Syncarp red to dark purple when mature, shortly cylindric, ca. 1 cm in diam. Fl. Mar–Apr, fr. Apr–May.

Limestone areas, forest margins, mountain slopes, fallow land, scrub in valleys; 500–2000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, SE Xizang, Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Myanmar, Nepal, Sikkim].

This species is closely related to *Morus indica* Linnaeus, and some authors have considered them conspecific. Varieties have been recognized on the basis of differences in leaf form, particularly the degree of division. Deeply divided leaves are characteristic of juvenile growth in a number of genera in the Moraceae and other families, and it does not seem advisable to give such material formal names, at least without more detailed population studies.

The bark fibers are used for making paper and the fruit are edible.

### 3. BROUSSONETIA L'Héritier ex Ventenat, Tabl. Règn. Vég. 3: 547. 1799, nom. cons., not Ortega (1798).

构属 gou shu

*Allaeanthus* Thwaites; *Smithiodendron* Hu.

Trees, shrubs, or climbers, deciduous, with latex; monoecious or dioecious. Winter buds small. Stipules free, lateral, ovate-lanceolate, caducous. Leaves alternate, spirally arranged or distichous; leaf blade simple to palmately lobed, margin toothed; primary veins 3–5 and plinerved, secondary veins pinnate. Male inflorescences axillary, spicate or ± capitate, many-flowered. Female inflorescences densely capitate to ± elongated; bracts clavate, persistent. Male flowers: calyx (3 or) 4-lobed, valvate; stamens inflexed in bud. Female flowers: calyx lobes connate into a tube, apically entire or 3- or 4-lobed, persistent; ovary enclosed, stipitate; style lateral; stigma linear, often with vestigial second lobe at base. Fruit densely aggregated into globose syncarp. Syncarp globose; pericarp membranous, enlarged; exocarp fleshy. Cotyledons orbicular, flat, or conduplicate; embryo curved.

Four species: E Asia, Pacific Islands; four species in China.

The bark fibers are used for making paper, the wood is used for furniture, and the leaves and fruit are used medicinally.

- 1a. Flowers produced on leafless stems; leaves distichous; leaf blade glabrous or nearly so; endocarp smooth ..... 4. *B. kurzii*  
 1b. Flowers always produced on leafy stems; leaves spirally arranged; leaf blade adaxially scabrous or scabridulous; endocarp minutely tuberculate.  
 2a. Stipules 15–20 × 8–10 mm; petiole 2.3–8 cm; leaf blade abaxially densely pubescent between pilose veins; syncarp 1.5–3 cm in diam., mostly pubescent with scattered stout, ± barbed hairs ..... 1. *B. papyrifera*  
 2b. Stipules 3–5 × 0.5–1 mm; petiole 0.8–1 cm; leaf blade abaxially glabrous or sparsely pubescent, mainly on veins; syncarp 0.8–1 cm in diam., with stellate clusters of stout strongly barbed hairs.  
 3a. Plant monoecious, freestanding; male inflorescences globose, 0.8–1 cm ..... 2. *B. kazinoki*  
 3b. Plant dioecious, climbing; male inflorescences spicate, 1.5–2.5 cm ..... 3. *B. kaempferi*

**1. Broussonetia papyrifera** (Linnaeus) L'Héritier ex Ventenat, Tabl. Règn. Vég. 3: 547. 1799.

构树 gou shu

*Morus papyrifera* Linnaeus, Sp. Pl. 2: 986. 1753; *Smithiodendron artocarpioideum* Hu.

Trees 10–20 m tall, flowers always produced on leafy stems; dioecious. Bark dark gray. Branchlets densely pubescent. Stipules ovate, 1.5–2 × 0.8–1 cm, apex attenuate. Leaves spirally arranged; petiole 2.3–8 cm; leaf blade broadly ovate to narrowly elliptic-ovate, simple or 3–5-lobed on young trees, 6–18 × 5–9 cm, abaxially densely pubescent but veins with coarser hairs, adaxially scabridulous and sparsely pubescent,

base cordate and asymmetric, margin coarsely serrate, apex acuminate; secondary veins 6 or 7 on each side of midvein. Male inflorescences long spicate, 3–8 cm; bracts lanceolate, pubescent. Female inflorescences globose; bracts clavate, apically pubescent. Male flowers: calyx 4-lobed, lobes triangular-ovate and pubescent; anthers globose. Female flowers: calyx pipelike, lobes apically connate with style; ovary ovoid; stigma linear, pubescent. Syncarp orange-red when mature, 1.5–3 cm in diam., mostly pubescent with scattered stout and ± barbed hairs, fleshy. Drupelets equal in length to peduncle, with 2 rows of small verruca; exocarp shell-like. Fl. Apr–May, fr. Jun–Jul.

Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong,

Shanxi, Sichuan, Taiwan, SE Xizang, Yunnan, Zhejiang [Cambodia, Japan, Korea, Laos, Malaysia, Myanmar, Sikkim, Thailand, Vietnam; Pacific Islands].

The bark fibers are used for making paper, the wood is used for furniture, and the leaves, fruit, and bark are used medicinally.

**2. *Broussonetia kazinoki*** Siebold, Verh. Batav. Genootsch. Kunsten 12: 28. 1830.

楮 chu

*Broussonetia kazinoki* var. *ruyangensis* P. H. Ling & X. W. Wei; *B. monoica* Hance.

Shrubs 2–4 m tall, flowers always produced on leafy stems; monoecious. Branchlets obliquely spreading, pubescent when young, glabrescent. Stipules linear-lanceolate, 3–5 × 0.5–1 mm, apex acuminate. Petiole ca. 1 cm; leaf blade ovate to oblique-ovate, simple or 3-lobed, 3–7 × 3–4.5 cm, abaxially subglabrous, adaxially scabrous, base ± rounded to obliquely rounded, margin triangular serrate, apex attenuate to shortly acuminate. Male inflorescences globose, 0.8–1 cm in diam. Female inflorescences globose, pubescent. Male flowers: calyx 3- or 4-lobed, lobes triangular and adaxially pubescent; anthers elliptic. Female flowers: calyx pipelike, apically toothed, lobed, or entire; style 1, papillate at middle. Syncarp 0.8–1 cm in diam., with stellate clusters of stout strongly barbed hairs. Drupelets verrucate compressed; exocarp shell-like. Fl. Apr–May, fr. May–Jun.

Forest margins, low mountains, near houses. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea].

**3. *Broussonetia kaempferi*** Siebold var. *australis* Suzuki, Trans. Nat. Hist. Soc. Taiwan 24: 433. 1934.

藤构 teng gou

*Broussonetia sieboldii* Blume.

Shrubs, scandent, flowers always produced on leafy stems;

dioecious. Bark blackish brown. Branchlets conspicuously spreading, pale gray pubescent when young, glabrescent. Leaves spirally arranged; petiole 0.8–1 cm, pubescent; leaf blade ± ovate-elliptic, simple or occasionally 2- or 3-lobed, 3.5–8 × 2–3 cm, scabrous and glabrous, base cordate to cuneate, margin finely serrate with glandular serrations at apex, apex attenuate to shortly acuminate. Male inflorescences spicate, 1.5–2.5 cm. Female inflorescences globose. Male flowers: calyx 3- or 4-lobed, adaxially pubescent; anthers yellow, elliptic-globose. Female flowers: style linear, exserted. Syncarp ca. 1 cm in diam., with stellate clusters of stout strongly barbed hairs. Fl. Apr–Jun, fr. May–Jul.

• Scrub, along trails on slopes; 300–1000 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Taiwan, SE Yunnan, Zhejiang.

*Broussonetia kaempferi* var. *kaempferi* is endemic to Japan.

The bark fibers are used for making paper.

**4. *Broussonetia kurzii*** (J. D. Hooker) Corner, Gard. Bull. Singapore 19: 234. 1962.

落叶花桑 luo ye hua sang

*Allaeanthus kurzii* J. D. Hooker, Fl. Brit. Ind. 5: 490. 1888.

Shrubs, scandent, large, flowering before leaves; dioecious. Branchlets long. Stipules obliquely triangular-lanceolate, 4–5 × 2.5–3 mm, glabrous, base ± amplexicaul, apex acute. Leaves distichous; petiole 0.7–1.4 cm, puberulous; leaf blade ovate-elliptic, 10–20 × 5–10 cm, both surfaces glabrous and smooth or very minutely papillate, margin serrate; secondary veins 3–6 on each side of midvein. Male inflorescences cylindrical, 4–5 cm. Female inflorescences globose, flowers intermixed with bracts. Male flowers: calyx 4-lobed. Female flowers: calyx pipelike, apically 4-lobed; ovary sessile; style linear, exserted. Syncarp 0.8–1 cm in diam. Drupelets compressed, smooth; exocarp woody. Fl. Apr–May, fr. May–Jun.

Tropical or seasonal rain forests; 200–600 m. S Yunnan [Bhutan, NE India, Laos, N Myanmar, Sikkim, Thailand, Vietnam].

#### 4. MALAISIA Blanco, Fl. Filip. 789. 1837.

牛筋藤属 niu jin teng shu

Shrubs, often scandent, ± evergreen, with latex; dioecious. Stipules lateral, caducous. Leaves alternate; leaf blade asymmetric, margin entire to inconspicuously toothed; veins pinnate. Male inflorescences axillary, spicate, catkinlike, branched or unbranched; peduncle short. Female inflorescences globose-capitate, surrounded by fleshy bracts, flowers mostly sterile with 1 or 2(–5) fertile. Male flowers: calyx 3- or 4-lobed, valvate; stamens inflexed in bud; pistillode small. Female flowers: calyx urceolate; style central, deeply 2-lobed, branches filiform. Fruit densely aggregated into globose or ± globose syncarp. Syncarp ± globose, enclosed by a persistent thin and fleshy calyx; pericarp thin, fleshy, ± connate with seed coats. Seed with endosperm thin or absent; cotyledons unequal, one large and split on one side, other small and folded around radicle; embryo globose to ovoid.

One species: Asia, Australia.

This monospecific genus is sometimes placed within the genus *Trophis* P. Browne.

**1. *Malaisia scandens*** (Loureiro) Planchon, Ann. Sci. Nat., Bot. sér. 4, 3: 293. 1855.

牛筋藤 niu jin teng

*Caturus scandens* Loureiro, Fl. Cochinch. 2: 612. 1790; *Malaisia tortuosa* Blanco; *Trophis scandens* (Loureiro) Hooker & Arnott.

Climbing shrubs, to 4 m tall when free standing, scandent to 9 m. Branchlets brown, cylindrical; lenticels white, orbicular. Leaf blade narrowly elliptic to elliptic-obovate, 5–12 × 2–4.5 cm, papery, abaxially ± scabrous, adaxially smooth, base rounded to cordate, margin entire or shallowly dentate toward apex, apex acuminate, caudate, or less often acute to ± rounded; secondary veins 7–12 on each side of midvein. Male inflores-

cences 3–6 cm, pubescent, basally dense, apically lax; peduncle 2–4 cm; bracts short, pubescent, basally connate, apically free. Female inflorescences ± globose, rarely more elongated, ca. 6 mm in diam., densely pubescent; peduncle ca. 1 cm, pubescent. Male flowers: sessile; calyx lobes triangular, pubescent; filaments 2 × as long as calyx lobes; anthers ± globose; pistillode

small. Female flowers: calyx bottle-like, enclosing ovary; style pale reddish to dark red, linear, 1–3 cm, 2-branched. Drupes red, ovoid, 6–8 mm, sessile. Fl. spring to summer.

Scrub on hills; 100–300 m. Guangdong, Guangxi, Hainan, Taiwan, SE Yunnan [Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam; Australia].

## 5. *STREBLUS* Loureiro, Fl. Cochinch. 2: 754. 1790.

鹊肾树属 *que shen shu shu*

*Dimerocarpus* Gagnepain; *Diplocos* Bureau; *Diplothorax* Gagnepain; *Epicarporus* Blume; *Paratrophis* Blume; *Pseudostreblus* Bureau; *Pseudotrophis* Warburg; *Taxotrophis* Blume; *Teonongia* Stapf.

Trees or shrubs, occasionally scandent shrubs, with latex, sometimes spiny; monoecious or dioecious. Spines when present axillary. Stipules free or connate, lateral to ± amplexicaul, caducous. Leaves alternate, distichous; petiole short; leaf blade with or without cystoliths on one or both surfaces, margin entire or toothed and not glandular; secondary veins pinnate. Male inflorescences axillary, sometimes bisexual with a single central female flower, racemose, spicate, or ± capitate, pedunculate. Female inflorescences often 1-flowered. Male flowers: calyx lobes (3 or)4(or 5), free or basally adnate with pistillode, imbricate or valvate; stamens inflexed in bud; anthers small, reniform, extrorse. Female flowers: calyx lobes 4, opposite, free or ± connate, imbricate; ovary superior, ovoid to oblique, basally thick and fleshy, enclosed by persistent calyx lobes or not; style 2-branched. Fruit free, not aggregated into a syncarp. Drupes globose, dehiscent or indehiscent, sometimes loosely covered by slightly enlarged persistent calyx, often basally fleshy on one side. Seed large, globose, enveloped by membranous endocarp, endosperm present or absent; cotyledons unequal.

Twenty-two species: tropical and subtropical Asia; seven species in China.

- 1a. Male inflorescences capitate to shortly racemose; female inflorescences 1-flowered; bisexual inflorescences sometimes present.
  - 2a. Plants with spines; branchlets with dark-yellow marginal hairs on one side; drupes basally fleshy; plants dioecious ..... 3. *S. taxoides*
  - 2b. Plants spineless; branchlets uniformly hairy; drupes basally not fleshy; plants often monoecious.
    - 3a. Leaf blade papery; pistillode cubic; drupe dehiscent, not enclosed by persistent calyx lobes ..... 2. *S. tonkinensis*
    - 3b. Leaf blade leathery; pistillode conic to cylindrical; drupes indehiscent, enclosed by persistent calyx lobes ..... 1. *S. asper*
- 1b. Male inflorescences spicate or scorpioid cymose; female inflorescences usually 2–8-flowered (1-flowered in *S. indicus*); bisexual inflorescences usually absent (present in *S. indicus*).
  - 4a. Male inflorescences scorpioid; male flowers 5-merous; female inflorescences 1-flowered; drupes indehiscent .... 4. *S. indicus*
  - 4b. Male inflorescences racemose or spicate; male flowers 4-merous; female inflorescences 2–8-flowered; drupes ± dehiscent.
    - 5a. Leaf blade ovate-oblong, narrowly elliptic, or lanceolate, apex shortly attenuate and tipped by 1 long tooth flanked by 2 short triangular teeth; cotyledons ± equal ..... 5. *S. zeylanicus*
    - 5b. Leaf blade elliptic, obovate-elliptic, rhombic, or oblong-obovate, apex acute, blunt, or retuse, with two spiny teeth or caudate; cotyledons unequal.
      - 6a. Branchlets spineless; leaf blade elliptic to obovate-elliptic, 8–16 × 3–6 cm, membranous to papery, margin entire or ± undulate, apex caudate ..... 6. *S. macrophyllus*
      - 6b. Branchlets with 1–1.5(–4.5) cm spines; leaf blade rhombic to oblong-obovate, 1–4.5(–9) × 0.6–2.5(–5) cm, leathery, margin loosely revolute with 5 or fewer spiny teeth, apex acute, blunt, or retuse, with two spiny teeth ..... 7. *S. ilicifolius*

### 1. *Streblus asper* Loureiro, Fl. Cochinch. 2: 615. 1790.

鹊肾树 *que shen shu*

*Diplothorax tonkinensis* Gagnepain.

Trees or shrubs; monoecious or dioecious. Bark dark gray, scabrous. Branchlets with short stiff hairs; lenticels conspicuous when young. Stipules small, caducous. Leaves shortly petiolate or sessile; leaf blade elliptic-obovate to elliptic, 2.5–6 × 2–3.5 cm, leathery, scabrous, base obtuse to ± cordate, margin entire or irregularly crenate, apex blunt to shortly acuminate; secondary veins 4–7 on each side of midvein. Bisexual inflorescences

capitate with 1 central sessile female flower surrounded by male flowers. Male inflorescences solitary or paired, capitate; peduncle 8–10 mm, pubescent; bracts few, at inflorescence base, none between flowers, small, narrowly elliptic; bracteoles 2, at base of calyx, larger than bracts. Female inflorescences pedunculate; bracts 1 or 2, at base of peduncle, minute; bracteoles at base of calyx. Male flowers: subsessile; pistillode conic to cylindrical, apically tuberculate. Female flowers: calyx lobes pubescent; ovary globose; style apically branched, 6–12 mm in fruit. Drupes yellow, globose, ca. 6 mm in diam., indehiscent, enclosed by enlarged calyx lobes when immature, without a fleshy base. Fl. Feb–Apr, fr. May–Jun.



Near villages, forests; 200–1000 m. Guangdong, Guangxi, Hainan, S Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Nepal, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam].

**2. *Streblus tonkinensis*** (Dubard & Eberhardt) Corner, Gard. Bull. Singapore 19: 228. 1962.

米扬 mi yang

*Bleekrodea tonkinensis* Dubard & Eberhardt, Compt. Rend. Hebd. Séances Acad. Sci. 145: 632. 1907; *Teonongia tonkinensis* (Dubard & Eberhardt) Stapf.

Trees 6–12 m tall, evergreen; monoecious with male and female flowers on same or different inflorescences. Bark gray, smooth. Branchlets thin. Stipules small, caducous. Petiole ca. 3 mm; leaf blade obovate-oblong to oblong-lanceolate, 5–11 × 2.5–4 cm, papery, abaxially densely covered with small tubercles and with sparse hairs on veins, adaxially glabrous, base cuneate, margin irregularly undulate or with 3 or 4 pairs of teeth apically from middle, apex ± caudate to acuminate and with an asymmetric acuminate; secondary veins 5 or 6 on each side of midvein. Bisexual inflorescences when present with 1 central sessile female flower surrounded by male flowers. Male inflorescences axillary, 6- or 7-flowered, green, globose, 3–7 mm in diam.; bracts adaxially long pubescent; bracteoles 2, at base of calyx. Female inflorescences 1-flowered. Male flowers: calyx lobes 4 or 5, ovate, shortly pubescent, margin ciliate; filaments long; anthers globose, extrorse; pistillode cubic. Female flowers: calyx lobes 4, ovate, pubescent, basally adnate with ovary; style linear, apically branched and slightly curved, 3–4 mm. Drupes ± globose, 7–10 mm in diam., dehiscent, not enclosed by ± reflexed calyx lobes, without a fleshy base. Fl. spring to summer.

Limestone areas in shade; ca. 500 m. SW Guangxi, Hainan, SE Yunnan [N Vietnam].

This species is also cultivated in Guangdong and Hainan for gum.

**3. *Streblus taxoides*** (Roth) Kurz, Forest Fl. Burma 2: 465. 1877.

叶被木 ye bei mu

*Trophis taxoides* Roth, Nov. Pl. Sp. 368. 1821; *Phyllochlams taxoides* (Roth) Koorders.

Shrubs 2–3 m tall; dioecious. Branchlets curved, one side with dark-yellow marginal hairs; spines 1–1.5 cm, strong. Stipules lanceolate, abaxially with a longitudinal rib. Petiole 2–3 mm; leaf blades elliptic to oblong-lanceolate, 2–8 × 1–3.5 cm, leathery, base acuminate to obtuse, margin entire and apical half crenate or apically with 3 pairs of teeth, apex acuminate to blunt; secondary veins 7–11 on each side of midvein. Bisexual inflorescences absent. Male inflorescences axillary, sessile, capitate to shortly racemose; involucre bracts several whorled, 2.5–3.5 mm, membranous, abaxially pubescent. Female inflorescences 1-flowered; bracts 2, scale-like. Male flowers: shortly pedicellate; calyx lobes 4, ovate to lanceolate, with marginal hairs; filaments exerted at anthesis; anthers globose; pistillode cubic. Female flowers: pedicellate; calyx lobes 4, lanceolate, conspicuously veined, enlarged and leafy in fruit; ovary at first straight then oblique; style apically branched. Drupes globose,

4–5 mm in diam., enclosed at first by enlarged foliaceous calyx lobes, basally fleshy, apically papillate. Fl. Apr–May.

Scrub on sunny mountain slopes; low elevations. Hainan [India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam].

**4. *Streblus indicus*** (Bureau) Corner, Gard. Bull. Singapore 19: 226. 1962.

假鹊肾树 jia que shen shu

*Pseudostreblus indicus* Bureau in Candolle, Prodr. 17: 220. 1873.

Trees to 15 m, d.b.h. 15–20 cm; monoecious or dioecious. Bark brown, smooth. New branchlets pubescent; spines absent. Stipules linear, small, caducous. Petiole 1–1.5 cm; leaf blade elliptic-lanceolate but narrowly elliptic-lanceolate on young trees, 7–15 × 2.5–4 cm, leathery, glabrous, shiny, abaxially pale green, adaxially green, base cuneate, margin entire, apex obtuse to ± caudate. Bisexual inflorescences with 1 apical female flower and many basal male flowers. Male inflorescences axillary, solitary or paired, scorpioid; bracts 3, triangular, basally connate. Female inflorescences 1-flowered; peduncle 1–1.5 cm. Male flowers: pedicel ca. 6 mm, pubescent; calyx lobes 5, reddish white, imbricate, narrowly elliptic, ca. 4 mm, with marginal hairs; filaments flat; pistillode small, conic-columnar. Female flowers: calyx lobes ± orbicular, ca. 1 cm, enclosing ovary, with marginal hairs; ovary globose; style 2-branched almost from base, densely dark brown pubescent. Drupes globose, ca. 1 cm in diam., enclosed by enlarged calyx lobes, basally attenuate and fleshy. Fl. Oct–Nov.

Mountain slopes, moist shaded areas; 600–1400 m. Guangdong, Guangxi, Hainan, S Yunnan [NE India, Thailand].

**5. *Streblus zeylanicus*** (Thwaites) Kurz, Forest Fl. Burma 2: 464. 1877.

尾叶刺桑 wei ye ci sang

*Epicarpurus zeylanicus* Thwaites, Hooker's J. Bot. Kew Gard. Misc. 4: 1. 1852; *Diplocos zeylanica* (Thwaites) Bureau; *Taxotrophis caudata* Hutchinson; *T. zeylanica* (Thwaites) Thwaites.

Shrubs; dioecious. Branches pubescent; spines few, axillary. Leaf blade ovate-oblong, narrowly elliptic, or lanceolate, 4.5–10(–20) × 1.2–4.5(–5.5) cm, thinly leathery, glabrous, base obtuse to cuneate, margin with or without 5 or more gland-tipped spiny teeth, apex shortly attenuate and tipped by 1 long tooth flanked by 2 short triangular teeth; secondary veins 6–9 on each side of midvein. Bisexual inflorescences absent. Male inflorescences racemose, narrowly elliptic, 1.5–2 cm, densely flowered. Female inflorescences shortly racemose, 2–6-flowered; peduncle 1–1.2 cm; bracts minute, scale-like. Male flowers: sessile or pedicellate; calyx lobes 4, greenish white, ovate, ca. 1.5 mm, glabrous; filaments exerted at anthesis; anthers globose; pistillode minute. Female flowers: long pedicellate; calyx lobes 4, ovate, enclosing drupe when in fruit; ovary obliquely ovoid; style branched, ca. 2 mm. Drupes enclosed by enlarged calyx lobes, without a fleshy base. Fl. Apr, fr. May.

200–500 m. Hainan, Yunnan (Hekou, Yuanyang) [India, Myanmar, Sri Lanka, Vietnam].

Specimens from Yuanyang Xian in Yunnan may be a natural hybrid with *Streblus ilicifolius*. The leaf shape has characteristics of the two species. The male inflorescences are ca. 2.2 cm, and the female inflorescences have clusters of 2 or 3 pedicellate flowers.

**6. *Streblus macrophyllus*** Blume, Mus. Bot. 2: 80. 1856.

双果桑 shuang guo sang

*Dimerocarpus balansae* (Hutchinson) C. Y. Wu & H. L. Li; *D. brenieri* Gagnepain; *Paratrophis caudata* Merrill; *Taxotrophis balansae* Hutchinson.

Scandent shrubs; dioecious. Bark gray. Branchlets angular, without spines. Stipules tapered, 4–5 mm. Leaves on branchlets yellowish green when dry; petiole 3–5 mm; leaf blade elliptic to obovate-elliptic, 8–16 × 3–6 cm, membranous to papery, densely covered with cystoliths, base cuneate to obtuse and ± asymmetric, margin entire or ± undulate, apex caudate; midvein abaxially prominent and adaxially flat, secondary veins 5 or 6 on each side of midvein, abaxially conspicuous, and adaxially inconspicuous. Bisexual inflorescences absent. Male inflorescences spicate, 4–14 cm. Female inflorescences shortly spicate, 4–8-flowered; bracts ovate-lanceolate to reniform. Male flowers: sessile; calyx lobes 4; pistillode small. Female flowers: subsessile; calyx lobes 4, ± orbicular, margin inflexed and ciliate; ovary obliquely ovoid. Drupes globose, ca. 1.5 cm in diam., dehiscent, basally fleshy on one side. Fl. Apr.

Mixed forests, trail sides; 100–300 m. Guangxi, Yunnan [Indonesia, Malaysia, Philippines, Vietnam].

**7. *Streblus ilicifolius*** (S. Vidal) Corner, Gard. Bull. Singapore 19: 227. 1962.

刺桑 ci sang

*Taxotrophis ilicifolia* S. Vidal, Revis. Pl. Vasc. Filip. 249. 1886; *Pseudotrophis laxiflora* Warburg; *Taxotrophis aquifoloides* W. C. Ko; *T. obtusa* Elmer; *T. triapiculata* Gamble.

Trees or shrubs; dioecious. Bark grayish white, smooth. Branchlets angular; spines straight, 1–1.5(–4.5) cm. Stipules tapered, ca. 5 mm. Petiole ca. 4 mm; leaf blade rhombic to oblong-obovate, 1–4.5(–9) × 0.6–2.5(–5) cm, thickly leathery, abaxially with cystoliths, adaxially glabrous and shiny, base cuneate to decurrent, margin loosely revolute with 5 or fewer spiny teeth, apex acute, blunt, or retuse, with two spiny teeth; midvein conspicuous on both surfaces and abaxially prominent, secondary veins pinnate, abaxially inconspicuous, and adaxially slightly depressed. Bisexual inflorescences absent. Male inflorescences axillary, spicate, 0.5–1.2(–5) cm; bracts conspicuous, imbricate, margin dark. Female inflorescences shortly spicate, 2–6-flowered. Male flowers: shortly pedicellate; calyx lobes 4, ± orbicular, margin inflexed and ciliate; pistillode 3–5-branched. Female flowers: calyx lobes 4, outer 2 smaller; ovary oblique. Drupes on brachyblasts, obovate, ca. 1 cm in diam., with persistent bracts, half enclosed by persistent calyx lobes. Fl. Apr, fr. May–Jun.

Limestone areas; 100–500 m. Guangxi, Hainan, S Yunnan [Bangladesh, India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

**6. ARTOCARPUS** J. R. Forster & G. Forster, Char. Gen. Pl. 51. 1775, nom. cons.

波罗蜜属 bo luo mi shu

*Radermachia* Thunberg; *Sitodium* Parkinson, nom. rej.

Trees, evergreen or deciduous, with latex; monoecious. Stipules free, intrapetiolar or lateral, amplexicaul or not. Leaves spirally arranged or distichous; leaf blade simple to pinnatifid, rarely pinnate, leathery, margin entire. Inflorescences sometimes borne on main branches or trunk, unisexual, capitate, many-flowered. Male flowers: free, surrounded by peltate to clavate interfloral bracts; calyx tubular, slightly 2-lobed or 2–4-lobed; lobes imbricate or valvate; stamen 1, straight in bud, slightly to conspicuously exerted from calyx; anthers globose to oblong, 2-loculed; pistillode absent. Female flowers: at least partially adnate to each other and/or to interfloral bracts; calyx tubular, basally thin walled, apically thick walled and either completely fused or not; ovary free; style central or ± lateral; stigmas 1 or 2, equal or unequal. Flowers and bracts fused laterally to form a syncarp. Syncarp fleshy throughout or at least at basal portions of calyx, sometimes very large, flowers and bracts fused at their tips to form an areolate surface or free and forming variously shaped processes on surface. Seed without endosperm; cotyledons fleshy, equal or unequal.

About 50 species: tropical and subtropical Asia, Pacific Islands; 14 species (five endemic, two introduced) in China.

Some species are important for their edible fruit (most notably *Artocarpus communis*, “breadfruit”), and/or timber.

Records of *Artocarpus gomezianus* Wallich ex Trécul from Taiwan (FRPS 23(1): 51. 1998) have not been confirmed, and this species was excluded from Fl. Taiwan. There is also a specimen without flowers or fruit from W Yunnan that may be *A. gomezianus*, which species is recorded from N India, Indonesia, Myanmar, Philippines, Sri Lanka, and Vietnam.

- 1a. Stipules amplexicaul, leaving continuous scar around node; mesophyll with resin cells.
  - 2a. Plant deciduous; bracts many ..... 1. *A. chama*
  - 2b. Plant evergreen; bracts few or absent.
    - 3a. Branchlets mostly pubescent; leaves on mature trees pinnately lobed or pinnatifid; male inflorescences 7–30(–40) cm; fruiting syncarp 8–15 cm in diam. .... 2. *A. communis*
    - 3b. Branchlets glabrous; leaves on mature trees entire; male inflorescences 2–7 cm; fruiting syncarp 25–50 cm in diam. .... 3. *A. heterophyllus*
- 1b. Stipules lateral, leaving small ± D-shaped scars; mesophyll without resin cells.
  - 4a. Leaf blade adaxially glabrous.

MORACEAE

- 5a. Leaf blade abaxially pubescent.  
 6a. Branchlets dark brown; petiole 2–3 cm; leaf blade apex caudate; secondary veins 11–13 on each side of midvein ..... 7. *A. gongshanensis*  
 6b. Branchlets pale reddish brown; petiole 0.4–1 cm; leaf blade apex mucronate; secondary veins 6–9 on each side of midvein ..... 14. *A. tonkinensis*  
 5b. Leaf blade abaxially glabrous.  
 7a. Calyx lobes of male flowers basally connate; fruiting peduncle to 5 mm ..... 10. *A. nitidus*  
 7b. Calyx of male flowers tubular; fruiting peduncle 6–11 mm ..... 11. *A. xanthocarpus*  
 4b. Leaf blade adaxially pubescent at least on midvein.  
 8a. Leaf blade 25–30 × 15–20 cm ..... 13. *A. lakoocha*  
 8b. Leaf blade 4–24 × 4–11 cm.  
 9a. Petiole 0.8–1.5 cm.  
 10a. Leaf blade 4–8 × 2.5–3 cm; branchlets 1–1.5 mm thick; syncarp covered with prominent curved cylindric papillae; fruiting peduncle 1.8–2.5 cm ..... 4. *A. styracifolius*  
 10b. Leaf blade 9–23 × 4–11 cm; branchlets 3–8 mm thick; syncarp without cylindric papillae; fruiting peduncle 2.5–4 cm.  
 11a. Branchlets 7–8 mm thick; male inflorescences 1–3.5 cm in diam. .... 8. *A. nanchuanensis*  
 11b. Branchlets 3–4 mm thick; male inflorescences 0.4–0.7 cm in diam. .... 12. *A. petelotii*  
 9b. Petiole 1.8–4 cm.  
 12a. Male inflorescences 0.4–0.7 cm in diam.; branchlets 1–2.5 mm thick ..... 5. *A. nigrifolius*  
 12b. Male inflorescences 1–1.5 cm in diam.; branchlets (1.5–)4–6 mm thick.  
 13a. Leaf blade with 7–11(–15) lateral veins on each side of midvein; fruiting syncarp green, blackish brown when mature, ca. 12 cm in diam.; peduncle 1–3 cm ..... 6. *A. pithecolobium*  
 13b. Leaf blade with 6–7 lateral veins on each side of midvein; fruiting syncarp pale to golden yellow, 3–4 cm in diam.; peduncle 3–5 cm ..... 9. *A. hypargyreus*

**1. *Artocarpus chama*** Buchanan-Hamilton, Mem. Wern. Nat. Hist. Soc. 5: 331. 1826.

野树波罗 ye shu bo luo

*Artocarpus chaplasha* Roxburgh; *A. melinoxylus* Gagnepain.

Trees to 40 m tall, deciduous. Bark black, gray, or brown, coarse. Branchlets furrowed when dry, 4–8 mm thick, pubescence rust-colored to reddish yellow, hairs long and spreading to bent. Stipules amplexicaul. Leaves spirally arranged; petiole brown, 1.5–4.5 cm, densely pubescent; leaf blade elliptic, oblong, or ovate, 13–37 × 6–21 cm, abaxially densely rust-colored to grayish white pubescent but more densely so along veins, adaxially glabrous or with sparse bent hairs, base broadly cuneate to rounded, margin entire or ± crenate, apex acute to shortly acuminate; secondary veins 9–18 on each side of midvein, apically curved, and joined together near margin, tertiary veins reticulate and with dark brown glandular points. Inflorescences axillary, solitary. Male inflorescences ellipsoid, ovoid, or clavate, 1.2–2.3 × 1–1.8 cm; bracts shield-shaped; pedicel ca. 2 mm, shortly pubescent. Female inflorescences globose to ellipsoid; bracts peltate. Style exerted. Male flowers: calyx lobes 2 or 3, ca. 5 mm, margin ciliate; filaments short; anthers ellipsoid. Fruiting syncarp yellow when young then rust-colored brown, ± globose, 5–6 cm in diam.; peduncle 1.5–4.5 cm, with short brown hairs; persistent calyx separating near top, with several persistent bracts. Drupes ellipsoid, ca. 10 × 6 mm.

Yunnan [Bangladesh, Bhutan, India, Laos, Malaysia, Myanmar, Sikkim, Thailand].

**2. *Artocarpus communis*** J. R. Forster & G. Forster, Char. Gen. Pl. 51. 1775.

面包树 mian bao shu

*Artocarpus altilis* (Parkinson) Fosberg; *A. incisus* (Thunberg) Linnaeus f.; *Radermachia incisa* Thunberg; *Sitodion altile* Parkinson.

Trees 10–15 m tall, evergreen. Bark grayish brown, thick. Branchlets 0.5–1.5 cm thick. Stipules amplexicaul, lanceolate to broadly lanceolate, 10–25 cm, pubescence yellowish green, gray, or brown, hairs bent. Leaves spirally arranged; petiole 8–12 cm; leaf blade ovate to ovate-elliptic, 10–50 cm, thickly leathery, glabrous, abaxially pale green, adaxially dark green and shiny, margin entire, apex acuminate; secondary veins 10 on each side of midvein. Leaves on mature trees pinnately lobed or pinnatipartite; lobes or segments 3–8, lanceolate. Inflorescences axillary, solitary. Male inflorescences yellow, narrowly cylindric, narrowly ellipsoid, or clavate, 7–30(–40) cm. Male flowers: calyx tubular, apically 2-lobed, pubescent, lobes lanceolate; anthers elliptic. Female flowers: calyx tubular; ovary ovoid; style long, apically 2-branched. Fruiting syncarp green to yellow, brown to black when mature, obovoid to ± globose, 15–30 × 8–15 cm, tuberculate; pericarp soft; mesocarp of milky white fleshy calyx. Drupes ellipsoid to conic, ca. 2.5 cm in diam.

Cultivated; low elevations. Hainan, Taiwan [probably native to tropical Asia; now cultivated throughout the tropics].

Plants known as breadfruit produce few or no seeds and are a staple item of the diet in some tropical parts of the world, most notably the Pacific Islands.

**3. *Artocarpus heterophyllus*** Lamarck, Encycl. 3: 209. 1789.

波罗蜜 bo luo mi

Trees 10–20 m tall, d.b.h. 30–50 cm, evergreen. Mature trees with tubular roots. Bark blackish brown, thick. Branchlets

furrowed to smooth, 2–6 mm thick, glabrous. Stipules amplexicaul, ovate, 1.5–8 cm, with or without bent pubescence, caducous, scar annular and conspicuous. Leaves spirally arranged; petiole 1–3 cm; leaf blade elliptic to obovate, 7–15 (or more) × 3–7 cm, lobed on new growth of young trees, leathery, abaxially pale green and with scattered globose to ellipsoid resin cells, adaxially dark green, glabrous, and shiny, base cuneate, margin of mature leaves entire, apex blunt to acuminate; midvein abaxially conspicuously prominent, secondary veins 6–8 on each side of midvein; leaves on mature trees entire. Inflorescences on old stems or brachyblasts. Male inflorescences axillary on apical branchlet, sometimes axillary on axillary brachyblasts, cylindrical to conic-ellipsoid, 2–7 cm, many-flowered but some sterile; peduncle 1–5 cm. Female inflorescences with a globose fleshy rachis. Male flowers: calyx tubular, apically 2-lobed, 1–1.5 mm, pubescent; filament straight in bud; anther ellipsoid. Female flowers: calyx tubular, apically lobed; ovary 1-celled. Fruiting syncarp pale yellow when young, yellowish brown when mature, ellipsoid, globose, or irregularly shaped, 30–100 × 25–50 cm, with stiff hexagonal tubercles and thick hairs. Drupes narrowly elliptic, ca. 3 × 1.5–2 cm. Fl. Feb–Mar.

Cultivated; low elevations. Guangdong, Guangxi, Hainan, S Yunnan [native to India; cultivated throughout the tropics].

**4. *Artocarpus styracifolius*** Pierre, Bull. Soc. Bot. France 52: 492. 1905.

二色波罗蜜 er se bo luo mi

*Artocarpus bicolor* Merrill & Chun.

Trees to 20 m. Bark dark gray, rough. Young branchlets 1–1.5 mm thick, densely white appressed-puberulent. Stipules subulate, caducous. Leaves distichous; petiole 0.8–1.4 cm, pubescent; leaf blade oblong, obovate-lanceolate, or sometimes elliptic, 4–8 × 2.5–3 cm, lobed or apically shallowly toothed on new leaves of young trees, leathery to papery, abaxially densely covered with white farinaceous hairs especially on veins, adaxially dark green and sparsely pubescent, base cuneate to decurrent on petiole, margin entire, apex acuminate to caudate; secondary veins 4–7 on each side of midvein, tertiary veins reticulate, abaxially ± flat, and adaxially raised when dry. Inflorescences axillary, solitary. Male inflorescences ellipsoid, 6–12 × 4–7 mm, densely covered with grayish white pubescence; peduncle ca. 1.5 cm with glandular hairs; bracts 1(–6), shield-shaped to ± orbicular. Male flowers: filament thin; anther globose. Female flowers: calyx lobes 2 or 3, oblong, pubescent. Fruiting syncarp yellow, reddish brown when dry, globose, ca. 4 cm in diam., pubescent, covered with curved cylindrical papillae; peduncle 1.8–2.5 cm, pubescent. Drupes globose. Fl. early autumn, fr. late autumn to early winter.

Forests; 200–1500 m. Guangdong, Guangxi, Hainan, SW Hunan, SE Yunnan [Laos, Vietnam].

The wood is used for furniture and the fruit for jam.

**5. *Artocarpus nigrifolius*** C. Y. Wu, Acta Bot. Yunnan. 11: 28. 1989.

牛李 niu li

Trees to 15 m tall, straight, deciduous. Branchlets brownish black, wrinkled, 1–2.5 mm thick. Young buds with short rust-colored pubescence. Petiole blackish, thin, 1.8–2.8 cm, with short rust-colored pubescence when young, glabrate; leaf blade elliptic to narrowly elliptic, 5–11 × 2–4 cm, thinly papery, abaxially greenish brown and with very small white papillae, adaxially nearly black and glabrous, base cuneate to broadly cuneate and ± asymmetric, margin entire, apex acuminate to caudate and with a 0.5–1.5 cm cauda; midvein and secondary veins conspicuous on both surfaces, tertiary veins inconspicuous. Inflorescences axillary, solitary. Male inflorescences 4–7 mm in diam. Female inflorescences white when young, rust-colored-green when dry, obconic, 5–9 mm, basally tuberculate, apex blunt; peduncle 1–1.5 cm, thin. Mature fruiting syncarp unknown.

• Dense moist forests; ca. 1000 m. S Yunnan (Jinping).

**6. *Artocarpus pithecogallus*** C. Y. Wu, Acta Bot. Yunnan. 11: 26. 1989.

猴子瘦袋 hou zi ying dai

Trees 7–18 m tall, evergreen. Young branchlets dark brown, wrinkled, 4–6 mm thick, pubescent, glabrescent, with scattered lenticels. Petiole 1.5–4 cm; leaf blade elliptic to elliptic-ovate, 4–24 × (1.5–)5–10 cm, leathery, abaxially brownish red to pale white and pubescent, adaxially blackish green, shiny, and glabrous but midvein with scattered white pubescence, base broadly cuneate to rounded and ± asymmetric, margin entire, apex caudate; veins abaxially prominent, secondary veins 7–11(–15) on each side of midvein and curved, tertiary veins numerous and parallel. Inflorescences axillary, solitary. Male inflorescences obovoid, ca. 2.5 × 1.4 cm, tuberculate, with short rust-colored pubescence; peduncle 1–1.5 cm, thick. Fruiting syncarp green, blackish brown when dry, ± globose, ca. 12 cm in diam., sparsely tuberculate or smooth, pubescence pale red and short; peduncle 1–3 cm, thick.

• Moist forests; 1400–1700 m. S Yunnan (Xishuangbanna).

**7. *Artocarpus gongshanensis*** S. K. Wu ex C. Y. Wu & S. S. Chang, Acta Bot. Yunnan. 11: 29. 1989.

贡山波罗蜜 gong shan bo luo mi

Trees to 30 m tall, d.b.h. 30–40 cm, evergreen. Branchlets dark brown, tubercular when young, wrinkled with age, thick, pale red to rust-colored pubescent when young, glabrescent, with scattered lenticels. Petiole 2–3 cm; leaf blade elliptic to oblong-elliptic, ca. 20 × 9–10 cm, leathery, abaxially dark gray, densely pubescent, and tuberculate on midvein and secondary veins, adaxially dark green, shiny, and glabrous, base broadly cuneate to ± cordate, margin entire or shallowly crenate, apex caudate with a 5–10 mm cauda; midvein adaxially slightly impressed, midvein and secondary veins abaxially prominent, secondary veins 11–13 on each side of midvein and curved, tertiary veins numerous, parallel, and with gray pubescence. Inflorescences axillary, solitary. Female inflorescences pale red to reddish yellow, ± globose, 3–3.5 cm in diam., tubercular, densely pubescent; peduncle 2.5–3 cm, thick.

• Evergreen forests; 1300–1400 m. NW Yunnan (Gongshan).

**8. *Artocarpus nanchuanensis*** S. S. Chang et al., Acta Bot. Yunnan. 11: 29. 1989.

南川木波罗 nan chuan mu bo luo

Trees to 25 m, d.b.h. 60 cm. Bark dark brown, longitudinally furrowed. Branchlets cylindrical, 7–8 mm thick, rust-colored pubescent when young. Winter buds ovate, 2–3 mm in diam., pale brown pubescent when young. Petiole 1.2–1.5 cm, densely hairy with short, coarse, and spreading hairs; leaf blade oblong to elliptic, 12–18 × 7–11 cm, leathery, abaxially grayish green but gray to brown when dry and densely covered with white coarse pubescence, adaxially dark green and sparsely covered with white coarse appressed hairs, base broadly cuneate and decurrent on petiole, margin entire or shallowly crenate, apex acute to acuminate; secondary veins 5–7 on each side of midvein, apically curved toward margin, and abaxially prominent, tertiary veins reticulate and conspicuous on both surfaces when dry. Male inflorescences 1–3.5 cm in diam. Female inflorescences yellowish brown, obovate, ca. 1.5 cm, densely covered with short white pubescence, sparsely papillate; peduncle 1.5–2 cm, densely covered with white coarse hairs; bracts papillate. Fruiting syncarp yellowish orange when mature, globose, 4–6 cm in diam., covered with short coarse hairs; peduncle 2.5–4 cm, densely covered with short coarse hairs. Drupes numerous, ± globose to ovate-elliptic, 1–1.5 cm in diam.; carpodermis thin.

• 500–600 m. Chongqing (Nanchuan).

**9. *Artocarpus hypargyreus*** Hance in Bentham, Fl. Hongk. 325. 1861.

白桂木 bai gui mu

Trees 10–25 m tall, d.b.h. 40 cm. Bark dark purple, exfoliating. Young branchlets 1.5–2 thick, grayish to whitish appressed puberulent. Stipules linear, caducous. Leaves distichous; petiole 1.5–2 cm, pubescent; leaf blade elliptic to obovate, 8–15 × 4–7 cm, pinnately lobed on young trees, leathery, abaxially green to whitish green and with farinaceous pubescence, adaxially dark green and puberulent on midvein when young, base cuneate, margin entire, apex acuminate to shortly acuminate; veins conspicuous and grayish white when dry, secondary veins 6–7 on each side of midvein, apically curved, abaxially prominent, and adaxially flat. Inflorescences axillary, solitary. Male inflorescences ellipsoid to obovoid, 1.5–2 × 1–1.5 cm; peduncle 2–4.5 cm, pubescent; bracts shield-shaped. Male flowers: calyx lobes 4, spatulate, densely pubescent, adnate to bracts; anther ellipsoid. Fruiting syncarp pale to golden yellow, ± globose, 3–4 cm in diam., brown pubescent, papillate; peduncle 3–5 cm, shortly pubescent. Fl. spring to summer.

• Broad-leaved evergreen forests; 100–1700 m. Fujian, Guangdong, Guangxi, Hainan, S Hunan, Jiangxi, SE Yunnan.

The milky latex is used for making stiff rubber and the wood for furniture.

**10. *Artocarpus nitidus*** Trécul, Ann. Sci. Nat., Bot., sér. 3, 8: 119. 1847.

光叶桂木 guang ye gui mu

Trees or small trees, to 17 m tall, straight. Bark black to brown, longitudinally fissured. Branchlets cylindrical, wrinkled, 2–3 mm thick, appressed puberulent, rapidly glabrescent. Stipules lanceolate, caducous. Petiole 0.5–2 cm; leaf blade oblong to ± orbicular [or ovate], 7–15 × 3–7 cm, leathery to thinly leathery, glabrous, abaxially pale green, adaxially dark green, young leaves with both surfaces black when dry, base cuneate, ± rounded, or blunt, margin entire or irregularly shallowly toothed, apex acute and mucronate to caudate; secondary veins 6–10 on each side of midvein, adaxially prominent. Male inflorescences capitate, obovoid, or oblong [or rodlike] 2.5–12 × 2.7–7 mm. Female inflorescences ± capitate [or ± globose]; peduncle 1.5–8 mm. Male flowers: calyx lobes 2–4, basally connate for 0.5–0.7 mm. Female flowers: calyx tubular; style exerted. Fruiting syncarp red, reddish orange, or yellow, brown when dry, ± globose, ca. (1.5–)5 cm in diam., fleshy, glabrous or sparsely covered with coarse pubescence; peduncle to 5 mm; bracts persistent. Drupes [1–6 or]10–15. Fl. Apr–May.

Mixed forests, forests; 200–300 m. Guangdong, Guangxi, Hainan, S Hunan, S Yunnan [Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam].

*Artocarpus nitidus* subsp. *nitidus* is restricted to the Philippines.

- 1a. Leaf blade thinly leathery; fruit with coarse pubescence ..... 10a. subsp. *lingnanensis*  
 1b. Leaf blade leathery; fruit glabrous or with sparse reddish brown pubescence ..... 10b. subsp. *griffithii*

**10a. *Artocarpus nitidus*** subsp. ***lingnanensis*** (Merrill) F. M. Jarrett, J. Arnold Arbor. 41: 124. 1960.

桂木 gui mu

*Artocarpus lingnanensis* Merrill, Lingnan Sci. J. 7: 302. 1929; *A. parvus* Gagnepain.

Trees to 17 m tall. Petiole 0.5–1.5 cm; leaf blade oblong-elliptic to obovate-elliptic, 7–15 × 3–7 cm, thinly leathery, base cuneate to ± rounded, margin entire or irregularly shallowly toothed, apex mucronate to caudate; secondary veins 6–10 on each side of midvein, adaxially prominent. Male inflorescences capitate, obovoid, or oblong, 2.5–12 × 2.7–7 mm. Peduncle of female inflorescences 1.5–5 mm. Male flowers: calyx lobes 2–4, basally connate for 0.5–0.7 mm. Fruiting syncarp red when mature, brown when dry, ± globose, with coarse pubescence.

• Mixed forests. Guangdong, Guangxi, Hainan, S Hunan, S Yunnan [cultivated in Cambodia, Thailand, and N Vietnam].

The fruit are edible and also used medicinally.

**10b. *Artocarpus nitidus*** subsp. ***griffithii*** (King ex J. D. Hooker) F. M. Jarrett, J. Arnold Arbor. 41: 128. 1960.

披针叶桂木 pi zhen ye gui mu

*Artocarpus gomezianus* Wallich ex Trécul subsp. *griffithii* King ex J. D. Hooker, Fl. Brit. Ind. 5: 544. 1888; *A. eberhardtii* Gagnepain; *A. griffithii* (King ex J. D. Hooker) Merrill.

Small trees. Petiole 1.5–2 cm; leaf blade oblong, 8–15 ×

3.4–5.4 cm, leathery, base rounded, margin entire, apex mucronate; midvein and secondary veins adaxially conspicuous, secondary veins 6–8 on each side of midvein. Peduncle of female inflorescences 7–8 mm. Fruiting syncarp orange red to yellow, globose, glabrous or with sparse reddish brown pubescence.

Forests; 200–300 m. S Yunnan [Cambodia, Indonesia, Laos, Malaysia, Thailand, Vietnam].

**11. *Artocarpus xanthocarpus*** Merrill, Publ. Bur. Sci. Gov. Lab. 17: 10. 1904.

黄果波罗蜜 huang guo bo luo mi

Trees to 8 m tall. Branchlets pale red to ± blackish when young, cylindric, slightly wrinkled, 1.5–3 mm thick, appressed-puberulent, glabrescent. Petiole 0.5–2 cm; leaf blade green, pale brown, or pale green when dry, obovate-elliptic to elliptic-oblong, 5.5–20 × 2.5–9 cm, glabrous, base cuneate to rounded, margin entire, apex acuminate to caudate with a cauda to 3 cm; midvein abaxially prominent, secondary veins 6–11 on each side of midvein and curved, tertiary veins reticulate. Inflorescences axillary, solitary or paired. Male inflorescences globose to obovoid, 3–6 × 3–4 mm; peduncle 2–3 mm, pubescent; bracts small, petiolate, margin ciliate, apically shield-shaped. Female inflorescences capitate; bracts shield-shaped. Male flowers: calyx tubular, apically 2-lobed; filament apically narrowed; anther ellipsoid. Female flowers: style exerted 0.8–1 mm, papillate. Fruiting syncarp yellow when mature, whitish to reddish brown when dry, ± globose, developing into 2 elongated lobes, smooth, glabrous or sparsely tomentose. Calyx and hypocarp adnate and fleshy and enclosing a few drupes; peduncle 6–11 mm, pubescent; bracts few, persistent. Drupes ellipsoid, ca. 4 mm in diam.

Taiwan (Lan Yu) [Indonesia (Kalimantan), Philippines].

**12. *Artocarpus petelotii*** Gagnepain, Bull. Soc. Bot. France 73: 89. 1926.

短绢毛波罗蜜 duan juan mao bo luo mi

*Artocarpus brevisericus* C. Y. Wu & W. T. Wang.

Trees to 10 m. Branchlets 3–4 mm thick, sporadically white or reddish brown pubescent. Stipules lanceolate, 7–12 mm, adaxially densely covered with short pubescence, caducous. Petiole 0.8–1.5 cm, gray pubescent; leaf blade elliptic to narrowly elliptic, 9–23 × 4–9 cm, papery, glabrous except midvein abaxially with reddish brown short pubescence, base blunt, rounded, or broadly cuneate, margin entire or apically with a few teeth, apex acuminate to acute; reticulate veins abaxially dense and prominent. Male inflorescences axillary, solitary, obovoid-oblong, 1.8–2.3 × 0.4–0.7 cm, densely covered with short grayish white pubescence; peduncle 7–10 mm, densely covered with short gray pubescence; bracts shield-shaped. Female inflorescences capitate, irregularly furrowed and papillate. Male flowers: calyx 2-lobed; stamen glabrous; filament flat; anther globose. Female flowers: calyx tubular with 2 or 3 apical lobes; style exerted. Fruiting syncarp red when dry, globose or lobed, 3–5 cm in diam., fleshy, shortly pubescent;

peduncle 3.5–4 cm, pubescent. Drupes ellipsoid, 1–1.3 cm in diam. Fl. spring to summer.

Montane forests; ca. 1900 m. SE Yunnan [N Vietnam].

**13. *Artocarpus lakoocha*** Roxburgh, Fl. Ind., ed. 1832, 3: 524. 1832.

野波罗蜜 ye bo luo mi

*Artocarpus ficifolius* W. T. Wang; *A. yunnanensis* Hu.

Trees 10–15 m tall. Branchlets 3–6 mm thick, densely covered with stiff pale brown to yellow pubescence, glabrescent. Stipules ovate-lanceolate, 4–5 cm, membranous, densely pubescent. Leaves distichous; petiole 2–3 cm, densely covered with yellow bristles; leaf blade broadly elliptic to elliptic, 25–30 × 15–20 cm, sometimes pinnately lobed, abaxially with yellow bristles, adaxially coarse, base broadly cuneate to obtuse, margin entire or with small teeth, apex obtuse; secondary veins (9–)10–12(–18) on each side of midvein, abaxially prominent, adaxially flat. Male inflorescences ovoid to ellipsoid, 1–3.5(–4) × 1.5–2 cm, pedunculate; bracts shield-shaped, margin ciliate. Male flowers: calyx deeply 2-lobed. Fruiting syncarp reddish brown when dry, ± globose, ca. 7 cm in diam., with bent bristles.

Forests on limestone mountains; 100–1300(–1800) m. S Yunnan [India, Indonesia, Laos, Myanmar, Nepal, Sikkim, Vietnam].

The name is sometimes given as "*Artocarpus lacucha*" Buchanan-Hamilton ex D. Don, but this is not a valid name.

**14. *Artocarpus tonkinensis*** A. Chevalier ex Gagnepain, Bull. Soc. Bot. France 73: 90. 1926.

胭脂 yan zhi

Trees 14–16 m tall. Bark brown, coarse. Branchlets pale reddish brown, 1.5–2.5 mm thick, curly to appressed puberulent. Stipules pyramidal, often caducous and leaving a scar. Petiole 4–10 mm, sparsely pubescent; leaf blade elliptic, obovate, or narrowly oblong, 8–20(or longer) × 4–10 cm, leathery, abaxially greenish, densely pubescent and sparsely covered with short curly hairs along midvein, adaxially glabrous, base cuneate to rounded, margin entire or sometimes apically with a few shallow teeth, apex mucronate; midvein and secondary veins abaxially conspicuously raised and reddish when dry, secondary veins 6–9 on each side of midvein, tertiary veins pale brown. Inflorescences axillary, solitary. Male inflorescences obovoid to ellipsoid, 1–1.5 × 0.8–1.5 cm; peduncle shorter than inflorescence; bracts petiolate, shield-shaped. Female inflorescences globose; bracts shield-shaped. Male flowers: calyx lobes 2 or 3, margin ciliate; anther ellipsoid. Female flowers: calyx completely connate; style exerted. Fruiting syncarp yellow when mature, reddish brown when dry, ± globose, ca. 6.5 cm in diam.; peduncle 3–4 cm. Drupes ellipsoid, 1.2–1.5 × 0.9–1.2 cm. Fl. summer to autumn.

Sunny mountain slopes; below ca. 800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Yunnan [Cambodia, N Vietnam].

The wood is very hard and the fruit are edible.

7. **MACLURA** Nuttall, Gen. N. Amer. Pl. 2: 233. 1818, nom. cons.

柘属 zhe shu

*Cudrania* Trécul, nom. cons.; *Ioxylon* Rafinesque, nom. rej.; *Vanieria* Loureiro, nom. rej.

Trees, small trees, shrubs, scandent shrubs, or woody vines, evergreen or deciduous, with latex; dioecious. Spines usually present at least on juvenile growth, axillary, straight or curved. Stipules free. Leaves spirally arranged or distichous; leaf blade margin entire, veins pinnate. Inflorescences axillary, globose, spicate, or racemose, without involucral bracts but often with many bracts at base of inflorescence; interfloral bracteoles adnate to calyx, 2–4 around each flower, each with 2 embedded yellow glands. Female inflorescences globose. Flowers free or connate. Male flowers: calyx lobes (3 or)4(or 5), imbricate, free or basally connate, each lobe with 2–7 embedded glands; stamens as many as calyx lobes, erect, straight in bud [or sometimes inflexed]; pistillode present or not. Female flowers: sessile; calyx peltate, fleshy, free or basally connate, apex thick; ovary free or immersed in a receptacle; style short; stigmas 1 or 2, unequal. Syncarp formed by laterally fused flowers and bracts, fleshy, globose or ± globose; calyx and interfloral bracteoles enlarged. Druplets ovoid, surface shell-like, enveloped by a fleshy calyx. Seed thin and fleshy, with endosperm; cotyledons broad, variously twisted, equal or unequal, folded around radicle.

About 12 species: Africa, Asia, Australia, North America, Pacific Islands, South America; five species in China.

Asian members of this genus have been segregated as *Cudrania* on the basis of the straight rather than inflexed stamens and shorter style arms, but it has been shown that these characters are unreliable and that *Cudrania* is best included within *Maclura*.

The North American tree *Maclura pomifera* (Rafinesque) C. K. Schneider is cultivated in Hebei.

*Cudrania bodinieri* H. Léveillé is *Capparis cantoniensis* Loureiro (Capparaceae).

## 1a. Stems pubescent.

2a. Young branchlets brown pubescent; leaf blade 12–16 × 6–7 cm; petiole 2–3 cm ..... 3. *M. amboinensis*

2b. Young branchlets densely yellowish brown pubescent; leaf blade 4–12 × 2.5–5.5 cm; petiole ca. 1.5 cm ..... 4. *M. pubescens*

## 1b. Stems glabrous or nearly so.

3a. Leaf blade 2–2.5 cm wide, base cuneate; secondary veins 7–10 on each side of midvein ..... 1. *M. cochinchinensis*

3b. Leaf blade 3–6 cm wide, base rounded or broadly cuneate, rarely cuneate; secondary veins 4–6 on each side of midvein.

4a. Woody vines; leaf blade broadly elliptic ..... 2. *M. fruticosa*

4b. Tree or shrub; leaf blade ovate to rhombic ..... 5. *M. tricuspidata*

**1. *Maclura cochinchinensis*** (Loureiro) Corner, Gard. Bull. Singapore 19: 239. 1962.

枸棘 gou ji

*Vanieria cochinchinensis* Loureiro, Fl. Cochinch. 2: 564. 1790; *Cudrania cochinchinensis* (Loureiro) Kudô & Masamune; *C. integra* F. T. Wang & T. Tang; *C. javanensis* Trécul; *C. obovata* Trécul; *C. rectispina* Hance; *Maclura gerontogea* Siebold & Zuccarini; *Trophis spinosa* Roxburgh ex Willdenow; *Vanieria cochinchinensis* var. *gerontogea* (Siebold & Zuccarini) Nakai.

Shrubs, erect or scandent. Branches glabrous; spines curved or straight, to ca. 2 cm, sometimes very inconspicuous. Petiole ca. 1 cm; leaf blade elliptic-lanceolate to oblong, 3–8 × 2–2.5 cm, papery to leathery, glabrous, base cuneate, margin entire, apex rounded to shortly acuminate; secondary veins 7–10 on each side of midvein, tertiary veins reticulate. Male inflorescences a capitulum, 6–10 mm in diam., pedunculate. Female inflorescences pubescent; peduncle to 1 cm. Male flowers: calyx lobes 4, unequal; anthers short; pistillode pyramidal or shield-shaped. Female flowers: calyx lobes free or basally connate, apex thick. Fruiting syncarp reddish orange when mature, 2–5 cm in diam., pubescent. Drupes brown when mature, ovoid, smooth. Fl. Apr–May, fr. Jun–Jul.

Near villages. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, SE Xizang, Yunnan,

Zhejiang [Bhutan, India, Indochina, Japan, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam; Australia, Pacific Islands].

This species is widespread and variable. The binomial has often been ascribed to Kudô & Masamune (Ann. Rep. Taihoku Bot. Gard. 2: 27. 1932.) but they mentioned only var. *gerontogea* and thus did not validate any new name as they ascribed the variety to a then non-existent binomial. The identity of *Cudrania chinensis* Loureiro, published simultaneously with *Maclura cochinchinensis* Loureiro, is uncertain as no type material has been found, but the most likely possibility is that it is a spineless form of this species.

**2. *Maclura fruticosa*** (Roxburgh) Corner, Gard. Bull. Singapore 19: 239. 1962.

柘藤 zhe teng

*Batis fruticosa* Roxburgh, Fl. Ind., ed. 1832, 3: 763. 1832; *Cudrania fruticosa* (Roxburgh) Wight ex Kurz; *Vanieria fruticosa* (Roxburgh) Chun.

Woody vines. Branchlets grayish white to pale brown, longitudinally ridged when dry, glabrous, lenticellate; spines curved, often absent on flowering shoots. Petiole 1–1.2 cm, glabrous; leaf blade broadly elliptic, 8–14 × 3.5–6 cm, membranous, abaxially pale green and pubescent sporadically along veins, adaxially dark green and glabrous, base rounded to broadly cuneate, margin entire, apex acute to caudate; basal lateral veins 2 and extending to 1/3 of leaf blade length, secondary

veins 4 or 5 on each side of midvein, abaxially conspicuous, and adaxially flat, tertiary veins  $\pm$  parallel. Inflorescences axillary, in pairs. Male inflorescences with a slender peduncle to 1.5 cm; capitulum ca. 1 cm in diam. Male flowers: calyx lobes fleshy, margin revolute, apex thick; filaments short; pistillode pyramidal. Female flowers: calyx lobes fleshy, basally connate, margin revolute, apically free and thick. Fruiting syncarp  $\pm$  globose, ca. 2 cm in diam. Mature drupes pealike, 5–6 mm in diam., enclosed by persistent calyx lobes. Fl. Apr–May, fr. Jul–Aug.

Monsoon forests; 1000–1700 m. S Yunnan [Bangladesh, NE India, Myanmar, Thailand, Vietnam].

**3. *Maclura amboinensis*** Blume, Mus. Bot. 2: 84. 1856.

景东柘 jing dong zhe

*Cudrania amboinensis* (Blume) Miquel; *C. grandifolia* Merrill; *C. jingdongensis* S. S. Chang.

Scandent shrubs. Branches cylindrical; densely brown pubescent; spines curved, 1–1.5 cm. Petiole 2–3 cm, sparsely pubescent; leaf blade narrowly oblong-elliptic, 12–16  $\times$  6–7 cm, papery, abaxially sparsely pubescent along midvein, adaxially green and glabrous, base rounded to broadly cuneate, apex acuminate to obtuse; midvein abaxially conspicuous and adaxially slightly impressed, secondary veins 6 or 7 on each side of midvein. Peduncle 4–5 mm. Fruiting syncarp solitary or in pairs, orange red when mature,  $\pm$  globose, 2–2.5 cm in diam.; persistent calyx lobes fleshy, shield-shaped. Drupes ovoid, smooth.

Forests; 1400–1600 m. Xizang (Médog), CS to S Yunnan [Indonesia, Malaysia, New Guinea, Thailand].

**4. *Maclura pubescens*** (Trécul) Z. K. Zhou & M. G. Gilbert, **comb. nov.**

毛柘藤 mao zhe teng

Basionym: *Cudrania pubescens* Trécul, Ann. Sci. Nat. Bot, sér. 3, 8: 125. 1847; *C. jinghongensis* S. S. Chang; *Maclura cochinchinensis* (Loureiro) Corner var. *pubescens* (Trécul) Corner; *Vanieria pubescens* (Trécul) Chun.

Woody vines. Branchlets pale brown, grayish green when older, cylindrical, striate when dry, densely yellow brown pubescent; lenticels elliptic; spines present on longer branches, often absent on flowering shoots. Petiole ca. 1.5 cm, densely yellow-

ish brown pubescent; leaf blade oblong-elliptic to obovate-elliptic, 4–12  $\times$  2.5–5.5 cm, abaxially densely yellowish brown long pubescent, adaxially subglabrous, base broadly cuneate to  $\pm$  rounded, margin entire, apex acuminate to shortly acuminate; midvein adaxially conspicuous, secondary veins 5 or 6 on each side of midvein, tertiary veins reticulate. Male inflorescences axillary, in pairs, capitulate, ca. 1 cm in diam.; peduncle shorter than capitulum. Male flowers: densely yellow brown pubescent; calyx lobes fleshy, basally connate, apically free; filaments short; pistillode conic. Fruiting syncarp orange red when mature,  $\pm$  globose, 1.5–2 cm in diam. Drupes ovoid.

Forest margins; 500–1100 m. N Guangdong, Guangxi, S Guizhou, S Yunnan [Indonesia, Malaysia, Myanmar].

**5. *Maclura tricuspidata*** Carrière, Rev. Hort. 1864: 390. 1864.

柘 zhe

*Cudrania tricuspidata* (Carrière) Bureau ex Lavallée; *C. triloba* Hance; *Morus integrifolia* H. Léveillé & Vaniot; *Vanieria tricuspidata* (Carrière) Hu; *V. triloba* (Hance) Satake.

Shrubs or small trees, 1–7 m tall, deciduous. Bark grayish brown. Branchlets slightly ridged, glabrous; spines 0.5–2 cm. Winter buds reddish brown. Petiole 1–2 cm, sparsely pubescent; leaf blade ovate to rhombic-ovate, occasionally 3-lobed, 5–14  $\times$  3–6 cm, abaxially greenish white and glabrous or sparsely pubescent, adaxially deep green and glabrous, base rounded to cuneate, margin entire, apex acuminate; secondary veins 4–6 on each side of midvein, tertiary veins reticulate. Inflorescences axillary, single or in pairs. Male inflorescences capitulate, ca. 5 mm in diam.; peduncle shorter than capitulum. Female inflorescences 1–1.5 cm in diam., axillary; peduncle short. Male flowers: calyx lobes fleshy, margin revolute, apex thick; pistillode pyramidal. Female flowers: calyx lobes with margin revolute, apically shield-shaped; ovary immersed in lower part of calyx. Fruiting syncarp orange red when mature,  $\pm$  globose, ca. 2.5 cm in diam. Fl. May–Jun, fr. Jun–Jul.

Sunny forest margins, mountain slopes; 500–2200 m. Anhui, Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, S Shanxi, Sichuan, Yunnan, Zhejiang [Japan (cultivated), Korea].

The bark fibers are used for making paper, the leaves are used as food for silkworms, the fruit are edible, and the bark is used medicinally.

**8. ANTIARIS** Leschenault, Ann. Mus. Natl. Hist. Nat. 16: 476. 1810, nom. cons.

见血封喉属 jian xue feng hou shu

*Ipo* Persoon, nom. rej.

Trees, evergreen, with latex; monoecious. Stipules small, adnate to petiole, caducous. Leaves alternate, distichous; leaf blade margin entire or sometimes serrate; veins pinnate. Male inflorescences discoid, fleshy, many-flowered, without interfloral bracteoles, pedunculate. Involucral bracts imbricate, persistent in fruit. Female inflorescences 1-flowered, sessile or pedunculate. Male flowers: shortly pedicellate; calyx lobes (3 or)4, spatulate, fleshy, apically concave; stamens 3–8, straight in bud, included; pistillode absent. Female flowers: usually solitary in a pear-shaped receptacle, covered by numerous bracts, without sepals; ovary enclosed in involucre and adnate to receptacle; style subuliform, 2-branched, curved, exserted, pubescent. Fruit partly immersed in fleshy receptacle, fleshy, bracts persistent. Seed with hard exotesta; cotyledons fleshy, equal in size; embryo  $\pm$  globose; radicle small.

One species: widely distributed in Old World tropics; one species in China.



**1. *Antiaris toxicaria*** Leschenault, Ann. Mus. Natl. Hist. Nat. 16: 478. 1810.

见血封喉 *jian xue feng hou*

Trees 25–40 m tall, d.b.h. 30–40 cm, occasionally with buttresses when large. Bark gray, coarse. Branchlets brown pubescent when young, furrowed when dry. Stipules lanceolate, caducous. Petiole 5–8 mm, with long thick hairs; leaf blade elliptic to obovate but narrowly elliptic on mature plants, 7–19 × 3–6 cm, abaxially pale green but brown when dry and densely covered with long thick hairs but more densely so along main veins, adaxially dark green and sparsely covered with long thick hairs, base rounded to ± cordate and asymmetric, margin serrate, apex acuminate; secondary veins 10–13 on each side of midvein, apically inflexed. Male inflorescences ca. 1.5 cm

wide; involucre bracts triangular, boatlike, outside pubescent. Female inflorescences pear-shaped, 1-flowered, covered by numerous bracts. Male flowers: filament very short; anthers ellipsoid, with purple spots. Female flowers: without sepals; style 2-branched, subuliform, pubescent. Drupes bright red to purple red, pear-shaped, ca. 2 cm in diam. when mature. Fl. Mar–Apr, fr. May–Jun.

Rain forests; below 1500 m. Guangdong, Guangxi, Hainan, S Yunnan [India, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

There are several recognized subspecies, but only subsp. *toxicaria* occurs in China.

The latex contains varying amounts of cardiac glycosides and can be very poisonous. The bark fiber is used for cordage.

## 9. *FICUS* Linnaeus, Sp. Pl. 2: 1059. 1753.

榕属 *rong shu*

Trees, shrubs, climbers, stranglers, or sometimes woody epiphytes, evergreen or deciduous, with latex; monoecious species with male, gall (sterile female), and female flowers in each fig or dioecious with either male and gall flowers or only female flowers in each fig. Stipules often connate, lateral to amplexicaul and enclosing terminal leaf bud, caducous or ± persistent, scar ringlike. Leaves usually alternate, rarely opposite or ± verticillate; leaf blade simple to lobed, rarely palmate, glabrous or hairy, abaxially usually with waxy spots (“wax glands”) at base of leaf blade or in axil of secondary veins, with or without papillalike cystoliths, margin entire or toothed; veins pinnate to ± palmate. Inflorescences axillary or on specialized cauliflorous branches, a fig (syconium) with many minute flowers inserted on inner wall of hollow receptacle communicating with outside through an apical pore or apical pore closed by scale-like bracts, sessile or pedunculate; involucre bract usually 3 at base of fig; lateral bracts sometimes present on side of fig, scale-like, caducous or persistent. Male flowers: calyx lobes 2–6; stamens 1–3 (rarely more), straight in bud; pistillode present or absent. Gall flowers: similar to female flowers but never producing seeds and usually occupied by a fig wasp. Female flowers: calyx lobes 0–6; ovary free, straight or oblique; styles 1 or 2 and unequal, apical or lateral. Fruit a seedlike achene, usually enclosed within syncarp formed from an enlarged hollow fleshy receptacle. Seeds pendulous; endosperm usually scanty; cotyledons equal or unequal, sometimes folded.

About 1000 species: mainly in tropics and subtropics, particularly diverse in SE Asia; 99 species (16 endemic, two introduced) in China.

The species of *Ficus* are immediately recognizable by the very distinctive inflorescence, the “fig.” Many are grown as ornamentals in tropical and subtropical regions and as house plants elsewhere, and a few, most notably *F. carica*, are valued as fruit trees. Fig wasps, Hymenoptera of the family Agaonidae, are very specialized symbiotic pollinators of *Ficus* with life cycles closely tied to the flowering and fruiting cycles of the figs. The wasp taxonomy closely parallels that of *Ficus* with genera of the wasps mostly being restricted to particular subgenera, sections, or subsections of *Ficus*. The wasp larvae feed on short-styled female flowers or, in the male figs of the dioecious species, on specialized gall (sterile female) flowers. Figs are present at some stage of development throughout the year within nearly all populations of *Ficus*, thus ensuring the survival of the fig wasps, which are short-lived after leaving the figs.

The genus shows considerable diversity in floral morphology and has been divided into a number of distinct genera, but the overall inflorescence morphology is so consistent and distinctive that these generic segregates never came into general use. Corner, in a series of papers (Gardens’ Bulletin, Singapore 1960–1965) divided the Asian and African members of the genus into four subgenera and a complex hierarchy of lower groups, based primarily on floral characters. Berg (Blumea 48: 167–178. 2003) modified the subgeneric classification of Corner, giving more emphasis to vegetative characters, and his scheme has been adopted for this account.

The following names of Chinese *Ficus* belong to taxa in other families: *F. corymbifera* H. Léveillé is *Solanum erianthum* D. Don (Solanaceae); *F. hirtiformis* H. Léveillé & Vaniot is *Actinidia eriantha* Benth (Actinidiaceae); *F. marchandii* H. Léveillé is *Capparis acutifolia* subsp. *viminea* Jacobs (Capparaceae); *F. ouangliensis* H. Léveillé & Vaniot is *Aglaiia tetrapetala* (Pierre) Pellegrin (Meliaceae); *F. rufipes* H. Léveillé & Vaniot, p.p. (*Esquirol* 75 and 76) is *Psychotria prainii* H. Léveillé (Rubiaceae); *F. salix* H. Léveillé & Vaniot is *Salix babylonica* Linnaeus (Salicaceae); *F. vaniotii* H. Léveillé is *Aglaiia tetrapetala* (Pierre) Pellegrin (Meliaceae).

- 1a. Male and female flowers on same plants; figs with or without bracts among flowers; trees or shrubs, often epiphytic, not climbing by adventitious roots but sometimes producing long aerial roots.
- 2a. Plants at first epiphytic or epilithic, with long aerial roots which can form new trunks (“banyan”) or strangle host plant (“strangler fig”), usually without well-defined main trunk; figs often with inner and sometimes also outer layer of stone cells; leaf blade with wax gland abaxially at base of midvein or absent (spp. 1–23) ..... 1. *F.* subgen. *Urostigma*
- 2b. Trees with well-defined main trunk, less often shrubs, never epiphytic; figs with only inner layer of stone cells or stone cells absent; wax glands in axils of main basal veins or absent.

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- 3a. Leaf margin entire or very bluntly and obscurely lobed; male flowers usually pedicellate; stamen filaments free or slightly connate; ovary white or basally red; tepals entire; figs with bracts among flowers (spp. 24–27) ..... 2. *F.* subgen. *Pharmacosycea*
- 3b. Leaf margin toothed; male flowers sessile; stamen filaments basally connate; ovary dark red; tepals lobed; figs without bracts among flowers (spp. 28–37) ..... 3. *F.* subgen. *Sycomorus*
- 1b. Male and fertile female flowers on different plants; figs without bracts among flowers; shrubs or climbers with short adventitious roots but not long aerial roots, less often trees with well-defined main trunk, rarely epiphytic (*F. tinctoria* and *F. virgata*).
  - 4a. Root-climbers, usually with 2 types of leaves on creeping vegetative stems and on fertile stems (spp. 86–99) ..... 6. *F.* subgen. *Synoecia*
  - 4b. Trees or shrubs without aerial roots and all leaves similar.
    - 5a. Stipules often not fully amplexicaul; leaf blade often asymmetric; involucre bracts mostly scattered along peduncle; male flowers always with pistillode (spp. 73–85) ..... 5. *F.* subgen. *Sycidium*
    - 5b. Stipules nearly always fully amplexicaul; leaf blade symmetric; involucre bracts in a whorl of 3 at base of peduncle; male flowers often without pistillode.
      - 6a. Figs often cauliflorous or on specialized leafless branches; lateral bracts often present; nodes of leafy shoots enlarged when dry; male flowers near apical pore and usually subtended by bracteoles (spp. 28–37) ..... 3. *F.* subgen. *Sycomorus*
      - 6b. Figs axillary on normal leafy branches, either with or just below leaves; lateral bracts absent; nodes of leafy shoots no wider than internodes when dry; male flowers scattered among gall flowers, not subtended by bracteoles (spp. 38–72) ..... 4. *F.* subgen. *Ficus*

1. **Ficus** subgen. **Urostigma** (Gasparrini) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 285. 1867.

榕亚属 rong ya shu

*Urostigma* Gasparrini, Giorn. Bot. Ital. 1: 215. 1844.

Shrubs or multistemmed trees, often initially epiphytic or epilithic, rarely terrestrial; monoecious. Stipules fully amplexicaul. Branches usually with long aerial adventitious roots. Leaf blade unlobed, symmetric, margin entire; wax gland solitary, abaxially at base of midvein. Figs usually axillary on normal leafy stems, rarely cauliflorous, interfloral bracts usually present, internal bristles sometimes present, apical pore with interlocking bracts, circular with 2 or 3 bracts visible or upper bracts descending and aperture slit-shaped or 3-radiate; peduncle with 3 basal bracts in a collar; lateral bracts usually absent. Male flowers: dispersed or around apical pore; stamen 1(or 2); pistillode usually absent. Female flowers: stigma usually simple, filiform, mostly conspicuously papillate. Fruit an achene or ± drupaceous.

Between 280 and 300 species: throughout tropics and subtropics worldwide; 23 species (one introduced) in China.

The fig wasps that pollinate members of *Ficus* subgen. *Urostigma* belong to some 12 genera, each mostly associated with a particular section or subsection of this subgenus.

- 1a. Stipules 10–13 cm.
  - 2a. Leaf blade secondary veins 6–9 on each side of midvein, reticulate near margin, conspicuous on both surfaces when dry; figs 2–2.7 × 1–1.5 cm ..... 8. *F. hookeriana*
  - 2b. Leaf blade secondary veins many on each side of midvein, closely parallel, inconspicuous; figs ca. 1 × 0.5–0.8 cm ..... 11. *F. elastica*
- 1b. Stipules 0.4–6 cm (sometimes to 10 cm in *F. virens*).
  - 3a. Fig interfloral bristles abundant and conspicuous; involucre bracts persistent.
    - 4a. Leaf blade elliptic to oblong; secondary veins 9–15 on each side of midvein ..... 1. *F. caulocarpa*
    - 4b. Leaf blade broadly ovate, ovate-lanceolate, narrowly lanceolate, elliptic-ovate, ± elliptic, or obovate; secondary veins 5–12 on each side of midvein.
      - 5a. Leaf blade apex mucronate; figs borne on short branchlets or on older leafless branchlets, 5–7 mm in diam., sessile or subsessile ..... 2. *F. genticulata*
      - 5b. Leaf blade apex acuminate to shortly acuminate; figs paired or solitary and axillary on leafy branchlets, or in clusters on leafless older branchlets, 7–12 mm in diam., sessile or pedunculate ..... 3. *F. virens*
  - 3b. Fig interfloral bristles few, small, and inconspicuous, sometimes absent; involucre bracts caducous or persistent.
    - 6a. Figs clearly pedunculate.
      - 7a. Petiole more than 9 cm, as long as or longer than leaf blade; leaf blade triangular-ovate, apex acute to caudate ..... 6. *F. religiosa*
      - 7b. Petiole 1–7 cm, usually less than 1/2 as long as leaf blade; leaf blade elliptic, elliptic-lanceolate, oblong, or obovate, apex rounded, mucronate, or acuminate.
      - 8a. Stipules 1.2–2 cm; figs 0.5–1 cm in diam.

MORACEAE

- 9a. Peduncle 3–8 mm; figs purplish black when mature; petiole 3–7 cm ..... 4. *F. subpisocarpa*  
 9b. Peduncle 10–15 mm; figs orange-yellow when mature; petiole 1–3 cm ..... 16. *F. glaberrima*  
 8b. Stipules 2–6 cm; figs 1–2 cm in diam.  
 10a. Figs globose to ovoid-globose, 1–2 cm; apical bracts ± persistent, sometimes losing only apical portion; leaf blade 8–15 cm ..... 9. *F. orthoneura*  
 10b. Figs ovoid to cylindric, 2–2.5 cm; apical bracts caducous, leaving well-defined annular scar; leaf blade 13–28 cm ..... 12. *F. annulata*  
 6b. Figs sessile or subsessile.  
 11a. Petiole 6–8 cm; leaf blade with 2 pairs of basal lateral veins, outer pair thin and short ..... 10. *F. rumphii*  
 11b. Petiole 0.5–5 cm; leaf blade with 1 pair of basal lateral veins (sometimes with 2 pairs in *F. drupacea*).  
 12a. Stipules 2–3 cm.  
 13a. Stipules membranous with thick hairs; leaf blade narrowly elliptic to obovate-elliptic, base rounded, ± cordate, or ± auriculate; secondary veins 8–11 on each side of midvein ..... 13. *F. drupacea*  
 13b. Stipules thickly leathery, with gray silky hairs; leaf blade broadly ovate to broadly ovate-elliptic, base broadly cuneate; secondary veins 5–7 on each side of midvein ..... 14. *F. altissima*  
 12b. Stipules 0.4–2.5 cm.  
 14a. Leaf blade with reticulate tertiary veins.  
 15a. Figs top-shaped -globose, 0.5–0.7 cm in diam.; involucre bracts persistent; leaf blade with cystoliths on both surfaces ..... 18. *F. pisocarpa*  
 15b. Figs globose, ± globose, or pear-shaped, 1–1.3 cm in diam.; involucre bracts caducous or obscure; leaf blade abaxially with cystoliths.  
 16a. Branchlets green, drying pale brown; leaf blade with 5 or 6 secondary veins on each side of midvein; figs with apex slightly raised ..... 15. *F. pubilimba*  
 16b. Branchlets dark brown; leaf blade with 6–9 secondary veins on each side of midvein; figs with apex slightly sunken ..... 17. *F. kurzii*  
 14b. Leaf blade with reticulate tertiary veins indistinct from secondary veins or absent.  
 17a. Secondary veins inconspicuously raised.  
 18a. Leaf blade 12–18 cm, thickly leathery, apex rounded; branchlets 5–8 mm in diam.; figs 1–1.5 cm in diam.; involucre bracts 3–4 mm ..... 21. *F. curtipes*  
 18b. Leaf blade 4–13 cm, leathery or ± leathery, apex acuminate to mucronate or ± obtuse; branchlets thin; figs 0.6–0.8 cm in diam.; involucre bracts 1–3 mm.  
 19a. Leaves leathery, glabrous when dry; basal veins conspicuously raised; secondary veins extended in a right angle; figs purplish red when mature ..... 19. *F. maclellandii*  
 19b. Leaves ± leathery, not glabrous when dry; basal veins not raised; secondary veins extended in a blunt angle; figs yellow to slightly red when mature ..... 20. *F. microcarpa*  
 17b. Secondary veins conspicuously raised.  
 20a. Leaf blade with 4–8 secondary veins on each side of midvein.  
 21a. Leaf blade narrowly elliptic, base cuneate; petiole 1–2 cm; involucre bracts caducous ..... 5. *F. concinna*  
 21b. Leaf blade ovate to cordate, base rounded to ± cordate; petiole 2–4 cm; involucre bracts persistent ..... 7. *F. cardiophylla*  
 20b. Leaf blade with 8–16 secondary veins on each side of midvein.  
 22a. Involucre bracts conspicuous; figs 1.5–1.8 cm in diam. .... 22. *F. stricta*  
 22b. Involucre bracts inconspicuous; figs usually 0.8–1 cm in diam. (var. *nuda* 1.5–2 cm in diam.) ..... 23. *F. benjamina*

**1. *Ficus caulocarpa*** (Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 235. 1867.

大叶赤榕 *da ye chi rong*

*Urostigma caulocarpum* Miquel, London J. Bot. 6: 568. 1847; *Ficus infectoria* Willdenow var. *caulocarpa* (Miquel) King; *F. stipulosa* (Miquel) Miquel; *Urostigma stipulosum* Miquel.

Trees, large, deciduous. Bark dark brown. Branchlets pale brown, glabrous. Stipules caducous, broadly lanceolate, 2–4

cm. Petiole slender, 2–4 cm, glabrous or sparsely pubescent; leaf blade elliptic to oblong, 15–20 × 7–9.5 cm, papery, glabrous, base obtuse to rounded, margin entire or slightly undulate, apex abruptly shortly acuminate; secondary veins 9–15 on each side of midvein. Figs axillary on leafy branchlets or on leafless main branches, (1 or) in clusters of 2–8, yellow and white tinged red when mature, 5–8 mm in diam., with conspicuous interfloral bristles; peduncle 5–7 mm; involucre bracts cuplike. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, sessile; calyx lobes 3 or 4,

involute; stamen 1; filament very short. Gall flowers: sessile; calyx lobes 2 or 3; ovary globose to obovate, glabrous; style subapical, short; stigma dilated. Female flowers: calyx lobes 2 or 3; ovary obovate, glabrous; style subapical, long. Achenes flat, smooth. Fl. and fr. Apr–Jul.

Low elevations. Taiwan [Indonesia, Japan, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand].

**2. *Ficus geniculata*** Kurz, Forest Fl. Burma 2: 447. 1877.

曲枝榕 qu zhi rong

*Ficus tenii* H. Léveillé.

Trees, evergreen, glabrous except stipules. Branchlets pale yellow when dry, strong, slightly curved. Stipules broadly ovate, ca. 1 cm, pubescent. Leaves clustered apically on branchlets; petiole 2–7 cm, glabrous; leaf blade ± elliptic to broadly ovate, 4.5–11 × 3–8 cm, adaxially glabrous and shiny when dry, base broadly cuneate to rounded, apex mucronate; secondary veins 5–12 on each side of midvein, raised on both surfaces. Figs axillary on short woody branchlets or on leafless older branchlets, in clusters of 2–4, red when mature, depressed globose, 5–7 mm in diam., with conspicuous interfloral bristles, tuberculate, sessile or subsessile; involucre bracts broadly ovate. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore; calyx lobes connate; stamen 1; filament short; anther broadly ovoid. Gall and female flowers: calyx lobes 2 or 3, lanceolate; style in female flowers longer than in gall flowers. Fl. Apr–May, fr. Jun–Jul.

Mountains, plains; medium elevations. Hainan, Sichuan, Yunnan [Cambodia, India, Laos, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

**3. *Ficus virens*** Aiton, Hort. Kew. 3: 451. 1789.

黄葛树 huang ge shu

*Ficus caulobotrya* (Miquel) Miquel var. *fraseri* (Miquel) Miquel; *F. glabella* Blume; *F. saxophila* Blume var. *sublanceolata* Miquel; *F. virens* var. *sublanceolata* (Miquel) Corner; *F. wightiana* Wallich ex Benth; *Urostigma fraseri* Miquel; *U. infectarium* Miquel; *U. wightianum* Miquel.

Trees, epiphytic when young, with buttress or prop roots, deciduous or semideciduous. Stipules lanceolate-ovate, to 1 cm, apex acute. Petiole 2–5 cm; leaf blade obovate, narrowly lanceolate, ovate-lanceolate, or elliptic-ovate, 10–20 × 4–7 cm, thinly leathery to thickly papery, not shiny when dry, base bluntly rounded, cuneate, or cordate, margin entire, apex acuminate to shortly acuminate; basal lateral veins short, secondary veins (5–)7–10(–11) on each side of midvein, and abaxially prominent, reticulate veins ± conspicuous. Figs axillary on leafy branchlets, paired or solitary or in clusters on leafless older branchlets, purple red when mature, globose, 7–12 mm in diam., with conspicuous interfloral bristles, sessile or pedunculate; involucre bracts small. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, sessile; calyx lobes 4 or 5, lanceolate; stamen 1; filament short; anther broadly ovoid. Gall flowers: pedicellate; calyx lobes 3 or 4; style lateral, shorter than ovary. Female flowers: similar to gall flowers; style longer than ovary. Achenes wrinkled on surface. Fl. Apr–Aug.

Common tree by streamsides in subtropical China; 300–2700 m. Fujian, Guangdong, Guangxi, SW Guizhou, Hainan, Hubei, S Hunan, S Shaanxi, Sichuan, SE Xizang, Yunnan, S Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam; N Australia].

**4. *Ficus subpisocarpa*** Gagnepain, Notul. Syst. (Paris) 4: 95. 1927.

笔管榕 bi guan rong

*Ficus geniculata* Kurz var. *abnormalis* Kurz.

Trees, deciduous. Bark blackish brown. Branches with few aerial roots; branchlets pale red, glabrous. Stipules caducous, lanceolate, ca. 2 cm, membranous, sparsely pubescent. Leaves alternate or fasciculate; petiole 3–7 cm, subglabrous; leaf blade elliptic to oblong, 10–15 × 4–6 cm, ± papery, glabrous, base rounded, margin entire or slightly undulate, apex shortly acuminate; secondary veins 7–9 on each side of midvein. Figs axillary on leafy branchlets, paired or solitary, or in small clusters on older leafless branchlets, purplish black when mature, depressed globose, 5–8 mm in diam., apical pore ± concave; peduncle 3–8 mm; involucre bracts broadly ovate, basally leathery. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, sessile; calyx lobes 3, broadly ovate; stamen 1; filament short; anther ovoid. Gall flowers: many, similar to female flowers but ovary with a thick long stalk; stigma linear. Female flowers: sessile or pedicellate; calyx lobes 3, lanceolate; style short, lateral; stigma rounded. Fl. Apr–Jun.

Plains or villages mainly near seacoast; 100–1400 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, S Yunnan, SE Zhejiang [Japan, Laos, Malaysia, Myanmar, Thailand, Vietnam].

This species has often been treated as *Ficus superba* var. *japonica*, but it is quite distinct from *F. superba* s.str. which does not occur within the Flora area (Berg, in litt.). Chinese material has also been named as *F. tenuipes* S. Moore, but we follow Corner, who regarded *F. tenuipes* as a synonym of *F. superba* s.str. Chinese records of *F. wightiana* Wallich ex Miquel were based on misidentifications of this species.

**5. *Ficus concinna*** (Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 286. 1867.

雅榕 ya rong

*Urostigma concinnum* Miquel, London J. Bot. 6: 570. 1847; *Ficus affinis* Wallich ex Kurz; *F. concinna* var. *subsessilis* Corner; *F. fecundissima* H. Léveillé & Vaniot; *F. glabella* Blume var. *affinis* (Wallich ex Kurz) King; *F. glabella* var. *concinna* (Miquel) King; *F. parvifolia* (Miquel) Miquel; *F. pseudoreligiosa* H. Léveillé; *F. subpedunculata* Miquel; *Urostigma parvifolium* Miquel.

Trees, 15–20 m tall, d.b.h. 25–40 cm. Bark dark gray, lenticellate. Branches producing few aerial roots; branchlets 1–2 mm thick, glabrous. Stipules lanceolate, ca. 1 cm, glabrous. Petiole 1–2 cm; leaf blade grayish green when dry, narrowly elliptic, 5–10 × 1.5–4 cm, glabrous or sparsely pubescent, base cuneate, margin entire, apex mucronate to acuminate; basal lateral veins short, secondary veins 4–8 on each side of midvein, conspicuous on both surfaces. Figs axillary on leafy branchlets, paired, or in clusters of 3 or 4 on leafless older branchlets, glo-

bose, 4–5 mm in diam., sessile or subsessile with a 0.5 mm peduncle; involucre bracts caducous. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore; calyx lobes 2, lanceolate. Gall flowers: similar to female flowers; style linear, short. Female flowers: ovary obliquely ovoid; style lateral; stigma rounded. Fl. and fr. Mar–Jun.

Dense forests, near villages; 900–2400 m. Fujian, Guangdong, Guangxi, Guizhou, S Jiangxi, SE Xizang, Yunnan, S Zhejiang [Bhutan, India, Laos, Malaysia, Myanmar, Philippines, Sikkim, Thailand, Vietnam].

**6. *Ficus religiosa*** Linnaeus, Sp. Pl. 2: 1059. 1753.

菩提树 pu ti shu

*Urostigma religiosum* (Linnaeus) Gasparini.

Trees, 15–25 m tall, d.b.h. 30–50 cm, epiphytic when young, crown wide when mature. Bark gray, smooth or longitudinally ± fissured. Branchlets grayish brown, sparsely pubescent when young. Stipules ovate, small, apex acute. Petiole slender, as long as or longer than leaf blade, articulate; leaf blade triangular-ovate, 9–17 × 8–12 cm, leathery, abaxially green, adaxially dark green and shiny, base broadly cuneate to ± cordate, margin entire or undulate, apex acute to caudate with a 2–5 cm cauda; basal lateral veins 2, secondary veins 5–7 on each side of midvein. Figs axillary on leafy branchlets, paired or solitary, red when mature, globose to depressed globose, 1–1.5 cm in diam., smooth; peduncle 4–9 mm; involucre bracts ovate. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, sessile; calyx 2- or 3-lobed, margin revolute; stamen 1; filament short. Gall flowers: pedicellate; calyx 3- or 4-lobed; ovary globose, smooth; style short; stigma enlarged, 2-lobed. Female flowers: sessile; calyx 4-lobed, broadly lanceolate; ovary globose, smooth; style thin; stigma narrow. Fl. Mar–Apr, fr. May–Jun.

Cultivated. Guangdong, Guangxi, S Yunnan [native to N India, Nepal, and Pakistan; cultivated throughout the tropics].

**7. *Ficus cardiophylla*** Merrill, Univ. Calif. Publ. Bot. 13: 129. 1926.

龙州榕 long zhou rong

*Ficus bonii* Gagnepain.

Trees or shrubs. Bark smooth. Branchlets purplish brown when dry, terete, glabrous, sparsely lenticellate. Stipules lanceolate, ca. 1 cm. Petiole slender, 2–4 cm, glabrous, apically articulate; leaf blade ovate to cordate, 5–9 × 3–6 cm, ± leathery, pale green when dry, base rounded to ± cordate, margin entire, apex acute to acuminate; basal lateral veins expanded, secondary veins 5–7 on each side of midvein, raised on both surfaces. Figs axillary on leafy branchlets, solitary or paired, globose, 5–7 mm in diam., smooth, apical pore not concave, sessile; involucre bracts orbicular to reniform, ca. 2 mm, margin ciliate. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, pedicellate or sessile; calyx lobes 3 or 4, lanceolate, margin serrate; stamen 1; filament short; anther ellipsoid. Gall and female flowers: many, similar; sepals 3 or 4; ovary obovate; style apical, very short in gall flowers. Fl. May–Jul.

Guangxi (Longzhou) [N Vietnam].

**8. *Ficus hookeriana*** Corner, Gard. Bull. Singapore 17: 378. 1960.

大青树 da qing shu

*Ficus hookeri* Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 215. 1867, not Sweet (1826).

Trees, to 25 m tall, trunk straight, d.b.h. 40–50 cm. Bark dark gray, longitudinally fissured. Branchlets reddish green when young, strong, ca. 1 cm in diam., smooth. Stipules caducous, dark red, lanceolate, 10–13 cm, membranous. Petiole terete, robust, 3–5 cm; leaf blade narrowly elliptic to broadly ovate-elliptic, 10–30 (or longer) × 8–12 cm, ± leathery, abaxially greenish white, adaxially dark green, base broadly cuneate to rounded, margin entire, apex obtuse or mucronate; basal lateral veins 2, secondary veins 6–9 on each side of midvein, reticulate near margin, and conspicuous on both surfaces when dry. Figs axillary on leafy branchlets, paired, obovoid-ellipsoid to cylindrical, 2–2.7 × 1–1.5 cm, apical pore convex, sessile; involucre bracts connate into a cup. Male, gall, and female flowers within same fig. Male flowers: scattered among other flowers; calyx lobes 4, lanceolate; stamen 1; anther ellipsoid, as long as filament. Gall flowers: similar to female flowers but style shorter and thicker. Female flowers: calyx lobes 4 or 5; style lateral; stigma 1, ventricose. Fl. Apr–Oct.

Usually in limestone regions, also cultivated around temples; 500–2000 m. W Guangxi, SW Guizhou, Yunnan [Bhutan, NE India, Nepal, Sikkim].

**9. *Ficus orthoneura*** H. Léveillé & Vaniot, Repert. Spec. Nov. Regni Veg. 4: 66. 1907.

直脉榕 zhi mai rong

*Ficus caesia* Handel-Mazzetti; *F. federovii* W. T. Wang; *F. hypoleucogramma* H. Léveillé & Vaniot; *F. imenensis* S. S. Chang.

Trees, 2–10 m tall, d.b.h. 5–15 cm. Branchlets terete, longitudinally fissured when dry, sparsely pubescent when young. Stipules greenish white, lanceolate, ca. 5 cm, membranous. Leaves clustered apically on branchlets; petiole slightly flattened, 2–5 cm; leaf blade obovate to elliptic, 8–15 × 6–9 cm, leathery, abaxially pale green with pale brown veins, adaxially dark green, base rounded to ± cordate, margin entire, apex rounded or mucronate; basal lateral veins short, secondary veins 7–15 on each side of midvein, parallel, straight, and reticulate near margin, reticulate veins ± pale brown. Figs axillary on leafy branchlets, paired or solitary, globose to ovoid-globose, 1–2 cm in diam., base ± attenuate into short stalk, pedunculate, apical pore navel-like; involucre bracts free, small. Male, gall, and female flowers within same fig. Male flowers: few, scattered among other flowers, pedicellate; calyx lobes 4, lanceolate; stamen 1; anther ellipsoid, longer than filament. Gall flowers: style very short. Female flowers: calyx lobes 4 or 5; ovary obliquely ovoid; style lateral, linear, persistent; stigma slightly 2-lobed. Achenes globose, smooth. Fl. Apr–Sep.

Limestone mountains; 200–1700 m. W Guangxi, SW Guizhou, C and S Yunnan [Myanmar, NW Thailand, N Vietnam].

**10. *Ficus rumphii*** Blume, Bijdr. Fl. Ned. Ind. 437. 1825.

心叶榕 xin ye rong

*Ficus cordifolia* Roxburgh (1832), not Blume (1825); *Urostigma rumphii* (Blume) Miquel.

Trees, ca. 15 m tall, usually epiphytic. Bark gray, wrinkled when dry. Stipules caducous, ovate-lanceolate, 1.5–2.5 cm, scar conspicuous. Petiole 6–8 cm, glabrous; leaf blade cordate to ovate-cordate, 6–13 × 6–11 cm, ± leathery, glabrous, base ± cordate to broadly cuneate, apex acuminate; basal lateral veins 4, outer 2 basal veins short and thin, secondary veins 5 or 6 on each side of midvein. Figs axillary on leafy branchlets, paired or in small clusters on leafless older branchlets, with dark spots when young, dark purple when mature, globose, 1–1.5 cm in diam., sessile; involucre bracts orbicular, small; apical bracts ± navel-like. Male, gall, and female flowers within same fig. Male flowers: few, scattered among other flowers; calyx lobes 3, spatulate; stamen 1. Gall and asexual flowers: calyx lobes 3, lanceolate. Female flowers: ovary white, ovoid, smooth; style persistent, long; stigma clavate. Achenes thin, tuberculate and with adherent liquid; style long; stigma clavate.

Along trails; 600–700 m. W Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

**11. *Ficus elastica*** Roxburgh, Fl. Ind., ed. 1832, 3: 541. 1832.

印度榕 yin du rong

*Ficus cordata* Kunth & Bouchardet; *F. skytinodermis* Summerhayes; *F. taeda* Kunth & Bouchardet; *Urostigma circumscissum* Miquel; *U. elasticum* (Roxburgh) Miquel; *U. karek* Miquel; *U. odoratum* Miquel.

Trees, 20–30 m tall, d.b.h. 25–40 cm, epiphytic when young. Bark pale gray, smooth. Branchlets strong. Stipules dark red, ca. 10 cm, membranous; scar conspicuous. Petiole robust, 2–5 cm; leaf blade oblong to elliptic, 8–30 × 7–10 cm, thickly leathery, abaxially pale green, adaxially dark green and shiny, base broadly cuneate, margin entire, apex acute; secondary veins many, closely parallel, inconspicuous. Figs axillary on leafless branchlets, paired, yellowish green, ovoid-ellipsoid, ca. 10 × 5–8 mm, subsessile; involucre bracts hoodlike, caducous, scar conspicuous. Male, gall, and female flowers within same fig. Male flowers: scattered among other flowers, pedicellate; calyx lobes 4, ovate; stamen 1; filament absent; anther ovoid-ellipsoid. Gall flowers: sepals 4; ovary ovoid, smooth; style subapical, curved. Female flowers: sessile; style persistent, long; stigma enlarged, ± capitate. Achenes ovoid, tuberculate. Fl. winter.

800–1500 m. W Yunnan [Bhutan, N India, Indonesia, Malaysia, Myanmar, Nepal, Sikkim].

This species is cultivated as a house plant around the world. In China it was also formerly a source of rubber.

**12. *Ficus annulata*** Blume, Bijdr. Fl. Ned. Ind. 448. 1825.

环纹榕 huan wen rong

*Ficus flavescens* Blume; *Urostigma annulatum* (Blume) Miquel; *U. flavescens* (Blume) Miquel.

Trees, large, epiphytic when young and semiclimbing.

Stipules caducous, lanceolate-linear, 2.5–6 cm, pubescent. Petiole 3–4 cm, glabrous or sparsely pubescent; leaf blade narrowly elliptic to elliptic-lanceolate, 13–28 × 5–8 cm, ± leathery, abaxially pale green and glabrous or sparsely pubescent, adaxially dark green and glabrous, base cuneate to rarely ± rounded, margin entire, apex shortly acuminate; basal lateral veins 2, short, secondary veins 12–17 on each side of midvein, abaxially conspicuous. Figs axillary on leafy branchlets, paired, reddish orange with scattered white spots when mature, ovoid to cylindrical, 2–2.5 × 1.5–2 cm, tuberculate, apical pore navel-like; peduncle robust, 1–1.5 cm; involucre bracts caducous, ovate, apex acute, scar conspicuous. Male, gall, and female flowers within same fig. Male flowers: scattered, pedicellate; stamen 1. Gall flowers: many; sepals connate, apex 3-lobed; ovary ovoid, smooth; stigma flat. Female flowers: few; calyx 4-lobed; style long; stigma clavate. Achenes tuberculate. Fl. May.

Montane forests; 500–1300 m. S Yunnan [Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

**13. *Ficus drupacea*** Thunberg, *Ficus*, 6. 1786.

枕果榕 zhen guo rong

Trees, 10–15 m tall. Bark grayish white. Branches without aerial roots; branchlets 5–9 mm in diam., densely yellowish brown woolly. Stipules yellowish brown, lanceolate, 2–3 cm, membranous, with thick hairs. Petiole robust; 2.5–3 cm; leaf blade narrowly elliptic to obovate-elliptic, 15–18 × 5–9 cm, leathery, glabrous or abaxially yellowish brown woolly but glabrescent, adaxially green and glabrous or sparsely shortly pubescent or densely yellowish brown long pubescent but glabrescent, base rounded, ± cordate, or ± auriculate, margin entire or slightly undulate, apex acute; basal lateral veins 2–4, secondary veins 8–11 on each side of midvein, tertiary veins reticulate. Figs axillary on leafy branchlets, paired, reddish orange to red and with scattered white spots, oblong, pillow-shaped, or conic-ellipsoid, 1.5–2.5 × 1–1.5(–2) cm, glabrous or densely covered with brownish yellow long hairs, inside with few or no bristles, apical pore closed by 3 or 4 umbonate bracts, not forming flat disk, subsessile; involucre bracts orbicular to ovate-lanceolate, margin ciliate. Male, gall, and female flowers within same fig. Male flowers: long-pedicellate; calyx lobes 3, broadly ovate; stamen 1; filament short and thick; anther narrowly ellipsoid. Gall flowers: pedicellate; sepals connate, apically 3- or 4-lobed; ovary ± globose. Female flowers: calyx lobes 3, white, broadly lanceolate. Achenes ± globose, tuberculate. Fl. early summer.

Montane forests, along streams; 100–1500 m. Guangdong, Hainan, S Yunnan [Bangladesh, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sikkim, Sri Lanka, Thailand, Vietnam; NE Australia].

This widespread and variable species has been divided into a number of varieties, two of which are recorded from the Flora area.

- 1a. Leaf blade glabrous or with sparse short pubescence; figs glabrous ..... 13a. var. *drupacea*
- 1b. Leaf blade densely covered with yellowish brown woolly pubescence, glabrescent; figs densely covered with brownish yellow long hairs ..... 13b. var. *pubescens*

**13a. *Ficus drupacea* var. *drupacea***

枕果榕(原变种) zhen guo rong (yuan bian zhong)

Leaf blade glabrous or with sparse short pubescence. Figs oblong to pillow-shaped, glabrous; involucre bracts orbicular. Fl. early summer.

Along streams. Guangdong, Hainan [Bangladesh, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; NE Australia].

**13b. *Ficus drupacea* var. *pubescens*** (Roemer & Schultes) Corner, Gard. Bull. Singapore 17: 381. 1960.

毛枕果榕 mao zhen guo rong

*Ficus mysorensis* Roth ex Roemer & Schultes var. *pubescens* Roemer & Schultes, Syst. Veg. 1: 508. 1817; *F. citrifolia* Willdenow (1797), not Miller (1768); *F. gonia* Buchanan-Hamilton; *F. mysorensis* Roth ex Roemer & Schultes; *Urostigma dasycarpum* Miquel; *U. mysorensis* (Roth ex Roemer & Schultes) Miquel ["*myrosense*"].

Leaf blade obovate-elliptic, densely covered with yellowish brown woolly pubescence, glabrescent. Figs conic-ellipsoid, densely covered with brownish yellow long hairs; involucre bracts ovate-lanceolate.

Montane forests; 100–1500 m. S Yunnan [Bangladesh, Bhutan, India, Laos, Myanmar, Nepal, Sikkim, Sri Lanka, Vietnam].

Berg (in litt.) indicated that this variety should not be recognized.

**14. *Ficus altissima*** Blume, Bijdr. Fl. Ned. Ind. 444. 1825.

高山榕 gao shan rong

Trees, 25–30 m tall, d.b.h. 40–90 cm. Bark gray, smooth. Branchlets green, ca. 1 cm thick, pubescent. Stipules 2–3 cm, thickly leathery, with gray silky hairs. Petiole robust, 2–5 cm; leaf blade broadly ovate to broadly ovate-elliptic, 10–19 × 8–11 cm, thickly leathery, glabrous, base broadly cuneate, margin entire, apex obtuse, acute; basal lateral veins long, secondary veins 5–7 on each side of midvein, reticulate venation clearly defined in dry leaf. Figs axillary on leafy branchlets, paired, red or yellow when mature, ellipsoid-ovoid, 1.7–2.8 cm, sometimes pubescent when very young, glabrous when mature, apical pore navel-like, convex, sessile; involucre bracts hoodlike, covering young fig, caducous, apex broadly obtuse, scar ringlike. Male, gall, and female flowers within same fig. Male flowers: scattered; calyx lobes 4, transparent, membranous; stamen 1. Gall flowers: sepals 4; style subapical, long. Female flowers: sessile; sepals 4; style elongated. Achenes tuberculate. Fl. Mar–Apr, fr. May–Jul.

Mountains, plains; 100–2000 m. Guangdong, Guangxi, Hainan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam].

**15. *Ficus pabilimba*** Merrill, J. Arnold Arbor. 23: 159. 1942.

球果山榕 qiu guo shan rong

Trees, 10–15 m tall, d.b.h. 15–25 cm. Branchlets green, pale brown when dry, 2–5 mm thick, without ringlike stipular scars, glabrous. Stipules ovate-triangular, without silky hair.

Petiole 2–3 cm, glabrous, adaxially sulcate; leaf blade shortly elliptic to ovate-elliptic, 6–10 × 4–7 cm, thickly papery, abaxially grayish green but reddish brown when dry, with cystoliths, adaxially dark green but grayish brown when dry, base ± rounded, margin entire, apex obtuse; basal lateral veins 2, secondary veins 5 or 6 on each side of midvein, abaxially conspicuous, adaxially flat, curved to margin and then reticulate, tertiary veins reticulate. Figs globose, 1–1.3 cm in diam., smooth, apical pore liplike, slightly raised, sessile; involucre bracts caducous, without ringlike scars. Male, gall, and female flowers within same fig. Male flowers: few; calyx lobes 4; stamen 1. Gall flowers: pedicellate. Female flowers: sessile; sepals 4, lanceolate; stigma subapical. Fl. early summer.

Fujian, Guangdong, Hainan [Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

**16. *Ficus glaberrima*** Blume, Bijdr. Fl. Ned. Ind. 451. 1825.

大叶水榕 da ye shui rong

*Ficus feddei* H. Léveillé & Vaniot; *F. glaberrima* var. *pubescens* S. S. Chang; *F. suberosa* H. Léveillé & Vaniot; *Urostigma glaberrimum* (Blume) Miquel.

Trees, to 15 m tall, d.b.h. 15–30 cm. Bark gray. Branchlets pubescent when young or densely covered with short grayish white pubescence. Stipules caducous, lanceolate, ca. 1.5 cm. Petiole 1–3 cm; leaf blade brown to pale brown when dry, narrowly elliptic, 10–20 × 3–7 cm, ± leathery, abaxially glabrous or densely covered with short grayish white pubescence, base broadly cuneate to rounded, margin entire, apex acuminate; basal lateral veins short, secondary veins 8–12 on each side of midvein, conspicuous on both surfaces. Figs axillary on leafy branchlets, paired, orange-yellow when mature, globose, 7–10 mm in diam., sparsely pubescent or glabrous, apical pore small, not navel-like; peduncle 1–1.5 cm, sparsely pubescent or glabrous; involucre bracts upper part caducous but base persistent. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore or scattered; calyx lobes 4, ovate-lanceolate; stamen 1. Gall flowers: sessile or with a short and thick pedicel; calyx deeply 4-lobed; ovary globose; stigma apical, short. Female flowers: sepals [3 or] 4; ovary ovoid; stigma apical, long. Achenes ovoid. Fl. and fr. May–Sep.

Open forests in mountains and plains, limestone mountains; 500–2800 m. S Guangdong, W Guangxi, S Guizhou, Hainan, SE Xizang, Yunnan [Bhutan, India, Indonesia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

This species is a host plant for lac insects.

**17. *Ficus kurzii*** King, Ann. Roy. Bot. Gard. (Calcutta) 1: 47. 1887.

滇緬榕 dian mian rong

Trees, large. Branches with many aerial roots which develop into secondary trunks ("banyan"); branchlets dark brown, glabrous. Stipules to 1.2 cm. Leaves ± distichous; petiole 0.5–2 cm, glabrous, drying blackish; leaf blade lanceolate-elliptic, 5–12 × 2–5.5 cm, ± leathery, glabrous, abaxially with cystoliths, base cuneate, margin entire, apex ± acute to almost acuminate; basal lateral veins 1/4–1/3 length of leaf-blade, se-

condary veins 6–9 on each side of midvein, parallel, anastomosing near margin, and slightly raised on both surfaces, tertiary veins reticulate. Figs axillary on leafy branchlets, paired, dark cherry-red to crimson-purple, ± globose to pear-shaped, 0.9–1.3 cm in diam., glabrous, base ± narrowed into a short often obscure stalk, apical pore slightly sunken, bracts minute, sessile; involucre bracts 2 (or 3), caducous or obscure, ca. 0.5 × 0.5 mm. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore; pedicel 0.5–2 mm; calyx lobes 3; stamen 1. Gall flowers: pedicel to 2 mm; ovary without any red, globose. Female flowers: sepals 4; ovary without red mark; stigma apical, long. Achenes ovoid, smooth. Fl. and fr. May–Oct.

Dense forests, near villages; 500–700 m. Yunnan [Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

**18. *Ficus pisocarpa*** Blume, Bijdr. Fl. Ned. Ind. 454. 1825.

豆腐榕 dou guo rong

*Ficus microstoma* Wallich ex King; *Urostigma pisocarpum* (Blume) Miquel.

Trees, 5–15 m tall, epiphytic when young. Bark gray, smooth. Stipules ovate-lanceolate, ca. 0.8 cm, membranous, pubescent. Petiole robust, 1–1.5 cm, glabrous; leaf blade elliptic to obovate-elliptic, 5–8 × 2.5–4 cm, thickly leathery, with cystoliths on both surfaces, base rounded to broadly cuneate, margin entire, apex mucronate; basal lateral veins short, secondary veins 5–8 on each side of midvein, and abaxially prominent, tertiary veins reticulate. Figs axillary on leafy branchlets or on leafless older branchlets, paired, top-shaped-globose, 5–7 mm in diam., apical pore liplike, sessile; involucre bracts ovate, persistent. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, sessile; calyx lobes 2, broadly ovate; stamen 1; filament short; anther ovoid. Gall and female flowers: calyx lobes 1 or 2; style short but longer in female flowers; stigma cylindrical. Achenes narrowly ovoid, smooth. Fl. May–Jul.

Limestone mountains; 500–2800 m. Guangxi, Guizhou, Yunnan [Brunei, Indonesia, Malaysia, Thailand].

**19. *Ficus maclellandii*** King, Ann. Roy. Bot. Gard. (Calcutta) 1: 52. 1887.

瘤枝榕 liu zhi rong

*Ficus maclellandii* var. *rhododendrifolia* Corner; *F. rhododendrifolia* (Miquel) Miquel (1867), not Kunth & Bouchardet (1847); *Urostigma rhododendrifolium* Miquel.

Trees, 15–20 m tall. Bark gray, smooth. Branchlets dark brown, ribbed and densely tuberculate [pale lenticellate], sparsely pilose but rapidly glabrescent. Stipules lanceolate, 0.4–1 cm, sparsely appressed pilose. Petiole 1.3–1.7 cm glabrous; leaf blade oblong to ovate-elliptic, 8–13 × 4–6 cm, leathery, glabrous but occasionally pubescent when young, base rounded to cuneate, margin entire, apex acuminate to mucronate; basal lateral veins 2, prominent, secondary veins 10–13 on each side of midvein, conspicuous on both surfaces, and with cystoliths between veins. Figs axillary on leafy branchlets, paired, purplish red when mature, ± globose to conic, slightly flat, 6–8 mm

in diam., tuberculate [some subapical bracts present], sessile; involucre bracts 2 or 3, ovate, 2–3 mm, unequal in size. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore. Gall flowers: similar to female flowers but pedicellate. Female flowers: sessile; calyx lobes 3, lanceolate; ovary ovoid; style apical. Fl. May–Jun.

Along streams, plains; 400–1200 m. Yunnan [Bangladesh, Bhutan, NE India, Malaysia, Myanmar, Sikkim, Thailand, Vietnam].

**20. *Ficus microcarpa*** Linnaeus f., Suppl. Pl. 442. 1782.

榕树 rong shu

*Ficus amblyphylla* (Miquel) Miquel; *F. cairnsii* Warburg; *F. condaravia* Buchanan-Hamilton; *F. littoralis* Blume; *F. microcarpa* var. *crassifolia* (W. C. Shieh) Liao; *F. microcarpa* var. *fuyuenensis* J. C. Liao; *F. microcarpa* var. *oluangpiensis* J. C. Liao; *F. microcarpa* var. *pusillifolia* J. C. Liao; *F. retusa* Linnaeus var. *crassifolia* W. C. Shieh; *F. retusiformis* H. Lévillé; *F. rubra* Roth; *Urostigma amblyphyllum* Miquel.

Trees, 15–25 m tall, crown wide, d.b.h. to 50 cm. Bark dark gray. Branches producing rust-colored aerial roots when old. Stipules lanceolate, ca. 0.8 cm. Petiole 5–10 mm, glabrous; leaf blade narrowly elliptic, 4–8 × 3–4 cm, ± leathery, adaxially dark green and shiny but dark brown when dry, base cuneate, margin entire, apex ± obtuse; basal lateral veins long, secondary veins 3–10 on each side of midvein. Figs axillary on leafy branchlets or on leafless older branchlets, paired, yellow to slightly red when mature, depressed globose, 6–8 mm in diam., inside with a few short bristles among flowers, sessile; involucre bracts broadly ovate, persistent. Male, gall, and female flowers within same fig. Male flowers: scattered, sessile or pedicellate; filament as long as anther. Gall and female flowers: sepals 3, broadly ovate; style ± lateral; stigma short, clavate. Achenes ovoid. Fl. May–Jun.

Mountains, plains; below 1900 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan, S Zhejiang [Bhutan, India, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Sri Lanka, Thailand, Vietnam; N Australia].

This species is commonly cultivated in China as a shade tree.

**21. *Ficus curtipes*** Corner, Gard. Bull. Singapore 17: 397. 1960.

钝叶榕 dun ye rong

*Ficus obtusifolia* Roxburgh, Fl. Ind., ed. 1832, 3: 546. 1832, not Humboldt et al. (1817).

Trees, 5–10 m tall, stems often basally many branched, epiphytic when young. Bark pale grayish, smooth. Branchlets green, 5–8 mm in diam., glabrous. Stipules lanceolate to ovate-lanceolate, 1–2 cm. Petiole robust; 1.5–2 cm; leaf blade narrowly elliptic to ovate-elliptic, 12–18 × 5–6 cm, thickly leathery, abaxially pale green, adaxially dark green, base cuneate, margin entire, apex rounded; basal lateral veins short, secondary veins 8–12 on each side of midvein, inconspicuous on both surfaces. Figs axillary on leafy branchlets, paired, dark red to purplish red when mature, globose to depressed globose, 1–1.5 cm in diam., inside without bristles, apical pore flat, bracts small, closed, sessile; involucre bracts green, broadly ovate, 3–



4 mm. Male, gall, and female flowers within same fig. Male flowers: pedicellate; calyx lobes 3, lanceolate; stamen 1. Gall flowers: sessile or pedicellate; calyx lobes 4; ovary white; style subapical, long. Female flowers: sessile; style apical, persistent, as long as achene; stigma funnelliform. Achenes ovoid, with a sticky surface membrane, tuberculate. Fr. late autumn to early winter.

Limestone mountains, near villages; 500–1400 m. Guizhou, S to SW Yunnan [Bangladesh, Bhutan, N India, Indonesia, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

This species is often cultivated as an ornamental tree.

**22. *Ficus stricta*** (Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 288. 1867.

劲直榕 jin zhi rong

*Urostigma strictum* Miquel, Pl. Jungh. 1: 50. 1851.

Trees, 15–20 m tall. Bark gray, smooth. Branches producing aerial roots; branchlets dull yellowish brown, straight. Stipules lanceolate, (0.7–)1.5–2.5 cm, membranous, glabrous. Petiole robust; 0.9–1.8 cm, glabrous; leaf blade oblong to broadly ovate, ± symmetric, 4–12(–15) × 3–6(–7) cm, ± leathery, drying greenish gray to pale greenish brown, glabrous, base rounded to broadly cuneate, margin entire, apex acuminate to mucronate; basal lateral veins short, secondary veins 10–16 on each side of midvein, anastomosing near margin, indistinct from tertiary veins. Figs axillary on leafy branchlets, paired or sometimes solitary, yellow when mature, globose to oblong, 1.5–1.8 cm in diam., smooth, apical pore liplike, bracts 3 and small, sessile; involucre bracts broadly ovate, 3–10 × 3–13 mm, persistent, conspicuous. Male, gall, and female flowers within same fig. Male flowers: few, sessile; calyx lobes 3; stamen 1; filament shorter than anther; anther cordate. Gall flowers: sessile or pedicellate; calyx lobes connate, apically 4-lobed; ovary smooth; style ± lateral, short. Female flowers: calyx lobes 4; style long. Achenes sparsely tuberculate. Fl. and fr. May–Aug.

300–1800 m. S to SW Yunnan [India, Indonesia, Malaysia, Vietnam].

**23. *Ficus benjamina*** Linnaeus, Syst. Nat., ed. 12, 2: 681. 1767; Mant. Pl. 1: 129. 1767.

垂叶榕 chui ye rong

Trees, to 20 m tall, crown wide, d.b.h. 30–50 cm. Bark gray to gray-white, smooth. Main branches producing aerial roots which can develop into new trunks; branchlets gray-white, pendulous, glabrous. Stipules caducous, lanceolate, 0.6–1.5 cm, membranous, glabrous. Petiole 1–2 cm, adaxially sulcate; leaf blade ovate to broadly elliptic, 4–8(–14) × 2–4(–8) cm, ± lea-

thy, glabrous, base rounded to cuneate, margin entire, apex shortly acuminate; secondary veins 8–10 on each side of midvein, parallel, anastomosing near margin, indistinct from tertiary veins. Figs axillary on leafy branchlets, paired or solitary, purple, red, or yellow [or red with white dots] when mature, globose to depressed globose or sometimes pear-shaped, 0.8–2 cm in diam., glabrous or pubescent, base attenuate into stalk, sessile; involucre bracts inconspicuous, triangular-ovate, glabrous, persistent. Male, gall, and female flowers within same fig. Male flowers: few, shortly pedicellate; calyx lobes (3 or)4, broadly ovate; stamen 1; filament rather long. Gall flowers: many; calyx lobes (3 or)4 or 5, narrowly spatulate; ovary ovoid, smooth; style ± lateral, short. Female flowers: sessile; calyx lobes 3, shortly spatulate; style ± lateral, short; stigma enlarged. Achenes ovoid-reniform, shorter than persistent style. Fl. Aug–Nov.

Moist mixed forests, near villages; 400–800 m. SW Guangdong, Guangxi, Guizhou, Hainan, S Taiwan, Yunnan [Bhutan, Cambodia, India, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sikkim, Thailand, Vietnam; N Australia, Pacific Islands].

1a. Figs 0.8–1.5 cm in diam. .... 23a. var. *benjamina*  
1b. Figs 1.8–2 cm in diam. .... 23b. var. *nuda*

**23a. *Ficus benjamina* var. *benjamina***

垂叶榕(原变种) chui ye rong (yuan bian zhong)

*Ficus cuspidatocaudata* Hayata; *F. haematocarpa* Blume ex Decaisne; *F. nitida* Thunberg; *F. retusa* Linnaeus var. *nitida* (Thunberg) Miquel; *Urostigma benjaminum* (Linnaeus) Miquel; *U. haematocarpum* (Blume ex Decaisne) Miquel.

Trees, to 20 m tall, crown wide, d.b.h. 30–50 cm. Figs 0.8–1.5 cm in diam., glabrous.

Moist mixed forests; 500–800 m. SW Guangdong, Guangxi, Guizhou, Hainan, S Taiwan, Yunnan [Cambodia, India, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam; N Australia, Pacific Islands].

**23b. *Ficus benjamina* var. *nuda*** (Miquel) Barrett, Amer. Midl. Naturalist 45: 127. 1951.

丛毛垂叶榕 cong mao chui ye rong

*Urostigma nudum* Miquel, London J. Bot. 6: 584. 1847; *Ficus benjamina* var. *comosa* (Roxburgh) Kurz; *F. comosa* Roxburgh; *F. nuda* (Miquel) Miquel; *U. benjaminum* Miquel var. *nudum* (Miquel) Miquel.

Trees, d.b.h. 18–20 cm. Figs 1.8–2 cm in diam., glabrous or pubescent.

Near villages; 400–500 m. Yunnan [Bhutan, NE India, Myanmar, Nepal, New Guinea, Philippines, Sikkim, Thailand, Vietnam].

**2. *Ficus* subgen. *Pharmacosycea*** (Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 299. 1867.

白肉榕亚属 bai rou rong ya shu

*Pharmacosycea* Miquel, London J. Bot. 6: 525. 1847.

Trees, rarely shrubs, terrestrial, very rarely with adventitious roots; monoecious. Stipules fully amplexicaul. Leaf blade margin entire except sometimes for juvenile plants; wax glands absent or in axils of main basal veins. Figs usually axillary on normal leafy

stems, rarely cauliflorous, mostly paired, carpodermis with stone cells absent or diffuse, interfloral bracts often present, internal bristles mostly absent, apical pore with interlocking bracts, few upper ones visible; peduncle with 3 basal bracts in a collar; lateral bracts absent. Perianth lobes entire, red, sometimes with white margins. Male flowers: scattered among females, often pedicellate; stamen 1 or 2 (or 3); filaments  $\pm$  free; pistillode often present. Female flowers: ovary white or reddish at base; stigma usually 2-parted, subulate and not conspicuously papillate. Fruit an achene, smooth.

About 80 species: tropics of America, Asia, and Madagascar (but not mainland Africa); four species in China.

Members of this subgenus are pollinated by fig wasps belonging to the genera *Dolichorus* and *Tetrapus*.

1a. Leaves grayish green when dry; leaf blade base without glands.

2a. Leaf blade elliptic to oblong-lanceolate, 4–11 cm, sometimes obscurely lobed; peduncle 0.7–0.8 cm ..... 24. *F. vasculosa*

2b. Leaf blade broadly elliptic, 15–30 cm, entire; peduncle 1–1.2 cm ..... 25. *F. callosa*

1b. Leaves brown to reddish brown when dry; leaf blade base with two glands.

3a. Leaf blade elliptic, oblong, or obovate-lanceolate; petiole 1–2 cm; leaf blade abaxially glabrous; peduncle absent ..... 26. *F. nervosa*

3b. Leaf blade obovate; petiole ca. 1 cm; leaf blade abaxially pubescent on veins; peduncle 1–1.2 cm ..... 27. *F. pubinervis*

**24. *Ficus vasculosa*** Wallich ex Miquel, London J. Bot. 7: 454. 1848.

白肉榕 bai rou rong

*Ficus championii* Benth.

Trees, 10–15 m tall, d.b.h. 10–15 cm. Bark gray, smooth. Branchlets grayish brown, smooth. Stipules ovate, ca. 6 mm. Petiole 1–2 cm; leaf blade elliptic to oblong-lanceolate, simple or irregularly lobed, 4–11  $\times$  2–4 cm, leathery, abaxially pale green but yellowish to grayish green when dry, adaxially dark green and shiny, base cuneate, apex obtuse to acuminate; secondary veins 10–12 on each side of midvein, reticulate veins prominent on both surfaces. Figs yellow to yellowish red when mature, globose, 7–10 mm in diam., obscurely longitudinally ridged when dry, base attenuate into a short stalk; peduncle 0.7–0.8 cm; involucre bracts caducous. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, shortly pedicellate; calyx deeply 3- or 4-lobed; stamen (1 or 2) (or 3), if stamen 1 then basal rudimentary pistil present. Gall and female flowers: many, sessile or pedicellate; calyx deeply 3- or 4-lobed; ovary obovoid; style smooth; stigma 2-branched. Achenes smooth, usually with 1 row of small apical tubercles. Fl. and fr. May–Jul.

Seasonally wet forests; below 800 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Malaysia, Myanmar, Thailand, Vietnam].

**25. *Ficus callosa*** Willdenow, Mem. Acad. Roy. Sci. Hist. (Berlin): 102. 1798.

硬皮榕 ying pi rong

*Ficus basidentula* Miquel; *F. cinerascens* Thwaites; *F. cordatifolia* Elmer; *F. malunensis* Warburg; *F. porteana* Regel; *F. scleroptera* Miquel.

Trees, 25–35 m tall, trunk straight, d.b.h. 25–35 cm. Bark gray to pale gray, hard. Branchlets wrinkled when dry. Stipules ovate-lanceolate, 1–1.8 cm, pubescent. Petiole 3–9 cm; leaf blade broadly elliptic, 15–30  $\times$  8–20 cm, leathery, abaxially pale green but grayish green when dry, adaxially green, glabrous, and shiny, base rounded to broadly cuneate, margin entire, apex obtuse or mucronate; secondary veins 8–11 on each side of midvein, prominent on both surfaces. Figs axillary on normal leafy stem, paired or solitary, yellow when mature,

pear-shaped-ellipsoid, 1.2–2.5  $\times$  1–1.5 cm, pubescent but glabrescent, base attenuate into a 1 cm stalk, apical pore flat; peduncle 1–1.2 cm; involucre bracts lanceolate-ovate, ca. 2 mm. Male, gall, and female flowers within same fig. Male flowers: near apical pore or scattered, thickly pedicellate; calyx lobes 3–5, spatulate; stamen 1 or 2; filaments thin, if stamen 1 then filament absent. Gall flowers: similar to female flowers but stigma very short. Female flowers: calyx deeply 3–5-lobed, broadly lanceolate; style lateral; stigma deeply 2-branched. Achenes obovoid. Fl. Sep–Oct.

Forests, forest margins, also cultivated; 600–800 m. Guangdong, Yunnan [India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam].

The fine wood is usually used for furniture.

**26. *Ficus nervosa*** Heyne ex Roth, Nov. Pl. Sp. 388. 1821.

九丁榕 jiu ding rong

*Ficus apoensis* Elmer; *F. blinii* H. Léveillé & Vaniot; *F. magnoliifolia* Blume; *F. modesta* (Miquel) Miquel; *F. nervosa* var. *longifolia* Sata; *Urostigma modestum* Miquel; *U. nervosum* (B. Heyne ex Roth) Miquel.

Trees, pubescent, glabrescent. Branchlets wrinkled when dry. Petiole 1–2 cm; leaf blade elliptic, oblong, or obovate-lanceolate, 6–15(–20)  $\times$  2.5–5 cm,  $\pm$  leathery, glabrous, abaxially dark colored with small scattered tubercles, adaxially dark green but brown when dry and shiny, base rounded to cuneate and with two glands, margin entire and  $\pm$  revolute, apex obtuse and mucronate; basal lateral veins short, with axillary glands, secondary veins 7–11 on each side of midvein and abaxially prominent. Figs axillary on normal leafy stem, paired or solitary, globose to  $\pm$  globose, 1–1.2 cm in diam., tuberculate when young, base attenuate into an apparent stalk, sessile; involucre bracts ovate, pubescent. Male, gall, and female flowers within same fig. Male flowers: near apical pore, pedicellate; calyx lobes 2, spatulate, unequal in size; stamen 1. Gall flowers: pedicellate or sessile; calyx lobes 3, elongated, apex acuminate; style lateral; stigma clavate. Persistent style 2  $\times$  as long as achene. Fl. Jan–Aug.

Forests in mountains; 400–1600 m. S Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, S Yunnan [Bhutan, India, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam].

**27. *Ficus pubinervis*** Blume, Bijdr. Fl. Ned. Ind. 452. 1825.绿岛榕 *lū dao rong**Ficus cuneatonervosa* Yamamoto; *Urostigma hasseltii* Miquel.

Shrubs. Branchlets brown, smooth, pubescent. Stipules linear, densely pubescent. Petiole ca. 1 cm, pubescent; leaf blade obovate, 6–13 × 2–6 cm, pubescent on veins, glandular basally on veins, base cuneate and with two glands, margin entire, apex acute; secondary veins 5–7 on each side of midvein.

Figs axillary, yellow to reddish orange, globose to depressed globose, pubescent, basally attenuated into a stalk; peduncle 1–1.2 cm. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, pedicellate; calyx lobes 3 or 4, longer than stamen; stamen 1; filament very short. Gall flowers: pedicellate; calyx lobes 4–6, lanceolate; ovary obliquely ovoid; style lateral. Female flowers: sessile; calyx lobes 4–6, linear; style lateral, long; stigma 2-branched, very long. Fl. Mar–Apr, fr. May–Jun.

Low elevations. Taiwan (Lan Yu, Lu Dao) [Indonesia, Philippines].

**3. *Ficus* subgen. *Sycomorus*** (Gasparrini) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 295. 1867.聚果榕亚属 *ju guo rong ya shu**Sycomorus* Gasparrini, Richerch. Caprif. 86. 1845.

Large trees, often buttressed, not epiphytic; monoecious or some species dioecious. Creeping stems with adventitious roots. Stipules fully amplexicaul; leaf blade entire, symmetric or asymmetric, margin often toothed; wax glands in axils of main basal veins, often also in other vein axils or on nodes. Figs often cauliflorous on specialized leafless branches, less often just below leaves, interfloral bracts absent, internal bristles often present, carpodermis with stone cells absent or in inner layers only, apical pore often large with many upper bracts visible; peduncle usually with 3 basal bracts in a collar. Perianth lobes joined, denticulate or lacerate. Male flowers: around apical pore, nearly always subtended by 2 bracteoles, ± sessile; stamens (1 or) 2, filaments joined at base; anthers mucronate; pistillode usually absent. Female flowers: ovary dark red; stigma simple, truncate. Fruit an achene; smooth, not or only slightly keeled.

About 140 species: from Africa through Asia to Australia; ten species (one endemic) in China.

This subgenus was restricted by Corner to monoecious species and thus to just one species from the Flora area, *Ficus racemosa*. Berg (Blumea 167–178. 2003) showed that other species, with similar inflorescences, which had been excluded because they are dioecious, resemble *F.* subgen. *Sycomorus* s.str. by the male flowers, which are each subtended by a pair of bracteoles. They are also all pollinated by fig wasps belonging to the genus *Ceratosolen*, and so they have been included within an enlarged *F.* subgen. *Sycomorus*.

- 1a. Leaves opposite ..... 34. *F. hispida*  
 1b. Leaves alternate.  
 2a. Figs with longitudinal ridges.  
 3a. Leaf blade with 3–5 secondary veins on each side of midvein; peduncle (2–)4–6 cm.  
 4a. Leaf blade margin regularly shallowly dentate, apex obtuse and mucronate; figs with 8–12 conspicuous longitudinal ridges ..... 29. *F. auriculata*  
 4b. Leaf blade margin irregularly toothed on apical 2/3, apex acute to acuminate; figs with 4–6 ridges and small tubercles ..... 30. *F. oligodon*  
 3b. Leaf blade with 6–12 secondary veins on each side of midvein; peduncle to 1.5(–4) cm.  
 5a. Petiole 0.5–1 cm; leaf blade 4.5–13 × 1.2–3.2 cm ..... 33. *F. squamosa*  
 5b. Petiole 2–8 cm; leaf blade 15–26 × 10–14 cm ..... 35. *F. septica*  
 2b. Figs not ridged.  
 6a. Leaf blade asymmetric.  
 7a. Figs reddish orange when mature, 1.5–2.2 cm in diam.; leaf blade basal lateral veins short ..... 36. *F. fistulosa*  
 7b. Figs pale yellow when mature, 0.8–1.5 cm in diam.; leaf blade basal lateral veins long ..... 37. *F. benguetensis*  
 6b. Leaf blade symmetric.  
 8a. Branchlets glabrous ..... 31. *F. beipeiensis*  
 8b. Branchlets pubescent.  
 9a. Leaf blade base cuneate to obtuse; plant monoecious ..... 28. *F. racemosa*  
 9b. Leaf blade base rounded to shallowly cordate; plant dioecious ..... 32. *F. variegata*

**28. *Ficus racemosa*** Linnaeus, Sp. Pl. 2: 1060. 1753.聚果榕 *ju guo rong*

Trees, 25–30 m tall, d.b.h. 60–90 cm; monoecious. Bark grayish brown, smooth. Branchlets, young leaf blades, and figs with bent hairs or densely covered with white soft pubescence. Branchlets brown. Stipules ovate-lanceolate, 1.5–2 cm, mem-

branous, pubescent. Leaves alternate; petiole 2–3 cm; leaf blade elliptic-obovate, elliptic, or narrowly elliptic, 10–14 × 3–4.5(–7) cm, ± leathery, abaxially pale green, pubescent when young, glabrescent, and ± scabrous, adaxially dark green and glabrous, base cuneate to obtuse, margin entire, apex acuminate to obtuse; basal lateral veins 2, secondary veins 4–8 on each side of midvein. Figs in a tumorlike aggregate on short branch-

lets of old stem, occasionally axillary on leafy shoot or on older leafless branchlets, paired, reddish orange when mature, pear-shaped, 2–2.5 cm in diam., basally attenuated into a stalk, apical pore navel-like, flat; peduncle ca. 1 cm; involucre bracts triangular-ovate. Male, gall, and female flowers within same fig. Male flowers: near apical pore, sessile; calyx lobes 3 or 4; stamens 2. Gall and female flowers: pedicellate; calyx lobes linear, apex 3- or 4-toothed; style lateral; stigma clavate. Fl. May–Jul.

Moist areas, beside rivers and streams, occasionally in streams; 100–1700 m. S Guangxi, Guizhou, Yunnan [India, Indonesia, Myanmar, Nepal, New Guinea, Pakistan, Sri Lanka, Thailand, Vietnam; Australia].

- 1a. Branchlets, young leaf blades, and figs with bent hairs ..... 28a. var. *racemosa*  
 1b. Branchlets, young leaf blades, and figs densely covered with straight white pubescence ..... 28b. var. *miquelli*

**28a. *Ficus racemosa* var. *racemosa***

聚果榕(原变种) ju guo rong (yuan bian zhong)

*Covellia glomerata* (Roxburgh) Miquel; *Ficus glomerata* Roxburgh.

Branchlets, young leaf blades, and figs with bent hairs. Fl. May–Jul.

Moist areas, beside rivers and streams, occasionally in streams. S Guangxi, Guizhou, C and S Yunnan [India, Indonesia, Myanmar, Nepal, New Guinea, Pakistan, Sri Lanka, Thailand, Vietnam; Australia].

Berg (in litt.) has suggested that there has been confusion between this taxon and *Ficus fistulosa* in Chinese herbaria.

**28b. *Ficus racemosa* var. *miquelli*** (King) Corner, Gard. Bull. Singapore 21: 35. 1965.

柔毛聚果榕 rou mao ju guo rong

*Ficus glomerata* Roxburgh var. *miquelli* King, Ann. Roy. Bot. Gard. (Calcutta) 1: 174. 1888; *F. chittagonga* Miquel; *F. glomerata* var. *chittagonga* (Miquel) King.

Branchlets, young leaf blades, and figs densely covered with white pubescence.

100–1700 m. Yunnan [India, N Myanmar, N Vietnam].

**29. *Ficus auriculata*** Loureiro, Fl. Cochinch. 2: 666. 1790.

大果榕 da guo rong

Trees, 4–10 m tall, crown elongated and wide, d.b.h. 10–15 cm; dioecious. Bark grayish brown, rough. Branchlets reddish brown, 1–1.5 cm thick, leafless in middle of stem, pubescent. Stipules reddish purple, triangular-ovate, 1.5–2 cm, adaxially shortly pubescent. Leaves alternate; petiole thick, 5–8 cm; leaf blade broadly ovate-cordate, 15–55 × (10–)15–27 cm, thickly papery, abaxially with short spreading pubescence, adaxially glabrous or puberulent on midvein or secondary veins, base cordate to occasionally rounded, margin regularly shallowly dentate, apex obtuse and mucronate; basal lateral veins 4–6, secondary veins 3 or 4 on each side of midvein,

abaxially prominent, and adaxially slightly impressed or flat. Figs on specialized leafless branchlets at base of trunk and main branches, reddish brown, pear-shaped, depressed globose, or top-shaped, with 8–12 conspicuous longitudinal ridges, 3–5(–6) cm in diam., white, shortly pubescent when young, glabrescent when mature; peduncle (2–)4–6 cm, thick, pubescent; involucre bracts triangular-ovate; apical bracts in 4 or 5 rows, broadly triangular-ovate, imbricate, rosulate. Male flowers: sessile; calyx lobes 3, transparent, spatulate, thinly membranous; stamens 2; filaments long; anthers ovoid. Gall flowers: calyx lobes 3, apically free, ± covering ovary; style lateral, hairy; stigma enlarged. Female flowers: pedicellate or sessile; calyx lobes 3; ovary ovoid; style lateral, longer than in gall flowers, with hairs. Achenes with adherent liquid. Fl. Aug–Mar, fr. May–Aug.

Forests in moist valleys; 100–1700(–2100) m. S Guangdong, Guangxi, SW Guizhou, Hainan, SW Sichuan, Yunnan [Bhutan, India, Myanmar, Nepal, Pakistan, Sikkim, Thailand, Vietnam].

The fruit are edible.

**30. *Ficus oligodon*** Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 234. 1867.

苹果榕 ping guo rong

*Ficus hainanensis* Merrill & Chun; *F. regia* Miquel; *F. roxburghii* Miquel.

Trees, 5–10 m tall, crown wide, d.b.h. 10–15 cm; dioecious. Bark gray, smooth. Branchlets sparsely pubescent. Stipules caducous, ovate-lanceolate, 1–1.5 cm, glabrous or puberulent. Leaves alternate; petiole 4–6 cm; leaf blade obovate-elliptic to elliptic, 12–25 × 6–23 cm, papery, abaxially densely small tuberculate, adaxially glabrous, base shallowly cordate to broadly cuneate, margin irregularly toothed on apical 2/3, apex acute to acuminate; veins with sparse slender white hairs when young, basal lateral veins extending to middle of blade or beyond, secondary veins 4 or 5 on each side of midvein and abaxially prominent. Figs clustered on short branchlets of old stems, dark red when mature, pear-shaped to ± globose, with 4–6 longitudinal ridges and small tubercles, 2–3.5 cm in diam., puberulent, basally attenuated into a short stalk, apical pore depressed, bracts ovate and rosulate; peduncle 2.5–3.5 cm; involucre bracts triangular-ovate. Male flowers: near apical pore, shortly pedicellate; calyx lobes 2, connate for most of length, thinly membranous; stamens 2. Gall flowers: many, on middle or lower part of fig, pedicellate; calyx lobes connate, thinly membranous; ovary obovoid; style lateral, short. Female flowers: shortly pedicellate; calyx 3-lobed; style lateral, longer than in gall flowers; stigma with hairs. Achenes obovoid, smooth. Fl. Sep–Apr, fr. May–Jun.

Valleys, along streams, moist soil areas; 200–2100 m. Guangxi, Guizhou, Hainan, SE Xizang, Yunnan [Bhutan, India, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

The figs are dark red, edible, and sweet.

**31. *Ficus beipeiensis*** S. S. Chang, Acta Phytotax. Sin. 22: 69. 1984.

北碚榕 bei bei rong

Trees, to 15 m tall, d.b.h. to 20 cm; dioecious. Branchlets

glabrous. Stipules red, lanceolate, ca. 1 cm. Petiole 2–3 cm, sparsely puberulent; leaf blade oblong-elliptic, 12–22 × 5–9 cm, papery, abaxially whitish green and densely covered with small pointlike cystoliths, adaxially dark green and glabrous, base cuneate, margin irregularly and sparsely toothed on upper 2/3, apex acute or mucronate; basal lateral veins extending to 2/3 of leaf blade length, secondary veins 4 or 5 on each side of midvein. Figs pendulous on specialized 15–30 cm leafless branchlets of main branches, pear-shaped, 1–2 cm in diam., densely covered with short rust-colored pubescence and sparsely globose tuberculate; peduncle 1–2.5 cm; involucre bracts broadly ovate; apical bracts rosulate. Male flowers: subsessile; calyx lobes 3 or 4, red, obovate; stamens 2. Gall flowers: ovary ± globose; style short. Female flowers: pedicellate; calyx lobes 4, red, bladelike; ovary ± globose; stigma clavate.

- Limestone areas; 300–500 m. Chongqing.

**32. *Ficus variegata*** Blume, Bijdr. Fl. Ned. Ind. 459. 1825.

杂色榕 za se rong

*Ficus chlorocarpa* Benth (1861), not Miquel (1848); *F. garciae* Elmer; *F. glochidiifolia* Hayata; *F. konishii* Hayata; *F. variegata* f. *rotundata* Sata; *F. variegata* var. *chlorocarpa* Benth ex King; *F. variegata* var. *garciae* (Elmer) Corner.

Trees, 7–15 m tall, d.b.h. 10–15(–17) cm; dioecious. Bark gray to grayish brown, smooth. Branchlets green, sparsely pubescent. Stipules ovate-lanceolate, 1–1.5 cm, glabrous. Leaves alternate; petiole 2.5–6.8 cm; leaf blade broadly ovate to ovate-elliptic, 10–17 cm, thickly papery, pubescent when young, base rounded to shallowly cordate, margin entire, undulate, or shallowly toothed, apex acute, acuminate, or obtuse; basal lateral veins 4, outer 2 thin and short, secondary veins 4–16 on each side of midvein. Figs clustered on shortly tuberculate branchlets from old stem, red, with green stripes and spots when mature, globose to depressed globose, 2.5–3.5 cm in diam., apex slightly depressed and navel-like, apical pore convex, bracts ovate; peduncle 2–4 cm, slender; involucre bracts caducous, scar ringlike. Male flowers: near apical pore; calyx lobes 3 or 4, broadly ovate; stamens 2, filaments basally connate. Gall flowers: near apical pore; calyx lobes connate, tubular, apically 4- or 5-lobed; ± covering ovary; ovary enclosed by calyx lobes; style lateral, short; stigma funnellform. Female flowers: calyx lobes 3 or 4, connate at base, thinly membranous, linear lanceolate; style persistent, as long as achenes; stigma clavate, glabrous. Achenes obovoid, finely tuberculate. Fl. winter.

Valleys; low to medium elevations. Fujian, Guangdong, Guangxi, Hainan, Taiwan, S Yunnan [India, Indonesia, Japan, Malaysia, Myanmar, Philippines, Thailand, Vietnam; Australia, Pacific Islands].

Collections with white-spotted fruits have been named as var. *garciae*.

**33. *Ficus squamosa*** Roxburgh, Fl. Ind., ed. 1832, 3: 531. 1832.

肉托榕 rou tuo rong

*Ficus pyrrhocarpa* Kurz; *F. saemocarpa* Miquel.

Shrubs, short, erect, rooting adventitiously; dioecious. Branchlets and petioles densely coarsely brown hairy. Stipules

lanceolate, 5–10 mm, abaxially with thick stiff rust-colored hairs on ridges. Leaves spirally arranged, clustered apically on branchlets; petiole 0.5–1 cm, densely covered with stiff thick rust-colored hairs; leaf blade oblanceolate to oblong, 4.5–13 × 1.2–3.2 cm, papery, abaxially with long thick rust-colored hairs on midvein but sparsely pubescent on other veins, adaxially dark green and sparsely covered with coarse stiff hairs, base narrowly cuneate, margin entire or apically sparsely toothed, apex acuminate; basal lateral veins short, secondary veins 6–8 on each side of midvein, apically curved and looped at margin. Figs axillary or on tuberculate branchlets from old stems, solitary, ± globose, 1.5–2 cm in diam., with prominent longitudinal ridges, densely covered with thick rust-colored hairs or villous, basally attenuated into a ca. 8 mm stalk, pedunculate; involucre bracts unequal. Male flowers: calyx lobes 3 or 4; stamen 1; anther ovoid to obovoid. Gall flowers: calyx lobes transparent; ovary smooth, enclosed by calyx lobes; style lateral, short; stigma tubular. Female flowers: similar to gall flowers; style persistent silklike, with long hairs. Achenes rhombic-ovoid, with hairs.

Moist rain forests; 700–1100 m. S Yunnan [Bhutan, India, Myanmar, Nepal, Sikkim, N Thailand].

**34. *Ficus hispida*** Linnaeus f., Suppl. Pl. 442. 1782.

对叶榕 dui ye rong

*Covellia hispida* (Linnaeus f.) Miquel; *Ficus compressa* S. S. Chang; *F. heterostyla* Merrill; *F. hispida* var. *badiostrigosa* Corner; *F. hispida* var. *rubra* Corner; *F. letaqui* H. Léveillé & Vaniot; *F. sambucixylon* H. Léveillé.

Shrubs or small trees, coarsely hairy; dioecious. Stipules usually 4 and decussate on leafless fruiting branchlets, ovate-lanceolate. Leaves opposite; petiole 1–4 cm, with short thick hairs; leaf blade ovate, oblong, or obovate-oblong, 10–25 × 5–10 cm, thickly papery, abaxially with coarse gray hairs, adaxially rough and with short thick hairs, base rounded to ± cuneate, margin entire or bluntly toothed, apex acute to mucronate; secondary veins 6–9 on each side of midvein. Figs axillary on normal leafy shoots, sometimes on leafless branchlets or branchlets from main branches, solitary or paired, yellow or red when mature, top-shaped, 1.2–3 cm in diam., with short scattered hairs, pedunculate; involucre bracts present; lateral bracts sometimes present. Male flowers: many, near apical pore; calyx lobes 3, thinly membranous; stamen 1. Gall flowers: calyx absent; style subapical, short, thick. Female flowers: calyx lobes absent; style lateral, with hairs. Fl. Jun–Jul.

Along streams, plains; 700–1500 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Sri Lanka, Thailand, Vietnam; Australia].

Varieties have been based on differences in fruit size and color but these vary too continuously to justify recognition of formal taxa.

**35. *Ficus septica*** N. L. Burman, Fl. Indica, 226. 1768.

棱果榕 leng guo rong

*Ficus haulii* Blanco; *F. kaukauensis* Hayata; *F. leucantoma* Poiré; *F. oldhamii* Hance.

Trees or shrublike trees; dioecious. Bark pale brown to yellowish brown, furrowed and scarred. Branchlets thick, cylindrical. Stipules red, ovate-lanceolate, 2–3 cm, membranous. Leaves alternate; petiole 2–8 cm; leaf blade oblong, ovate-elliptic, or obovate, 15–26 × 10–14 cm, membranous, base broadly cuneate, margin entire, pubescent when young, apex acuminate, mucronate, or sometimes caudate; basal lateral veins 2–4 and short, secondary veins 6–12 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, green to pale brown, depressed globose, with 8–12 longitudinal ridges, 1.2–2.5 cm in diam., with scattered white globose to ellipsoid tubercles and white small spots, apical pore open when mature; peduncle 6–13 mm; involucre bracts broadly ovate, margin revolute; lateral bracts absent. Male flowers: few, near apical pore; calyx lobes 2 or 3, basally connate; stamen 1; filament short; anther ellipsoid. Gall flowers: long pedicellate; calyx lobes short, transparent, apically with a few hairs; ovary ovoid to ± globose, smooth; style lateral to subapical, short; stigma enlarged. Female flowers: long pedicellate; calyx lobes apically with 2 or 3 teeth; style persistent, long, apex with transparent pubescence; stigma clavate. Achenes obliquely ovoid to ± globose. Fl. and fr. Apr–May.

Low elevations. Taiwan [Indonesia, Japan (Ryukyu Islands), New Guinea; NE Australia, Pacific Islands].

**36. *Ficus fistulosa*** Reinwardt ex Blume, Bijdr. Fl. Ned. Ind. 470. 1825.

水同木 shui tong mu

*Ficus harlandii* Benth.

Small trees, evergreen; dioecious. Bark dark brown. Branchlets hispid. Stipules ovate-lanceolate, 1–2 cm. Leaves alternate; petiole (0.7–)1.5–4 cm; hispid or hirsute; leaf blade obovate to oblong, 10–20 × 4–8 cm, papery, abaxially sparsely pubescent or yellow tuberculate, adaxially glabrous, base obliquely cuneate to rounded, margin entire or undulate, apex mucronate; basal lateral veins short, secondary veins 6–9 on each side of midvein. Figs on short ± conic branchlets on main branches, reddish orange when mature, ± globose, 1.5–2 × 1.5–2.2 cm, subglabrous, smooth, apical pore not open; peduncle

(0.5–)0.8–2.4 cm. Male flowers: few, near apical pore, shortly pedicellate; calyx lobes 3 or 4; stamen 1; filament short. Gall flowers: pedicellate; calyx lobes very short or absent; ovary obovate, smooth; style ± lateral, thin; stigma enlarged. Female flowers: perianth tubular, enclosing base of pedicel; style persistent, long, clavate. Achenes obliquely cubic, with small tubercles. Fl. May–Jul.

Forests, along streams, on rocks; 200–600 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Bangladesh, NE India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

**37. *Ficus benguetensis*** Merrill, Bull. Bur. Forest. Philipp. Islands 29: 10. 1905.

黄果榕 huang guo rong

*Ficus fistulosa* Reinwardt ex Blume f. *benguetensis* (Merrill) F. Y. Liu & Liao; *F. harlandii* Benth. var. *kotoensis* (Hayata) Sata; *F. kotoensis* Hayata; *F. miyagii* Koidzumi; *F. ochobiensis* Hayata; *F. urdanetensis* Elmer.

Trees, medium size; dioecious. Old branches coarse. Young branchlets yellowish brown to reddish purple, thin, sparsely thick-hairy. Stipules caducous, ovate-lanceolate, ca. 1.8 cm. Leaves alternate; petiole terete, 0.7–1.5 cm, with scattered yellowish brown thick hairs; leaf blade oblong to oblong-ovate, 9–13 × 4–6 cm, abaxially with stiff short hairs along veins, adaxially glabrous, base rounded, obliquely cuneate, or cordate, margin entire or undulate, apex acute and mucronate; veins abaxially prominent, basal lateral veins long, secondary veins 5–7 on each side of midvein. Figs axillary or in tuberculate clusters on short leafless branchlets, pale yellow when mature, ± globose, 0.8–1.5 cm in diam., smooth or with tubercles; peduncle ca. 1 cm; involucre bracts connate at base, triangular, margin entire, toothed, or ciliate. Female flowers: shortly pedicellate, glabrous; calyx tubular to campanulate, membranous, transparent; ovary obliquely ovoid, ca. 0.5 mm; style 1–1.5 mm, apex with thick hairs. Achenes obovoid, slightly oblique, ca. 1 mm, shortly stipitate.

Broad-leaved evergreen forests. Taiwan [Japan (Ryukyu Islands), Philippines].

#### 4. *Ficus* subgen. *Ficus*

无花果亚属 wu hua guo ya shu

*Covellia* Gasparrini.

Trees, shrubs, or climbers, usually terrestrial, rarely epiphytic; dioecious. Creeping branches with adventitious roots. Stipules fully amplexicaul or sometimes semiamplexicaul. Leaves spirally arranged; leaf blade margin often toothed; wax glands in axils of main basal veins, often also in other vein axils or also on nodes. Figs usually axillary on leafy stems, sometimes below leaves, solitary or paired, interfloral bracts absent, internal bristles mostly present, apical pore relatively large, with 3 or more upper bracts visible; involucre bracts usually present. Perianth lobes joined or free, occasionally absent, often hairy. Male flowers: dispersed or around apical pore, pedicellate or sessile; stamens 1–3(–4); pistillode usually absent. Gall flowers: with a simple often ± funnel-shaped stigma. Female flowers: stigma often 2-parted, subulate, not conspicuously papillate. Fruit an achene.

About 60 species: from NE Africa and the Mediterranean region through Asia to China; 35 species (eight endemic, one introduced) in China.

Corner placed all dioecious species of *Ficus* in this subgenus, but we have followed Berg, who transferred some of the more distinctive groups into the additional subgenera, *F.* subgen. *Synoecia* and *F.* subgen. *Sycidium* or into an enlarged *F.* subgen. *Sycomor*. The species remaining are all pollinated by fig wasps belonging to the genus *Blastophaga*.

MORACEAE

- 1a. Scandent or prostrate shrubs attached to substrate by adventitious roots.
- 2a. Figs on procumbent leafless stems, usually underground, sessile; leaf blade 1.5–4 cm wide, margin finely toothed ..... 64. *F. tikoua*
- 2b. Figs axillary on leafy stems, with peduncle to 1 cm, rarely sessile; leaf blade 0.3–2 cm wide, margin entire or sometimes irregularly undulate with 2 or 3 teeth on each side.
- 3a. Leaf blade (0.5–)1–1.5(–3) cm; stipules 3–4 mm; petiole less than 4 mm ..... 62. *F. vaccinioides*
- 3b. Leaf blade 2–13 cm; stipules 4–15 mm; petiole 4–15 mm.
- 4a. Branchlets sparsely pubescent to subglabrous; peduncle (3–)5–7 mm; figs pale brown, ca. 1.2 cm in diam. .... 63. *F. tannoensis*
- 4b. Branchlets densely covered with short and thick gray-white hairs; peduncle 7–10 mm; figs purplish black to brown red when mature, 1.5–2 cm in diam. .... 65. *F. abelii*
- 1b. Trees or shrubs sometimes scrambling or epiphytic but stems not climbing by adventitious roots.
- 5a. Figs with longitudinal ridges, conic to spindle-shaped ..... 59. *F. ischnopoda*
- 5b. Figs not ridged, globose, conic-globose, ovoid, ellipsoid, ellipsoid-globose, conic-ellipsoid, pear-shaped, or cylindrical.
- 6a. Achenes tuberculate or rugose, basally with double keels; male flowers always near apical pore; leaf blade without cystoliths (with small cystoliths in *F. pyriformis*).
- 7a. Leaf blade abaxially with white or yellow soft felted hairs and hairs 3–5 mm ..... 66. *F. esquiroliana*
- 7b. Leaf blade abaxially without felted hairs.
- 8a. Leaves palmately divided ..... 69. *F. simplicissima*
- 8b. Leaves not palmately divided.
- 9a. Leaf blade 15–25 cm, densely reticulated; figs with gall flowers green or yellow and open when mature ..... 70. *F. ruficaulis*
- 9b. Leaf blade 4–15 cm, sparsely reticulated; figs with gall flowers red and not open when mature.
- 10a. Leaf blade abaxially densely golden yellow tomentose ..... 68. *F. fulva*
- 10b. Leaf blade abaxially sparsely pubescent, puberulent, or glabrous.
- 11a. Leaf blade with 3 or 4 lateral veins on each side of midvein, basal lateral veins extending to 1/2 of leaf blade length; figs 0.5–0.7 cm in diam. .... 71. *F. chartacea*
- 11b. Leaf blade with 5–11(–15) lateral veins on each side of midvein, basal lateral veins much shorter than 1/2 of leaf blade length; figs 1–3 cm in diam.
- 12a. Leaf blade apex acute, acuminate, or caudate; figs pear-shaped, 1.5–3 cm in diam. .... 47. *F. pyriformis*
- 12b. Leaf blade apex obtuse to blunt; figs globose, 1–1.2 cm in diam. .... 48. *F. variolosa*
- 6b. Achenes smooth, not or only slightly keeled; male flowers scattered or near apical pore; leaf blade with cystoliths at least abaxially.
- 13a. Leaf blade usually 3–5-lobed.
- 14a. Stems and leaves with inconspicuous short gray pubescence; fig pear-shaped, with very inconspicuous hairs, inside without bristles ..... 38. *F. carica*
- 14b. Stems and leaves with long soft or coarse hairs or bristles (sometimes leaves glabrous); fig ± globose, with long, stiff, spreading, golden-yellow or brown hairs and also pubescent, inside with abundant bristles ..... 67. *F. hirta*
- 13b. Leaf blade unlobed.
- 15a. Leaf blade with cystoliths on both surfaces.
- 16a. Figs with persistent erect bracts around apical pore; leaf blade margin entire or apically toothed, apex acuminate to caudate; trees 3–10 m tall; tepals white or yellow; male flowers with 3–5 stamens ..... 39. *F. henryi*
- 16b. Figs without erect bracts around apical pore; leaf blade margin apically undulate or with a few blunt teeth, apex usually conspicuously caudate; shrubs or small trees, 1–3 m tall; tepals dark red; male flowers with 1 or 2(or 3) stamens ..... 40. *F. subincisa*
- 15b. Leaf blade with cystoliths on abaxial surface only.
- 17a. Figs sessile to subsessile.
- 18a. Leaf apex acute to obtuse, basal lateral veins extending to 1/3–1/2 of leaf blade length.
- 19a. Tree or shrub 2–10 m tall; leaf blade with gray to brown hairs; secondary veins 3–5 on each side of midvein ..... 50. *F. chapaensis*
- 19b. Shrub to 3 m tall; leaf blade with yellowish brown coarse hairs; secondary veins 5 or 6 on each side of midvein ..... 72. *F. tuphapensis*
- 18b. Leaf blade apex acuminate to caudate, basal veins much shorter than 1/3 of leaf blade length.

MORACEAE

- 20a. Leaf blade secondary veins 3 or 4 on each side of midvein ..... 55. *F. ovatifolia*  
 20b. Leaf blade secondary veins 6–15 on each side of midvein.  
     21a. Trees to 15 m tall; leaf blade ± leathery, adaxially smooth ..... 43. *F. neriifolia*  
     21b. Shrubs or small trees; leaf blade usually papery, adaxially  
         scabrous ..... 54. *F. heteromorpha*
- 17b. Figs pedunculate.  
 22a. Stipules 4–8 mm.  
     23a. Petiole 1.5–1.7 cm; leaf blade 4.5–5 cm wide, base rounded to auriculate .... 57. *F. undulata*  
     23b. Petiole 0.5–1 cm; leaf blade 1.5–4 cm wide, base cuneate.  
         24a. Branchlets pilose; leaf blade ovate-lanceolate, margin ciliate ..... 56. *F. sinociliata*  
         24b. Branchlets short pubescent; leaf blade oblanceolate, narrowly elliptic,  
             or ± linear, margin entire.  
             25a. Figs ovoid-globose, 0.6–1 cm in diam. .... 58. *F. formosana*  
             25b. Figs pear-shaped, 1.5–2 cm in diam. .... 65. *F. abelii*
- 22b. Stipules 10–15 mm.  
     26a. Leaf blade with basal lateral veins short, extending less than 1/4 of leaf blade  
         length.  
         27a. Petiole 1.5–5 cm ..... 53. *F. daimingshanensis*  
         27b. Petiole 0.3–1 cm.  
             28a. Trees, 7–10 m tall ..... 51. *F. filicauda*  
             28b. Shrubs, to 2 m tall.  
                 29a. Branchlets sparsely pubescent; petiole 0.3–0.7 cm;  
                     involucral bracts ovate-triangular ..... 44. *F. fusuiensis*  
                 29b. Branchlets coarsely hairy, glabrescent; petiole ca.  
                     1 cm; involucral bracts broadly ovate ..... 52. *F. gasparriniana*
- 26b. Leaf blade with basal lateral veins extending to 1/4–1/2 of leaf blade length.  
     30a. Branchlets yellowish brown, hairs reddish yellow, scurfy ..... 41. *F. langkokensis*  
     30b. Branchlets not yellowish brown, hairs if present not reddish yellow  
         scurfy.  
         31a. Figs inside with abundant bristles ..... 42. *F. pedunculosa*  
         31b. Figs inside with few or no bristles.  
             32a. Peduncle 1–5 cm.  
                 33a. Branchlets with scattered grayish white bristles;  
                     petiole 0.3–0.7 cm ..... 60. *F. stenophylla*  
                 33b. Branchlets glabrous or densely brown-tomentose;  
                     petiole 1–4 cm ..... 46. *F. erecta*  
             32b. Peduncle to 1 cm.  
                 34a. Figs 1–2 cm in diam.; plants 3–8 m tall ..... 49. *F. trivialis*  
                 34b. Figs 0.4–1 cm in diam.; plants 1–2 m tall.  
                     35a. Leaf blade finely pubescent, often constricted in  
                         middle (violin-shaped) ..... 61. *F. pandurata*  
                     35b. Leaf blade with coarse and bent or barbed hairs,  
                         never violin-shaped ..... 45. *F. ruyuanensis*

**38. *Ficus carica*** Linnaeus, Sp. Pl. 2: 1059. 1753.

无花果 *wu hua guo*

Shrubs, 3–10 m tall, many branched. Bark grayish brown, distinctly lenticellate. Branchlets straight, strong. Stipules red, ovate-lanceolate, ca. 1 cm. Leaves alternate; petiole strong, 2–5 cm; leaf blade broadly ovate, usually with 3–5 ovate lobes, 10–20 × 10–20 cm, thickly papery, abaxially densely covered with small cystoliths and short gray pubescence, adaxially scabrous, base ± cordate, margin irregularly toothed; basal lateral veins 2–4, secondary veins 5–7 on each side of midvein. Figs axillary on normal leafy shoots, solitary, purplish red to yellow when mature, pear-shaped, large, 3–5 cm in diam., apical pore concave, sessile; involucral bracts ovate. Male flowers: near apical pore; calyx lobes 4 or 5; stamens (1 or)3(–5). Gall flowers: style

lateral, short. Female flowers: calyx lobes 4 or 5; ovary ovoid, smooth; style lateral; stigma 2-branched, linear. Achenes lens-like. Fl. and fr. May–Jul.

Cultivated throughout China [native to the Mediterranean region eastward to Afghanistan].

This species was introduced to China during the Tang Dynasty (618–906 CE) and is grown particularly in Xinjiang for its edible fruit.

**39. *Ficus henryi*** Warburg ex Diels, Bot. Jahrb. Syst. 29: 299. 1900.

尖叶榕 *jian ye rong*

*Ficus acanthocarpa* H. Léveillé & Vaniot.

Trees, 3–10 m tall. Branchlets yellowish brown, narrowly



winged, glabrous. Stipules 3.5–6 mm, soon caducous. Petiole 1–1.5 cm; leaf blade obovate-oblong to narrowly lanceolate, usually with 3–5 ovate lobes, 7–16 × 2.5–5 cm, both surfaces with cystoliths, abaxially green, adaxially darker green, base cuneate, margin entire or apically with sparse teeth, apex acuminate to caudate; basal lateral veins to 1/4 of leaf blade length, secondary veins 5–7 on each side of midvein, abaxially conspicuous. Figs axillary on normal leafy shoots, solitary, erect, reddish orange when mature, globose to ellipsoid, ± beaked when young, 1–2 cm in diam., smooth; peduncle 5–6 mm; involucre bracts 3; outer apical bracts erect. Male flowers: near apical pore or scattered, long-pedicellate; calyx lobes 4 or 5, white, oblanceolate, pubescent; stamens 3–5; anther ellipsoid. Gall flowers: basal to female flowers in fig, pedicellate; calyx lobes 5, ovate-lanceolate. Female flowers: ovary ovoid; style lateral; stigma 2-branched. Achenes ovoid, smooth, with 1 row of small tubercles. Fl. May–Jun, fr. Jul–Sep.

Mountain slopes, beside streams; 600–1300(–1600) m. S Gansu, W Guangxi, Guizhou, W Hubei, Hunan, SW Sichuan, SE Xizang, C and SE Yunnan [N Vietnam].

The fruit are edible.

**40. *Ficus subincisa*** Buchanan-Hamilton ex Smith in Rees, Cycl. 14: *Ficus* no. 91. 1810.

棒果榕 bang guo rong

*Ficus caudata* Wallich ex Miquel (1848), not Stokes (1812); *F. clavata* Wallich ex Miquel; *F. subincisa* var. *pauidentata* (Miquel) Corner; *F. trachycarpa* Miquel var. *pauidentata* Miquel.

Shrubs or small trees, 1–3 m tall. Bark dark grayish, smooth. Branchlets reddish brown, slender, narrowly winged. Stipules caducous, linear to lanceolate, ca. 5 cm. Petiole 4–6 mm; leaf blade obovate-oblong to elliptic-lanceolate, 4–12 × 2–5 cm, papery, with cystoliths, base cuneate, margin apically undulate or with a few blunt teeth, apex long-caudate; basal lateral veins short, secondary veins 5–7 on each side of midvein, oblique to near margin then looped. Figs axillary on normal leafy shoots, solitary, reddish orange when mature, ellipsoid to ± globose, 0.6–2.5 cm in diam., smooth or tuberculate and lenticellate, apical pore navel-like, ± convex; peduncle 2–10 mm; involucre bracts triangular. Male flowers: near apical pore, pedicellate; calyx lobes 4; stamen 1 or 2(–3). Gall flowers: ovary smooth; style lateral; stigma shortly funnelform. Female flowers: style lateral, long; stigma 2-branched. Achenes lenslike, smooth. Fl. May–Jul, fr. Sep–Oct.

Dense and sparse forests, along streams, valleys; 400–2400 m. W Guangxi, Yunnan [Bhutan, NE India, Kashmir, Laos, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

**41. *Ficus langkokensis*** Drake, J. Bot. (Morot) 10: 215. 1896.

青藤公 qing teng gong

*Ficus harmandii* Gagnepain.

Trees, 6–15 m tall. Bark reddish brown to grayish yellow. Branchlets yellowish brown, slender, with reddish yellow scurfy hairs. Stipules lanceolate, 7–10 mm. Leaves alternate;

petiole 1–4 cm, glabrous or sparsely pubescent; leaf blade elliptic-lanceolate to elliptic, 7–19 × 2–6 cm, papery, glabrous, abaxially reddish brown, base broadly cuneate, margin entire, apex caudate to acuminate; basal lateral veins extending 1/3–1/2 length of leaf blade; secondary veins 2–4 on each side of midvein, reticulate veins abaxially ± conspicuous. Figs axillary on normal leafy shoots, paired or solitary, globose, 5–12 mm in diam., with rust-colored scurfy hairs, apical pore navel-like, convex; peduncle 0.5–1.5 cm, slender, with rust-colored scurfy hairs; involucre bracts broadly ovate. Male flowers: pedicellate; calyx lobes 3 or 4, ovate; stamen 1 or 2; filaments short. Female flowers: calyx lobes 4, dark red, obovate; style lateral.

Mountains, beside streams; 100–2000 m. Fujian, Guangdong, Guangxi, Hainan, SW Hunan, S Sichuan, S Yunnan [NE India, Laos, Vietnam].

**42. *Ficus pedunculosa*** Miquel, London J. Bot. 7: 442. 1848.

蔓榕 wan rong

*Ficus ataktophylla* Miquel; *F. garanbiensis* Hayata; *F. luzonensis* Merrill; *F. mearnsii* Merrill; *F. pedunculosa* var. *glabrifolia* S. S. Chang; *F. pedunculosa* var. *mearnsii* (Merrill) Corner.

Shrubs, scandent, evergreen. Bark pale reddish brown. Branchlets sparsely pubescent and with pale scurfy hairs. Stipules caducous, broadly lanceolate, 1–1.5 cm, membranous, usually hairy. Petiole ca. 1.5 cm, with chaffy scale-like hairs; leaf blade elliptic, obovate-elliptic, or obovate, 4–10 × 3–6 cm, leathery, glabrous or strigose, base cuneate, margin entire, apex acute to ± acuminate; basal lateral veins 2(or 4), extending 1/4–1/2 length of leaf blade, secondary veins 4–6(–10) on each side of midvein, and abaxially prominent. Figs axillary on normal leafy shoots, solitary or paired, ± globose to obovoid or ellipsoid, 1–2 cm in diam., puberulent, inside with abundant bristles; peduncle (1–)2–3 cm, slender, sparsely pubescent; involucre bracts 1.5–2 mm, membranous. Male flowers: long-pedicellate; calyx lobes 2–4; stamens 2–4; filaments short; anthers ellipsoid. Gall flowers: sessile or pedicellate; calyx lobes 3–5; ovary oblique, smooth; style lateral, short and thick; stigma enlarged or truncate. Female flowers: sessile; calyx lobes 3–5, short; ovary smooth; style longer than on gall flowers; stigma ± funnelform. Fl. and fr. Mar–Jun.

Usually in limestone areas; low elevations. S Taiwan [Indonesia, New Guinea, Philippines].

**43. *Ficus neriifolia*** Smith in Rees, Cycl. 14: *Ficus* no. 21. 1810.

森林榕 sen lin rong

*Ficus fieldingii* Miquel; *F. gemella* Wallich ex Miquel; *F. nemoralis* Wallich ex Miquel; *F. nemoralis* var. *fieldingii* (Miquel) King; *F. nemoralis* var. *gemella* (Wallich ex Miquel) King; *F. nemoralis* var. *trilepis* (Miquel) King; *F. neriifolia* var. *fieldingii* (Miquel) Corner; *F. neriifolia* var. *nemoralis* (Wallich ex Miquel) Corner; *F. neriifolia* var. *trilepis* (Miquel) Corner; *F. trilepis* Miquel; *F. wardii* C. E. C. Fischer.

Trees, to 15 m tall. Bark dark gray, smooth. Branchlets green to pale green, leaf traces and stipular scars conspicuous.

Stipules lanceolate, glabrous. Petiole 1–4 cm; leaf blade elliptic, ovate, ovate-elliptic, or ovate-lanceolate,  $\pm$  asymmetric, 8–18  $\times$  3–6.5 cm,  $\pm$  leathery, both surfaces glabrous and green, abaxially densely covered with cystoliths, adaxially smooth, base cuneate to rounded, margin entire, apex acuminate to caudate; basal lateral veins very short, secondary veins 7–15 on each side of midvein, and at about 90° to midvein, reticulate veins parallel to secondary veins. Figs axillary on leafy or older leafless branches, paired, narrowly cylindrical, ovoid,  $\pm$  globose, or globose, 8–10 cm in diam., carpodermis thick or thin and with or without stone cells, inside without bristles, apical pore navel-like, sessile; involucre bracts ovate, connate at base. Male flowers: many, pedicellate; calyx lobes 3 or 4, ovate-lanceolate; stamens 2 or 3. Gall flowers: few; ovary ovoid; style  $\pm$  lateral, short. Female and gall flowers: calyx lobes 3 or 4; ovary globose; style thin. Achenes smooth. Fl. and fr. Oct–Apr.

Broad-leaved evergreen forests; 1700–2900 m. Xizang (Médog), W Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

**44. *Ficus fusuiensis*** S. S. Chang, Guihaia 3: 298. 1983.

扶绥榕 fu sui rong

Shrubs, to 2 m tall. Branchlets slender, sparsely pubescent. Stipules lanceolate, ca. 1 cm or more, membranous. Petiole 3–7 mm, sparsely covered with short pubescence; leaf blade grayish green when dry, oblanceolate to oblong-lanceolate, 5.5–15  $\times$  4–4.5 cm, glabrous or sparsely pubescent, abaxially and on margin with barbed hairs, base cuneate to  $\pm$  obtuse, margin entire, apex acuminate to caudate with a 5–10 cm cauda; basal lateral veins very short, secondary veins 6–10 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, conic-ellipsoid, 1–1.2  $\times$  0.8–1 cm, base attenuate into a short stalk, carpodermis without stone cells; peduncle ca. 5 mm; involucre bracts ovate-triangular; apical bracts red, erect. Male flowers: near apical pore or scattered, pedicellate; calyx lobes 4, oblanceolate; stamens 2. Gall flowers: many, below male flowers, pedicellate; calyx lobes 4, ovate-lanceolate; ovary stipitate,  $\pm$  globose; style lateral, short; stigma funnellform. Fr. Jun.

• Forests, along streams, valleys; ca. 300 m. SW Guangxi (Fusui).

**45. *Ficus ruyuanensis*** S. S. Chang, Acta Phytotax. Sin. 20: 97. 1982.

乳源榕 ru yuan rong

*Ficus daimiaoshanensis* S. S. Chang.

Shrubs or trees, 1–2 m tall. Branches when young and petioles with straight spreading coarse hairs. Branchlets slender; internodes short. Stipules lanceolate, ca. 5 mm. Leaves spirally arranged; petiole 0.5–4 cm; leaf blade obovate-oblong to oblanceolate, 5–11  $\times$  2.5–5 cm, papery, abaxially pale green but silvery gray when dry, adaxially green and with loosely bent pubescence, base broadly cuneate, margin entire and with barbed hairs, apex acute to acuminate; basal lateral veins to 1/4 of leaf blade length, secondary veins 4–7 on each side of midvein. Figs axillary on normal leafy shoots, paired, red to purple when mature,  $\pm$  globose, 6–8 mm in diam., carpodermis without stone cells, inside without bristles; peduncle 0–3 mm; involu-

cre bracts triangular, 1–2 mm; apical bracts discoid, closed. Male flowers: near apical pore or scattered, pedicellate; calyx lobes 4, oblanceolate; stamens 2. Gall flowers: pedicellate or sessile; ovary stipitate; style lateral, short; stigma funnellform. Achenes  $\pm$  reniform, smooth.

• Dense forests, mountain slopes; 500–700 m. N Guangdong (Ruyuan), NE Guangxi (Daimiao Shan), Guizhou (Dushan).

**46. *Ficus erecta*** Thunberg, *Ficus*, 5. 1786.

矮小天仙果 ai xiao tian xian guo

*Ficus beecheyana* Hooker & Arnott; *F. beecheyana* f. *koshunensis* (Hayata) Sata; *F. beecheyana* f. *tenuifolia* Sata; *F. beecheyana* var. *koshunensis* (Hayata) Sata; *F. erecta* var. *beecheyana* (Hooker & Arnott) King; *F. erecta* var. *beecheyana* f. *koshunensis* (Hayata) Corner; *F. erecta* f. *sieboldii* (Miquel) Corner; *F. erecta* var. *sieboldii* (Miquel) King; *F. koshunensis* Hayata; *F. maruyamensis* Hayata; *F. sieboldii* Miquel; *F. tenax* Blume.

Trees or shrubs, 2–7 m tall, deciduous or semideciduous. Bark grayish brown. Branchlets glabrous or densely brown tomentose. Stipules caducous, reddish brown, broadly ovate or triangular-lanceolate, ca. 1 cm, membranous, puberulous. Petiole slender, 1–4 cm, glabrous or pubescent; leaf blade obovate-elliptic, oblong, lanceolate, obovate, or narrowly obovate, 7–25  $\times$  4–10 cm, thickly papery, glabrous or tomentose, base rounded to  $\pm$  cordate, margin entire or occasionally undulate toward apex, apex shortly acuminate or acute and mucronate; basal lateral veins elongated, secondary veins 5–8(–10) on each side of midvein and apically curved. Figs axillary on normal leafy shoots, solitary, reddish yellow to blackish purple or red when mature, globose to pear-shaped, 1–2.5 cm in diam., glabrous or hairy, apical pore navel-like; peduncle 1–2 cm; involucre bracts ovate-triangular, glabrous or thinly pubescent. Male flowers: many scattered, subsessile to pedicellate; calyx lobes (2 or)3(–6), elliptic to ovate-lanceolate; stamens 2 or 3. Gall flowers: subsessile to pedicellate; calyx lobes 3–5, lanceolate, longer than ovary, pubescent; ovary ellipsoid-globose; style lateral, short; stigma 2-branched. Female flowers: calyx lobes (3)–4–6, broadly spatulate; ovary smooth, shortly stipitate; style lateral; stigma 2-branched. Fl. and fr. May–Jun.

Forests, along streams. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, S Jiangsu, Jiangxi, Taiwan, Yunnan, Zhejiang [Japan, Korea (Cheju Island), Vietnam].

The bark fibers are used for making paper.

**47. *Ficus pyriformis*** Hooker & Arnott, Bot. Beechey Voy. 216. 1836.

舶梨榕 bo li rong

*Ficus millettii* Miquel; *F. pyriformis* var. *brevifolia* Gagnepain; *F. pyriformis* var. *hirtinervis* S. S. Chang.

Shrubs, 1–2 m tall. Branchlets coarsely hairy. Stipules red, lanceolate, ca. 1 cm, glabrous. Petiole 1–1.5 cm, hairy; leaf blade oblanceolate, obovate-lanceolate, or ovate-elliptic, 4–11(–14)  $\times$  2–4 cm, papery, abaxially sparsely pubescent and with small

cystoliths, midvein and lateral veins sometimes densely covered with brown coarse hairs, adaxially bright green, base cuneate to ± rounded, margin entire and slightly revolute, apex acuminate, acute, or caudate; basal lateral veins short, secondary veins 5–9 on each side of midvein and inconspicuous. Figs axillary on normal leafy shoots, solitary, pear-shaped, ca. 3 × 1.5–3 cm in diam., glabrous, with or without white spots and sparsely brown tuberculate, base cuneate; peduncle to 1.7 cm. Male flowers: near apical pore; calyx lobes 3 or 4, lanceolate; stamens 2; anthers ovoid. Gall flowers: calyx lobes 4, linear; ovary globose; style lateral. Female flowers: calyx lobes 3 or 4; ovary reniform; style lateral, long, thin. Achenes tuberculate. Fl. Dec–Jun.

Forests, wet areas near streams. S Fujian, Guangdong, Guangxi, Hainan, S Hunan [Vietnam].

**48. *Ficus variolosa*** Lindley ex Benth, London J. Bot. 1: 492. 1842.

变叶榕 bian ye rong

*Ficus langbianensis* Gagnepain, p.p. (*Chavali* 30696).

Shrubs or trees, 3–10 m tall. Bark grayish brown, smooth. Branchlet internodes short. Stipules narrowly triangular, ca. 8 mm. Petiole 6–10 mm; leaf blade narrowly elliptic to elliptic-lanceolate, 5–12 × 1.5–4 cm, ± leathery, base cuneate, margin entire, apex obtuse to blunt; basal lateral veins 2, short, secondary veins 7–11(–15) on each side of midvein and at almost 90° to midvein. Figs axillary on normal leafy shoots, paired or solitary, globose, 1–1.2 cm in diam., tuberculate, apical pore navel-like, convex; peduncle 0.8–1.2 cm; involucre bracts ovate-triangular, base slightly connate. Male flowers: near apical pore. Gall flowers: ovary globose; style lateral, short. Female flowers: calyx lobes 3 or 4; ovary reniform; style lateral, long, thin. Achenes tuberculate. Fl. Dec–Jun.

Forests, wet areas. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, S Yunnan, Zhejiang [Laos, Vietnam].

This species needs careful comparison with *Ficus biglandulosa* Wallich ex Steudel (1840).

The stems, leaves, and roots are used medicinally and the fibers are used for making cloth.

**49. *Ficus trivialis*** Corner, Gard. Bull. Singapore 17: 427. 1960.

楔叶榕 xie ye rong

Shrubs or trees, 3–8 m tall. Bark gray. Branchlets reddish brown, 3–5 mm in diam., glabrous or sparsely pubescent. Stipules ovate-lanceolate, 0.7–1.5 cm, pubescent. Petiole 1–5(–9) cm; leaf blade elliptic, obovate, ovate-elliptic, narrowly obovate, or rhombic-obovate, 6–16 × 2.5–8 cm, papery, abaxially glabrous or sparsely coarsely hairy and with cystoliths, adaxially glabrous, base cuneate to rounded, margin entire, apex acute to acuminate; basal lateral veins extending 1/3–1/2 length of leaf blade, secondary veins 3–5(–7) on each side of midvein, and axils of basal secondary veins abaxially glandular. Figs axillary on normal leafy shoots, solitary or paired or sometimes densely clustered, red to purple when mature, ± globose, 1–2 cm in diam., glabrous, slightly scabrid, apical pore navel-like, convex; peduncle 3–10 mm; involucre bracts triangular-ovate. Male flowers: near apical pore or scattered, pedicellate; calyx lobes 4; stamens 2. Gall flowers: sessile or shortly

pedicellate; calyx lobes 4; ovary ovoid; style glabrous; stigma 2-branched. Female flowers: sessile; calyx lobes 4; style glabrous; stigma 2-branched. Achenes ovoid, smooth. Fl. Sep–Apr, fr. May–Aug.

Along streams. N Guangdong, Guangxi, Guizhou, SE Yunnan [N Vietnam].

Berg (in litt.) believes that much Chinese material named as *Ficus trivialis* is better placed within *F. erecta* (species 46). It has also been confused with *F. heteromorpha* Hemsley (species 54).

- 1a. Petiole 2–5 cm; leaf blade ovate-elliptic, narrowly obovate, or rhombic-obovate, base rounded to broadly cuneate; figs solitary or paired in leaf axils ..... 49a. var. *trivialis*  
 1b. Petiole 1–2(–9) cm; leaf blade elliptic, base narrowly cuneate; figs many ..... 49b. var. *laevigata*

**49a. *Ficus trivialis* var. *trivialis***

楔叶榕(原变种) xie ye rong (yuan bian zhong)

*Ficus cuneata* H. Léveillé & Vaniot var. *congesta* H. Léveillé & Vaniot; *F. trivialis* var. *tenuipetiolata* S. S. Chang.

Petiole 2–5 cm; leaf blade ovate-elliptic, narrowly obovate, or rhombic-obovate, 6–16 × 4–8 cm, abaxially veins with coarse hairs or glabrous, base rounded to broadly cuneate; secondary veins 4 or 5 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, 1–2 cm in diam.; peduncle 3–8 mm. Fl. Sep–Apr, fr. May–Aug.

Along streams. N Guangdong, Guangxi, Guizhou, SE Yunnan [N Vietnam].

**49b. *Ficus trivialis* var. *laevigata*** S. S. Chang, Guihaia 4: 118. 1984.

光叶楔叶榕 guang ye xie ye rong

Petiole 1–2(–9) cm, thick; leaf blade elliptic, 6.5–11(–16) × 2.5–4(–6) cm, glabrous or sparsely covered with white coarse hairs, base narrowly cuneate; secondary veins 3 or 4(–7) on each side of midvein. Figs many, dense, ca. 1 cm in diam.; peduncle 5–10 mm.

- Guangxi (Pingguo), Guizhou (Pingtang).

**50. *Ficus chapaensis*** Gagnepain, Notul. Syst. (Paris) 4: 88. 1927.

沙坝榕 sha ba rong

Trees or shrubs, 2–10 m tall. Branchlets brown pubescent. Stipules red, ovate-lanceolate, 1–1.5 cm, membranous, sparsely pubescent. Petiole 1–3 cm, densely covered with brown short coarse hairs; leaf blade ovate-elliptic to elliptic, 5–13 × 2–6 cm, papery, abaxially densely covered with gray to brown short hairs but more so on veins, adaxially dark green and densely bent strigose but glabrescent, base obtuse to broadly cuneate, margin entire, apex obtuse; basal lateral veins 2–4, extending to 1/3–1/2 of leaf blade length, secondary veins 3–5 on each side of midvein. Figs axillary on normal leafy shoots, paired, pale reddish brown when mature, globose, ca. 1 cm in diam., sparsely covered with short hairs, apical pore slightly navel-like, sub-

sessile; involucre bracts broadly ovate, apically toothed. Male flowers: near apical pore, pedicellate; calyx lobes 4–6, red, oblong-lanceolate, ca. 1.5 mm; stamens 2 or 3; anthers ellipsoid, as long as filaments. Gall flowers: pedicel ca. 4 mm; calyx lobes 4; ovary ± globose; style lateral, short. Female flowers: calyx lobes 5 or 6, ovate, ca. 2 mm; ovary ± globose, ca. 1.5 mm in diam.; style lateral; stigma linear, apex funnellform. Fl. and fr. autumn.

Forests, along trails; 1700–2100 m. Sichuan (Miyi), Yunnan [N Vietnam].

**51. *Ficus filicauda*** Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 60: 180. 1924 [“1923”].

线尾榕 xian wei rong

Trees, 7–10 m tall. Branchlets slender, sparsely pubescent. Winter buds spindle-shaped, ca. 7 mm, pubescent. Stipules lanceolate, 1–1.5 cm, membranous. Petiole 7–10 mm, pubescent; leaf blade lanceolate to narrowly elliptic, 10–14 × 2.5–3.5 cm, both surfaces glabrous or abaxially pubescent on major veins, base cuneate, margin entire, apex long caudate; midvein prominent on both surfaces; basal lateral veins short, secondary veins 9–12 on each side of midvein at about 90° to midvein, and abaxially conspicuous. Figs axillary on normal leafy shoots, solitary or paired, sparsely spotted, ellipsoid-globose to globose, ca. 1 cm in diam., glabrous, apical pore slightly navel-like; peduncle 0.4–2 cm; involucre bracts broadly ovate, margin membranous. Male flowers: near apical pore; pedicel ca. 2 mm. calyx lobes 4, obovate, glabrous; stamens 2; filaments short; anthers ellipsoid. Gall flowers: basal or around middle; calyx lobes 4; ovary stipitate, ± globose; style lateral, short; stigma deeply 2-branched. Fl. Jun–Jul.

Forests; 2000–2700 m. SE Xizang, NW Yunnan [NE India, Myanmar].

Berg (in litt.) does not believe that it is practicable to maintain the following varieties.

- 1a. Leaf blade abaxially pubescent on midvein and secondary veins, adaxially glabrous; figs ellipsoid-globose; peduncle 0.4–0.5 cm ..... 51a. var. *filicauda*  
 1b. Leaf blade glabrous; figs globose; peduncle ca. 2 cm ..... 51b. var. *longipes*

**51a. *Ficus filicauda* var. *filicauda***

线尾榕(原变种) xian wei rong (yuan bian zhong)

*Ficus xiphias* C. E. C. Fischer.

Leaf blade abaxially pubescent on midvein and secondary veins, adaxially glabrous, apex acute to caudate and cauda ca. 4 cm, linear. Figs ellipsoid-globose; peduncle 4–5 mm.

Forests; 2000–2700 m. SE Xizang, NW Yunnan [NE India, Myanmar].

**51b. *Ficus filicauda* var. *longipes*** S. S. Chang in C. Y. Wu, Fl. Xizang. 1: 517. 1983.

长柄线尾榕 chang bing xian wei rong

Leaf blade glabrous, apex shortly caudate with a ca. 2 cm cauda. Figs globose; peduncle ca. 2 cm.

• SE Xizang (Médog).

**52. *Ficus gasparriniana*** Miquel, London J. Bot. 7: 436. 1848.

冠毛榕 guan mao rong

Shrubs. Branchlets slender; internodes short, coarsely hairy, glabrescent. Stipules lanceolate, ca. 1 cm. Petiole ca. 1 cm, pubescent; leaf blade obovate-elliptic, oblanceolate, lanceolate, or obovate, sometimes very variable, 6–15 × 2–5(–8) cm, papery to leathery, abaxially glabrous, sparsely pubescent, or densely covered with coarse hairs and pubescence, adaxially scabrid and tuberculate, base cuneate to obtuse, margin entire or with a few irregular teeth near apex, apex acute to acuminate; basal lateral veins short, secondary veins 3–18 on each side of midvein. Figs axillary on normal leafy shoots, paired or solitary, purple red with white spots when mature, ovoid, globose, or ellipsoid-globose, 0.7–1.4 × 0.7–1.2 cm, pubescent when young, apical pore navel-like, convex, bracts red; peduncle less than 1 cm; involucre bracts broadly ovate. Male flowers: pedicellate; calyx lobes 3, hairy; stamens 2–3. Gall flowers: calyx lobes 3 or 4, oblanceolate, hairy; ovary obliquely ovoid; style lateral, slightly 2-lobed. Female flowers: calyx lobes 4, apex with hairs; style persistent, lateral, long, curved. Achenes ovoid, smooth. Fl. May–Jul.

Forests, mountains, along trails, valleys; 500–2000 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan [Bhutan, NE India, Laos, Myanmar, Thailand, Vietnam].

Some authors have claimed that var. *gasparriniana* is restricted to India, Myanmar, and Vietnam, and that Chinese material should be placed in var. *viridescens*. However, the Chinese material is extremely variable, and it does not seem practicable to keep var. *viridescens* apart from var. *gasparriniana*. The status of the other two varieties has been questioned, and it has been suggested that they should be given full species status.

- 1a. Leaf blade abaxially densely coarsely hairy and pubescent ..... 52a. var. *gasparriniana*  
 1b. Leaf blade abaxially glabrous or sparsely pubescent.  
 2a. Leaf blade obovate, sometimes irregularly toothed near apex, secondary veins 5–7 on each side of midvein ..... 52b. var. *laceratifolia*  
 2b. Leaf blade lanceolate, always entire, secondary veins 8–18 on each side of midvein ..... 52c. var. *esquirolii*

**52a. *Ficus gasparriniana* var. *gasparriniana***

冠毛榕(原变种) guan mao rong (yuan bian zhong)

*Ficus comata* Handel-Mazzetti; *F. congesta* (H. Lévillé & Vaniot) H. Lévillé (1915), not Roxburgh (1832); *F. cyanus* H. Lévillé & Vaniot; *F. cyanus* var. *viridescens* H. Lévillé & Vaniot; *F. gasparriniana* var. *viridescens* (H. Lévillé & Vaniot) Corner; *F. leekensis* Drake; *F. silhetensis* Miquel; *F. silhetensis* var. *annamica* Gagnepain; *F. stapfii* H. Lévillé.

Leaf blade green when dry, usually obovate but varying greatly in shape, 6–10 × 2–3 cm, papery to leathery, abaxially

densely covered with coarse hairs and pubescence, margin entire; secondary veins 3–5 on each side of midvein. Figs 7–8 mm.

Mountains, along trails, valleys. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Yunnan [NE India, Laos, N Myanmar, Thailand, Vietnam].

This variety is highly variable in Guangxi, Guizhou, and Yunnan.

**52b. *Ficus gasparriniana* var. *laceratifolia*** (H. Léveillé & Vaniot) Corner, Gard. Bull. Singapore 17: 428. 1960.

菱叶冠毛榕 ling ye guan mao rong

*Ficus laceratifolia* H. Léveillé & Vaniot, Mem. Real Acad. Ci. Barcelona, ser. 3, 6: 151. 1907; *F. bhotanica* King.

Leaf blade obovate, 7–15 × 2.5–5(–8) cm, thickly papery to leathery, abaxially greenish white and glabrous or sparsely pubescent, adaxially scabrid and minutely strigose; margin with 1–4 irregular teeth near apex; secondary veins 5–7 on each side of midvein. Achenes 2.5–3.5 mm in diam.

Forests, along trails; 600–1300 m. Guangxi, Guizhou, Sichuan, Yunnan [Bhutan, Myanmar].

**52c. *Ficus gasparriniana* var. *esquirolii*** (H. Léveillé & Vaniot) Corner, Gard. Bull. Singapore 17: 428. 1960.

长叶冠毛榕 chang ye guan mao rong

*Ficus esquirolii* H. Léveillé & Vaniot, Mem. Real Acad. Ci. Barcelona, ser. 3, 6: 150. 1907; *F. cehengensis* S. S. Chang.

Leaf blade lanceolate, papery to leathery, abaxially sparsely pubescent, margin entire; secondary veins 8–18 on each side of midvein. Figs globose to ellipsoid-globose, 1–1.2 cm in diam.

• Mountain slopes, valleys; 500–2000 m. Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Yunnan.

**53. *Ficus daimingshanensis*** S. S. Chang, Guihaia 3: 297. 1983.

大明山榕 da ming shan rong

Shrubs, ca. 2 m tall. Branchlets sparsely pubescent. Stipules red, lanceolate, ca. 1 cm, glabrous. Petiole 1.5–5 cm; leaf blade ovate-elliptic, 9–22 × 4–8 cm, subglabrous, base broadly cuneate to rounded, margin entire, apex acuminate to caudate with a 1.5–2.5 cm cauda; basal lateral veins 2, short, and axil of veins with 2 red glands, secondary veins 4–9 on each side of midvein. Figs axillary on normal leafy shoots, paired or solitary, red when mature, ± globose to ellipsoid, 1–1.5 cm in diam., subglabrous, apical pore navel-like; peduncle ca. 1 cm; involucre bracts ovate-triangular. Male flowers: near apical pore, pedicellate; calyx lobes 4, ovate-lanceolate; stamens 2. Gall flowers: shortly pedicellate; calyx lobes 4; ovary globose; style lateral, short; stigma funnelliform.

• Limestone areas; ca. 2200 m. NE Guangxi (Daming Shan), Hunan.

**54. *Ficus heteromorpha*** Hemsley, Hooker's Icon. Pl. 26: t. 2533 & 2534. 1897.

异叶榕 yi ye rong

*Ficus cavaleriei* H. Léveillé & Vaniot; *F. cuneata* H. Léveillé & Vaniot (1907), not Blume (1825); *F. kouytchensis* H. Léveillé & Vaniot; *F. mairei* H. Léveillé; *F. pinfaensis* H. Léveillé & Vaniot; *F. xichouensis* S. S. Chang.

Shrubs or trees, 2–5 m tall, deciduous. Bark grayish brown. Branchlets reddish brown; internodes short. Stipules lanceolate, ca. 1 cm. Petiole red, 1.5–6 cm; leaf blade lyrate, elliptic, or elliptic-lanceolate, 10–18 × 2–7 cm, abaxially with small cystoliths, adaxially scabrous, base rounded to shallowly cordate, margin entire or slightly undulate, apex acuminate to caudate; basal lateral veins short, secondary veins red, 6–15 on each side of midvein. Figs axillary on short branchlets, paired, occasionally solitary, purplish black when mature, globose to conic-globose, 6–10 mm in diam., smooth, apical pore navel-like, sessile; involucre bracts ovate. Male flowers: scattered; calyx lobes 4 or 5, spatulate; stamens 2 or 3. Gall flowers: calyx lobes 5 or 6; ovary smooth; style short. Female flowers: calyx lobes 4 or 5; ovary enclosed by calyx lobes; style lateral; stigma brushlike, pubescent. Achenes smooth. Fl. Apr–May, fr. May–Jul.

Forests, mountain slopes, valleys. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, S Shanxi, Sichuan, E and S Yunnan, Zhejiang [Myanmar].

The bark fibers are used for making paper, the fruit are edible, and the leaves are fed to pigs. Much material named as *Ficus chapaensis*, *F. chartacea*, and *F. ovatifolia* belongs here.

**55. *Ficus ovatifolia*** S. S. Chang, Acta Phytotax. Sin. 22: 68. 1984.

卵叶榕 luan ye rong

Shrubs or trees, 3–4 m tall. Branchlets sparsely covered with short white pubescence. Stipules red, lanceolate. Petiole 1.5–2.5 cm, sparsely covered with short pubescence; leaf blade ovate to obliquely ovate, 5–12 × 2.5–6 cm, subglabrous, abaxially pale green and with pointlike cystoliths, adaxially dark green, base cordate to oblique, margin entire, apex acuminate; basal lateral veins with red glands in axils, secondary veins red, 3 or 4 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, red when mature, conic-ellipsoid, slightly tuberculate, sessile. Male flowers: calyx lobes 4, red, obovate; stamens 2. Gall flowers: many, pedicellate; calyx lobes 4, red; ovary ± globose; style lateral, short; stigma silk-like. Fl. Apr–May.

• Evergreen broad-leaved forests, beside streams; 1300–2100 m. SE Yunnan.

Berg (in litt.) suggests that this species should be included within *Ficus heteromorpha*.

**56. *Ficus sinociliata*** Z. K. Zhou & M. G. Gilbert, **nom. nov.**

缘毛榕 yuan mao rong

Replaced synonym: *Ficus ciliata* S. S. Chang, Acta Phytotax. Sin. 22: 68. 1984, not Warburg, Bot. Jahrb. Syst. 25: 615. 1898.

Shrubs, to 3 m tall. Branchlets slender, densely spreading white pilose, glabrescent. Stipules lanceolate, ca. 4 mm, densely

covered with short white pubescence. Petiole 5–7 mm, densely covered with white coarse hairs; leaf blade ovate-lanceolate, 6–18 × 1.8–4 cm, papery, abaxially greenish white and densely covered with small white cystoliths, adaxially green and with loosely adnate bristles, base broadly cuneate, margin ciliate, apex acuminate; major veins sparsely covered with short white pubescence; basal lateral veins short, secondary veins 7–12 on each side of midvein. Figs axillary on normal leafy shoots, solitary, globose, 6–8 mm in diam., carpodermis without stone cells, inside without bristles, apical pore navel-like; peduncle ca. 4 mm, sparsely covered with short pubescence; involucre bracts ovate-triangular, ca. 1.5 mm. Female flowers: shortly pedicellate; calyx lobes 4, obovate; ovary ovoid-ellipsoid, ca. 1 mm; style lateral; stigma silklike.

- Guangdong (Xingning).

**57. *Ficus undulata*** S. S. Chang, Acta Phytotax. Sin. 22: 71. 1984.

波缘榕 bo yuan rong

Shrubs, 1–2 m tall. Branchlets grayish brown when dry, slender, exfoliating, nodes short. Stipules red, lanceolate, ca. 5 mm, subglabrous. Petiole 1.5–1.7 cm, glabrous or sparsely pubescent; leaf blade oblong-lanceolate, 15–16 × 4.5–5 cm, membranous, both surfaces glabrous, abaxially white and densely covered with cystoliths, adaxially dark green, base rounded to auriculate, margin entire or irregularly undulate, apex narrowly acuminate; basal lateral veins very short, secondary veins 13 or 14 on each side of midvein, apically curved, abaxially conspicuously raised, and adaxially inconspicuous. Female figs axillary on normal leafy shoots, solitary, yellow, globose, 6–7 mm in diam., smooth, carpodermis with stone cells, apical pore navel-like; peduncle 5–6 mm; involucre bracts ovate, apex obtuse. Female flowers: sessile; calyx lobes 3 or 4, obovate; style lateral; stigma linear.

- Forests, along trails; 600–800 m. NW Guangdong (Fengkai).

**58. *Ficus formosana*** Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 546. 1881.

台湾榕 tai wan rong

*Ficus formosana* f. *lageniformis* (H. Léveillé & Vaniot) C. Y. Wu; *F. formosana* f. *shimadae* Hayata; *F. formosana* var. *shimadae* (Hayata) W. C. Chen; *F. lageniformis* H. Léveillé & Vaniot; *F. taiwaniana* Hayata.

Shrubs, 1.5–3 m tall, evergreen. Branchlets, petioles, and venation sparsely covered with short pubescence when young. Branchlets brown or reddish brown, slender; internodes short, shortly pubescent, glabrescent. Stipules caducous, linear-lanceolate, ca. 5 mm, glabrous or slightly pubescent. Petiole 7–10 mm, scurfy or sparsely pubescent; leaf blade oblanceolate to ± linear, 4–12 × 1.5–4 cm, papery to membranous, abaxially grayish, sparsely pilose and with cystoliths, adaxially dark green when dry, base narrowly cuneate, margin entire or with some teeth toward apex, apex acuminate; midvein inconspicuous; basal lateral veins 2, short; secondary veins 6–15 on each side of midvein, parallel, inconspicuous, sparsely covered with short pubescence. Figs axillary on normal leafy shoots, solitary,

green flushed pale red when mature, with white dots, ovoid-globose, 1.2–1.8 × 0.6–1 cm, glabrous, tuberculate, base attenuate into a short thin stalk, apical pore navel-like, convex; peduncle 2–10 mm, usually pilose; involucre bracts triangular-ovate, margin ciliate. Male flowers: scattered, pedicellate or sessile; calyx lobes 3 or 4, ovate; stamens 2(or 3); anthers longer than filaments. Gall flowers: calyx lobes 4 or 5, boatlike; ovary stipitate, globose; style lateral, short. Female flowers: pedicellate or sessile; calyx lobes 4; style long; stigma funnel-form. Achenes globose, smooth. Fl. Apr–Jul.

Along streams. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan, S Zhejiang [N Vietnam].

The invalid name "*Ficus taiwanicola*" (Iconogr. Cormophyt. Sin., ed. 2, 1: 493. 1972) refers to this species.

**59. *Ficus ischnopoda*** Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 229. 1867.

壺托榕 hu tuo rong

*Ficus delavayi* Gagnepain; *F. langbianensis* Gagnepain, p.p. (*Hahn 143*); *F. petelotii* Merrill; *F. pyriformis* Hooker & Arnott var. *ischnopoda* (Miquel) King.

Shrublike trees, 2–3 m tall. Bark gray, with winglike ridges. Branchlet internodes red, short. Stipules linear-lanceolate, ca. 8 mm. Leaves clustered apically on branchlets; petiole 5–8 mm; leaf blade elliptic-lanceolate to oblanceolate, 4–13 × 1–3 cm, papery, both surfaces glabrous, abaxially pale brown when dry, adaxially dark green, base cuneate, margin entire, apex acuminate; basal lateral veins short, secondary veins 7–15 on each side of midvein, and apically curved. Figs axillary on leafy or older leafless branches, solitary or occasionally paired, conic to spindle-shaped, with longitudinal ridges 1–2 × 0.5–0.8 cm, surface sulcate, basally attenuate into a short stalk; peduncle 1–1.5(–4) cm; involucre bracts 3 or 4, semipersistent. Male flowers: near apical pore, pedicellate; calyx lobes 3 or 4, oblanceolate; stamens 2; anthers ellipsoid. Gall flowers: subsessile; calyx lobes 4; ovary ± globose; style lateral, short; stigma shallowly 2-lobed. Female flowers: pedicellate; calyx lobes 3 or 4; style persistent, long; stigma 2-lobed. Achenes reniform, tuberculate. Fl. and fr. May–Aug.

River banks, scrub; 100–2200 m. S Guizhou, Yunnan [Bangladesh, Bhutan, NE India, Malaysia, Myanmar, Thailand, Vietnam].

**60. *Ficus stenophylla*** Hemsley, Hooker's Icon. Pl. 26: t. 2536. 1897.

竹叶榕 zhu ye rong

*Ficus macropodocarpa* H. Léveillé & Vaniot; *F. nerium* H. Léveillé & Vaniot; *F. stenophylla* var. *macropodocarpa* (H. Léveillé & Vaniot) Corner.

Shrubs, 1–3 m tall. Branchlet internodes short, with scattered grayish white bristles. Stipules red, lanceolate, ca. 8 mm, glabrous. Petiole 3–7 mm; leaf blade grayish green to yellow green when dry, linear-lanceolate, lanceolate, or oblanceolate, 5–20 × 2–3 cm, papery, abaxially with small tubercles, adaxially glabrous, base cuneate to rounded, margin entire and revolute, apex acuminate; basal lateral veins elongated, secondary veins 7–17 on each side of midvein. Figs axillary on normal

leafy shoots, solitary, dark red when mature, ellipsoid-globose, 7–8 mm in diam., sparsely pubescent, apical pore navel-like, convex; peduncle 2–5 cm; involucre bracts triangular, persistent. Male flowers: near apical pore, shortly pedicellate; calyx lobes 3 or 4, red, ovate-lanceolate; stamens 2 or 3; filaments short. Gall flowers: pedicellate; calyx lobes 3 or 4, oblanceolate, incurved; ovary globose; style lateral, short. Female flowers: subsessile; calyx lobes 4, linear, apex obtuse; style, persistent, lateral, thin. Achenes lenslike, one side slightly concave, apex ridged. Fl. May–Jul.

Along streams or rivers. Fujian, Guangdong, Guangxi, Guizhou, Hainan, W Hubei, W Hunan, Jiangxi, SE Yunnan, S Zhejiang [Laos, N Thailand, N Vietnam].

**61. *Ficus pandurata*** Hance, Ann. Sci. Nat., Bot., sér. 4, 18: 229. 1862.

琴叶榕 qin ye rong

*Ficus formosana* Maximowicz var. *angustissima* W. C. Ko; *F. formosana* var. *linearis* Migo; *F. pandurata* var. *angustifolia* W. C. Cheng; *F. pandurata* var. *holophylla* Migo; *F. pandurata* var. *linearis* Migo.

Shrubs, 1–2 m tall. Branchlets reddish brown, sometimes quickly turning gray, densely puberulent, very rapidly glabrescent. Stipules lanceolate, glabrous, sometimes persistent. Petiole 3–5 mm, sparsely pilose; leaf blade obovate, sometimes violin-shaped with middle constricted, lanceolate, or linear-lanceolate, 4–16 cm, papery, white pubescent when young, abaxially sparsely pubescent on veins and with small cystoliths, adaxially glabrous, base rounded to broadly cuneate, margin entire, apex acuminate to acute and mucronate; basal lateral veins extending 1/3–1/2 length of leaf blade length, secondary veins 3–18 on each side of midvein. Figs axillary on normal leafy shoots, paired, red when fresh, ellipsoid to globose, 4–10 mm in diam., glabrous or minutely scabrid-papillate, base cuneate to obscurely stalked, apical pore navel-like, bracts reddish with paler margin and ± erect; peduncle 4–5 mm, slender; involucre bracts ovate. Male flowers: near apical pore, pedicellate; calyx lobes 4, linear-lanceolate to linear; stamens (2 or)3, unequal. Gall flowers: sessile or pedicellate; calyx lobes 3 or 4, oblanceolate to linear; ovary ± globose; style lateral, very short. Female flowers: calyx lobes 3 or 4, elliptic; style lateral, long, thin; stigma funnelliform. Fl. Jun–Aug.

Forests or scrub in mountains. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangxi, Sichuan, SE Yunnan, Zhejiang [Thailand, Vietnam].

**62. *Ficus vaccinioides*** Hemsley ex King, Ann. Roy. Bot. Gard. (Calcutta) 1: 126. 1888.

越桔榕 yue jie rong

Shrubs, prostrate, evergreen. Branchlets blackish brown to pale reddish brown, puberulent, rooting at nodes. Stipules red, lanceolate, 3–4 mm, membranous. Petiole slender, less than 4 mm, puberulent; leaf blade obovate-elliptic, (0.5–)1–1.5(–3) × 0.4–0.7(–1) cm, papery, with scattered coarse hairs, abaxially with cystoliths, base obtusely cuneate, margin entire, apex acute; basal lateral veins not elongated; secondary veins 3 or 4

on each side of midvein, abaxially conspicuous. Figs axillary on normal leafy shoots, solitary or paired, purplish black, globose to ovoid, ca. 1 cm in diam., coarsely and sparsely pubescent; peduncle 0–2 mm; involucre bracts sparsely pubescent. Male flowers: scattered, pedicellate; calyx lobes 3–5, linear; stamens 2–4. Gall flowers: sessile; ovary stipitate, obliquely globose, smooth; style lateral, short; stigma enlarged. Female flowers: sessile; calyx 4-lobed, linear; ovary sessile, globose, smooth; style lateral, long; stigma acute. Fl. Mar–Apr, fr. May–Jun.

• Littoral thickets, exposed rocks; low to medium elevations. S Taiwan.

**63. *Ficus tannoensis*** Hayata, Icon. Pl. Formosan. 7: 36. 1918.

滨榕 bin rong

*Ficus tannoensis* f. *angustifolia* Hayata; *F. tannoensis* f. *rhombofolia* Hayata.

Shrubs, evergreen, scandent. Branchlets pale red to reddish brown, sparsely pubescent to subglabrous, rooting at nodes. Stipules caducous, linear-lanceolate, 0.5–1.5 cm, membranous, pubescent. Petiole 0.5–1.5 cm, sparsely pubescent and with scale-like hairs; leaf blade linear, narrowly lanceolate, obovate-rhombic, or ± rhombic, 2–13 × 0.3–2 cm, thinly papery to papery, base obtuse, rounded, slightly cordate, or auriculate, margin entire or irregularly undulate with 2 or 3 teeth on each side, apex acuminate to acute; basal lateral veins 2–4, short; secondary veins 3–12 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, pale brown, ± pear-shaped to globose, 1.3–1.5 × ca. 1.2 cm, glabrous; peduncle (3–)5–7 mm, scurfy; involucre bracts membranous. Male flowers: pedicellate; calyx lobes 3 or 4; stamens 2 or 3. Gall flowers: pedicellate or sessile; calyx lobes 3–5; ovary stipitate, globose to obliquely ovoid, smooth; style lateral, short; stigma enlarged or truncate. Female flowers: many, sessile or shortly pedicellate; calyx lobes 3 or 4; ovary sessile, globose, smooth; style lateral, long; stigma funnelliform. Fl. Mar–Apr, fr. May–Jun.

• Littoral forests; near sea level. S Taiwan.

**64. *Ficus tikoua*** Bureau, J. Bot. (Morot) 2: 214. 1888.

地果 di guo

*Ficus bonatii* H. Léveillé; *F. nigrescens* King.

Woody vines, prostrate, 0.3–0.4 m tall. Young branchlets occasionally straight, with long and thin adventitious roots, nodes enlarged. Stipules lanceolate, ca. 5 mm, pubescent. Petiole 1–2(–6) cm; leaf blade obovate-elliptic, 2–8 × 1.5–4 cm, thickly papery, base rounded to shallowly cordate, margin shallowly toothed, apex acute; basal lateral veins short; secondary veins 3 or 4 on each side of midvein, abaxially with fine hairs among veins, adaxially with short spinose hairs. Figs axillary on procumbent stem, paired or clustered usually at least partly underground, dark red when mature, globose to ovoid, 1–2 cm in diam., surface with rounded tubercles, basally attenuated into a short stalk, sessile; involucre bracts thin. Male flowers: near apical pore; calyx lobes 2–6; stamens 1–3. Female flowers: shortly pedicellate; calyx lobes absent; ovary covered by a sticky membrane; style persistent, lateral, long; stigma 2-lobed. Achenes ovoid-globose, tuberculate. Fl. May–Jun, fr. Jul.

Wastelands, grassy banks, rock crevices; 800–1400 m. S Gansu, Guangxi, Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, SE Xizang, Yunnan [NE India, Laos, N Vietnam].

**65. *Ficus abelii*** Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 281. 1867.

石榕树 shi rong shu

*Ficus pyriformis* Hooker & Arnott var. *abelii* (Miquel) King; *F. schinzii* H. Léveillé & Vaniot.

Shrubs, scandent, 1–2.5 m tall. Bark dark gray. Branchlets and petioles densely covered with short and thick gray-white hairs. Stipules lanceolate, ca. 4 mm, sparsely pubescent. Petiole 4–10 mm, pubescent; leaf blade narrowly elliptic to oblanceolate, 4–9 × 1–2 cm, papery, abaxially densely covered with yellow to gray-white short stiff hairs and soft pubescence, adaxially with scattered short and thick hairs but glabrescent, base cuneate, margin entire, apex shortly acuminate to acute; basal lateral veins short, secondary veins 7–9 on each side of midvein, abaxially conspicuous, and adaxially impressed. Figs axillary on normal leafy shoots, solitary, purplish black to brown red when mature, ± pear-shaped, 1.5–2 cm in diam., densely covered with short stiff white hairs, base attenuated into a stalk, apical pore navel-like; peduncle 7–10 mm, with short thick hairs; involucre bracts triangular-ovate, hairy. Male flowers: scattered, subsessile; calyx lobes 3, shorter than stamens; stamens 2 or 3, unequal; anthers longer than filaments. Gall flowers: together with male flowers; calyx lobes connate, apically 3- or 4-lobed; ovary globose, with sparse small tubercles; style lateral, short. Female flowers: without calyx; style subapical, long; style linear. Achenes reniform, covered by a sticky membrane. Fl. May–Jul.

S Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, SW Sichuan, Yunnan [NE Bangladesh, India, Myanmar, Nepal, N Thailand, Vietnam].

**66. *Ficus esquiroliana*** H. Léveillé, Bull. Acad. Int. Géogr. Bot. 24: 252. 1914.

黄毛榕 huang mao rong

Trees or shrubs, 4–10 m tall, d.b.h. to 40 cm. Bark grayish brown to grayish green, with longitudinal ridges. Branchlets stiffly brownish yellow hirsute. Stipules caducous, lanceolate, 1–1.5 cm. Leaves alternate; petiole slender, (2.5–)5–11 cm, sparsely hirsute; leaf blade broadly obovate, juvenile leaves often 3–5-lobed, (11–)17–27 × (8–)12–20 cm, thickly papery, abaxially with white or yellow soft felted hairs and hairs 3–5 mm, mostly on veins, adaxially sparsely strigose, base shallowly cordate, margin sparsely serrate with long hairs at apex of teeth, apex acute to caudate with a ca. 1 cm cauda; basal lateral veins 2–4(–6), secondary veins 4–6 on each side of midvein, and branched or unbranched. Figs axillary on normal leafy shoots, solitary, ovoid, (1.7–)2–2.5 cm in diam., pale brown hirsute, apical pore navel-like, sessile; involucre bracts ovate-lanceolate, ca. 8 mm. Male flowers: near apical pore, pedicellate; calyx lobes (3 or)4, apex entire; stamens 2. Gall flowers: calyx lobes 4; ovary globose, smooth; style lateral, short; stigma funnelform. Female flowers: calyx lobes 4, reddish violet; style hairy at tip. Achenes obliquely ovoid, base with a double keel, tuberculate. Fl. May–Jul.

Secondary forests. S Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, S Taiwan, SE Xizang, S Yunnan [Indonesia, Laos, Myanmar, N Thailand, Vietnam].

The invalidly published "*Ficus neoesquirolii*" H. Léveillé (Fl. Kouy-Tcheou, 431. 1915) belongs here.

**67. *Ficus hirta*** Vahl, Enum. 2: 201. 1805.

粗叶榕 cu ye rong

*Ficus hibiscifolia* Champion ex Benthams; *F. hirsuta* Roxburgh (1832), not Vellozo (1829); *F. hirta* var. *brevipila* Corner; *F. hirta* var. *hibiscifolia* (Champion ex Benthams) Chun; *F. hirta* var. *imberbis* Gagnepain; *F. hirta* var. *palmatiloba* (Merrill) Chun; *F. hirta* var. *roxburghii* (Miquel) King; *F. katsumadae* Hayata; *F. palmatiloba* Merrill; *F. porteri* H. Léveillé & Vaniot; *F. quangtrienensis* Gagnepain; *F. roxburghii* Miquel; *F. simplicissima* Loureiro var. *hirta* (Vahl) Migo; *F. tridactylites* Gagnepain; *F. triloba* Buchanan-Hamilton ex J. O. Voigt.

Shrubs or small trees. Branchlets leafless in middle, golden yellow or brown hirsute. Stipules red, ovate-lanceolate, 1–3 cm, membranous, pubescent. Leaves alternate; petiole 1–8 cm, brown hirsute; leaf blade simple or palmately 3–5-lobed, 8–25 cm, glabrous or golden yellow hirsute, base cuneate, rounded, or shallowly cordate, margin entire or with small serrations, apex acute to acuminate; basal lateral veins 2–4, secondary veins 4–7 on each side of midvein. Figs axillary on normal leafy shoots, paired, globose to ± globose, 1–3(–3.5) cm in diam., with long stiff spreading golden yellow or brown hairs and also pubescent, sometimes subglabrous, apical pore navel-like when young, sessile; involucre bracts caducous or persistent, ovate-lanceolate, 1.5–3 mm, with bent hairs, apex acute. Male and gall flowers sessile or shortly pedicellate. Male flowers: pedicellate; calyx lobes 4, red, lanceolate; stamens 2 or 3; anthers ellipsoid, longer than filaments. Gall flowers: calyx lobes 4; ovary globose or ovoid-globose, smooth; style lateral, short; stigma funnelform. Female flowers: sessile or pedicellate; calyx lobes 4; style persistent, long, thin, attached on one side, slightly concave; stigma clavate. Achenes ellipsoid-globose, smooth.

Forests, forest margins; low elevations. Fujian, Guangdong, Guangxi, S Guizhou, Hainan, S Hunan, Jiangxi, Yunnan, Zhejiang [Bhutan, India, Indonesia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

**68. *Ficus fulva*** Reinwardt ex Blume, Bijdr. Fl. Ned. Ind. 478. 1825.

金毛榕 jin mao rong

*Ficus chrysocarpa* Reinwardt ex Blume; *F. fulva* var. *chrysocarpa* (Reinwardt ex Blume) Koorders.

Small trees, 6–8 m tall. Branchlets and young leaves densely covered with coarse rust-colored thick hairs and pale yellow pubescence. Stipules lanceolate, 1–1.5 cm, densely woolly red rust-colored tomentose. Petiole 1–1.5 cm, densely golden yellow hairy; leaf blade oblong-lanceolate to elliptic, 10–15 × 5–8 cm, papery, abaxially densely golden yellow tomentose, adaxially with scattered and bent coarse hairs, base cuneate and entire, margin serrate, apex acute to acuminate;



secondary veins 3 or 4 on each side of midvein. Figs axillary on normal leafy shoots, paired, globose, 1–1.5 cm in diam., densely golden yellow tomentose, apical pore small, navel-like; peduncle short to absent; involucre bracts broadly ovate, densely covered with golden yellow thick hairs. Male flowers: near apical pore, calyx lobes 4, transparent white, broadly ovate, glabrous; stamens 2. Gall flowers: calyx lobes 4, narrowly oblong-lanceolate, tips with tufts of long hairs; ovary ovoid, smooth; style lateral, short. Female flowers: sepals similar to those of male flowers; style, persistent, lateral, long; stigma cylindrical. Achenes ellipsoid to rhomboid, wrinkled, tuberculate.

S Yunnan [Brunei, India (Nicobar Islands), Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

This species has been confused with *Ficus hirta*, and the occurrence of true *F. fulva* within the Flora area needs confirmation. The material varies considerably, and a number of probable further synonyms are recorded from outside the Flora area.

**69. *Ficus simplicissima*** Loureiro, Fl. Cochinch. 2: 667. 1790.

极筒榕 *ji jian rong*

Shrubs, 1–2.5 m tall, stems not or only occasionally branched. Branchlets cylindrical, rugose when dry; with sparse short thick barbed hairs. Stipules lanceolate, 1–2 cm, with sparse short barbed hairs. Leaves palmately divided; petiole cylindrical, 1–5 cm, densely covered with short thick barbed hairs, adaxially sulcate; leaf blade obovate to oblong, 5–16 cm, margin entire or shallowly serrate; basal lateral veins 2–4, secondary veins 3–6 on each side of midvein. Figs axillary or clustered on older leafless branches, paired, globose, 1–1.5 cm in diam., sparsely covered with short barbed hairs, sessile; involucre bracts ovate-triangular, ca. 1 mm. Male flowers: near apical pore, calyx lobes 4, red, obovate-lanceolate, ca. 1.5 mm; stamens 2; filaments very short; anthers ellipsoid, ca. 1 mm, apex mucronate. Gall flowers: pedicel ca. 1.5 mm; calyx lobes 4, obovate-lanceolate, apex obtuse; ovary ± globose; style lateral, short, funnelliform. Female flowers: calyx lobes 4; ovary pear-shaped. Achenes ± globose.

Sparse forests, sunny places. Hainan [Cambodia, Vietnam].

The barbed hairs are a characteristic of this species.

**70. *Ficus ruficaulis*** Merrill, Bull. Bur. Forest. Philipp. Islands 17: 13. 1904.

红茎榕 *hong jing rong*

*Ficus antaoensis* Hayata; *F. hiiranensis* Hayata; *F. ruficaulis* var. *antaoensis* (Hayata) Hatusima & J. C. Liao.

Trees, small, deciduous. Branchlets red to pale brown, lenticels conspicuous. Stipules caducous, broadly lanceolate, ca. 2 cm, membranous, glabrous. Petiole 3–10 cm, glabrous; leaf blade broadly ovate to ovate, 15–25 × 10–25 cm, papery to membranous when dry, base rounded, margin entire or occasionally undulate, apex acute; basal lateral veins 2–4, secondary veins 3–5 on each side of midvein, and abaxially prominent. Figs axillary on normal leafy stem, paired or solitary, yellowish orange to reddish purple when mature, globose to depressed globose, 2.5–3 cm in diam., sparsely pubescent, pedunculate;

involucre bracts orbicular, 5–8 mm, glabrous. Male flowers: few, near apical pore, pedicel pubescent; calyx lobes 3–5; stamen 1 or 2; filaments thick. Gall flowers: pedicellate; calyx lobes 4–6; ovary obovoid, smooth; style short; stigma enlarged, truncate. Female flowers: sessile or pedicellate; calyx lobes 4; ovary ovoid, smooth; style lateral, longer than in gall flowers; stigma truncate.

Usually at low elevations. S Taiwan [Malaysia, Philippines].

**71. *Ficus chartacea*** Wallich ex King, Ann. Roy. Bot. Gard. (Calcutta) 1: 159. 1888.

纸叶榕 *zhi ye rong*

Shrubs. Branchlets with short bent bristles. Stipules red, linear-lanceolate, ca. 5 mm, membranous, adaxially puberulent, apex acuminate. Petiole 1.5–3.5 cm, sparsely covered with short thick hairs; leaf blade narrowly ovate to obovate, 9–10 × 3–4 cm, glabrous or puberulent, base rounded, margin entire, apex acute; basal lateral veins extending to 1/2 of leaf blade length, secondary veins 3 or 4 on each side of midvein. Figs axillary on normal leafy stem, paired or solitary, globose, 5–7 mm in diam., subsessile to pedunculate. Male flowers: near apical pore, sessile or pedicellate; calyx lobes 3, obovate-elliptic; stamen 1 or 2; anthers ellipsoid. Gall flowers: calyx lobes 5; ovary smooth; style lateral, short. Female flowers: calyx lobes 3 or 4, ovate-lanceolate; ovary ovoid; style persistent, lateral; stigma linear. Achenes ovoid, rugose. Fl. and fr. May–Jul.

Slopes, along streams; 1400–1800(–2100) m. Yunnan [Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

Berg (in litt.) does not believe that var. *torulosa* should be recognized.

- 1a. Leaf blade puberulent; figs pedunculate;  
male flowers pedicellate ..... 71a. var. *chartacea*  
1b. Leaf blade glabrous; figs subsessile;  
male flowers sessile ..... 71b. var. *torulosa*

**71a. *Ficus chartacea* var. *chartacea***

纸叶榕(原变种) *zhi ye rong* (yuan bian zhong)

*Ficus lamponga* Miquel var. *chartacea* Wallich ex Kurz.

Leaf blade puberulent. Figs pedunculate. Male flowers pedicellate.

Slopes, along streams; 1400–1800(–2100) m. SE Yunnan [Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

**71b. *Ficus chartacea* var. *torulosa*** Wallich ex King, Ann. Roy. Bot. Gard. (Calcutta) 1: 159. 1888.

无柄纸叶榕 *wu bing zhi ye rong*

Leaf blade glabrous, without glands. Figs subsessile. Male flowers sessile.

Scrubby slopes. Yunnan [Malaysia, Thailand, Vietnam].

**72. *Ficus tuphapensis*** Drake, J. Bot. (Morot) 10: 211. 1896.

平塘榕 *ping tang rong*

*Ficus pingtangensis* S. S. Chang; *F. potingensis* Merrill & Chun.

MORACEAE

Shrubs, erect, to 3 m tall. Branchlets with thick bent hairs. Stipules caducous, lanceolate, ca. 1 cm, with hairs. Leaves spirally arranged, not distichous; petiole ca. 1 cm, densely covered with short thick hairs; leaf blade narrowly elliptic, 6–14 × 2.5–5 cm, ± leathery, abaxially densely covered with yellowish brown coarse hairs, adaxially densely covered with bent hairs, base obtuse to rounded, margin entire, apex acute to obtuse; basal lateral veins extending to 1/2 of leaf blade length, secondary veins 5 or 6 on each side of midvein. Figs axillary on normal leafy stem, paired or solitary, yellow when mature, glo-

bose, 1–2 cm in diam., shortly villous, sessile; involucre bracts broadly ovate. Male flowers: few, near apical pore, pedicellate; calyx lobes 4, brown, ± spatulate; stamens 2 or 3; anthers ellipsoid. Gall flowers: sessile or shortly pedicellate; calyx lobes 4; ovary ± globose; style lateral, short; stigma funnelliform. Female flowers: shortly pedicellate; calyx lobes 3 or 4, ± spatulate; style persistent, lateral, long. Achenes ovoid-ellipsoid, smooth. Fl. Mar–Apr, fr. May.

W Guangxi, S Guizhou, Hainan, SE Yunnan [N Vietnam].

5. *Ficus* subgen. *Sycidium* (Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 289. 1867.

糙叶榕亚属 cao ye rong ya shu

*Ficus* sect. *Sycidium* Miquel, London J. Bot. 7: 228. 1848.

Trees, shrubs, or climbers, terrestrial or initially epiphytic; dioecious. Creeping branches with adventitious roots. Stipules semiamplexicaul to lateral, less frequently fully amplexicaul. Leaves spirally arranged, distichous, or opposite; leaf blade often asymmetric, margin often dentate to sometimes lobed; wax glands on abaxial surface, in axils of one or both main basal veins, occasionally on midvein. Figs usually axillary below leaves or variously cauliflorous, interfloral bracts absent, internal bristles often present, apical pore usually with many upper bracts visible; peduncle often with scattered bracts; lateral bracts often present. Male flowers: around apical pore; stamen 1(or 2); pistillode present. Female flowers: stigma simple, truncate. Fruit an achene or drupelet.

About 110 species: from Africa through Asia to Australia and the Pacific Islands; 13 species (one endemic) in China.

Members of this subgenus are pollinated by fig wasps belonging to the genera *Kradibia* and *Liporrapalum*.

- 1a. Leaves opposite to subopposite ..... 76. *F. cumingii*
- 1b. Leaves alternate.
  - 2a. Leaf blade 16–28 cm; stipules 1.5–3.5 cm.
    - 3a. Stipules red, 2–3.5 cm; leaf blade hairy, base very asymmetric; figs on pendulous, eventually prostrate, leafless branchlets, ± underground at maturity ..... 77. *F. semicordata*
    - 3b. Stipules yellow and white, 1.5–2.5 cm; leaf blade glabrous, base not as above; figs axillary on normal leafy shoots ..... 83. *F. virgata*
  - 2b. Leaf blade 3–16(–25) cm; stipules 0.5–2 cm.
    - 4a. Figs clustered at base of main stem, on specialized leafless shortly tuberculate branchlets, or on pendulous, eventually prostrate, leafless branchlets, ± underground at maturity.
      - 5a. Figs clustered at base of old stem or on specialized leafless shortly tuberculate branchlets; peduncle 2–4 cm ..... 73. *F. tsiangii*
      - 5b. Figs on pendulous, eventually prostrate, leafless branchlets, ± underground at maturity; peduncle 0.8–1 cm ..... 78. *F. prostrata*
    - 4b. Figs axillary on normal leafy shoots (*F. heterophylla* and *F. subulata* sometimes on older leafless shoots).
      - 6a. Figs sessile to subsessile (sometimes pedunculate in *F. subulata*).
        - 7a. Leaf blade apex obtuse to acute; figs with stone cells ..... 82. *F. tinctoria*
        - 7b. Leaf blade apex acute, caudate, or acuminate; figs without stone cells.
          - 8a. Male plants erect; figs 2–5(–9) mm in diam., glabrous; leaf blade papery; veins abaxially inconspicuous ..... 84. *F. subulata*
          - 8b. Male plants climbing; figs 8–10 mm in diam., with short thick hairs; leaf blade ± leathery; veins abaxially conspicuous ..... 85. *F. heteropleura*
      - 6b. Figs pedunculate.
        - 9a. Figs ovoid, with lateral bracts ..... 80. *F. cyrtophylla*
        - 9b. Figs globose to pear-shaped, without lateral bracts.
          - 10a. Stems and leaves with barbed hairs; leaf blade obovate-falcate ..... 81. *F. praetermissa*
          - 10b. Stems and leaves with straight hairs; leaf blade not obovate-falcate.
            - 11a. Shrub, often prostrate; leaves distichous, juvenile leaves often pinnately lobed; figs 1–2 cm in diam. .... 79. *F. heterophylla*
            - 11b. Small tree; leaves spirally arranged, always entire; figs 0.5–1.2 cm in diam.
              - 12a. Peduncle 0.4–0.8 cm; figs 0.5–0.6 cm in diam. .... 75. *F. ampelos*
              - 12b. Peduncle (0.5–)0.7–2.4 cm; figs 0.8–1.2 cm in diam. .... 74. *F. irisana*

**73. *Ficus tsiangii*** Merrill ex Corner, Gard. Bull. Singapore 18: 25. 1960.

岩木瓜 yan mu gua

Shrubs or trees, 4–6 m tall, few-branched. Bark grayish brown, coarse. Branchlets 3–4 mm in diam.; internodes long, densely covered with grayish white and yellow brown stiff hairs. Stipules caducous, lanceolate, 5–6 mm, with bent pubescence. Leaves spirally arranged; petiole thin, 3–12 cm; leaf blade ovate to obovate-elliptic, 8–23 × 5–15 cm, papery, abaxially densely covered with grayish white to brown coarse hairs and cystoliths, adaxially coarse and with coarse stiff hairs, base rounded, shallowly cordate, or broadly cuneate and with 2 glands, margin denticulate, apex slightly broad and acuminate with a 0.7–1.3 cm acumen; basal lateral veins extending to 1/2 or more of leaf blade length, secondary veins 4 or 5 on each side of midvein. Figs clustered at base of old stem or on leafless shortly tuberculate branchlets, red when mature, ovoid to globose-ellipsoid, 2–3.5 × 1.5–2 cm, outside with stiff coarse short hairs, inside with bristles; peduncle 2–4 cm; lateral bracts present; apical bracts straight. Male flowers: dimorphic, near apical pore and sessile or scattered and pedicellate; calyx lobes 3–5, linear-lanceolate; stamens (1 or)2; filaments with basal hairs; anthers not mucronate. Gall flowers: small. Female flowers: ovary sessile; stigma shallowly 2-lobed, with sparse bristles. Achenes lenslike, dorsally slightly keeled. Fl. May–Aug.

• Valleys, along streams, moist areas; 200–2400 m. Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan.

**74. *Ficus irisana*** Elmer, Leaf. Philipp. Bot. 1: 45. 1906.

糙叶榕 cao ye rong

*Ficus fachikoogi* Koidzumi; *F. hayatae* Sata.

Trees, to 2 m tall, evergreen, crown open. Branchlets pale brown to pale reddish brown, pendulous, coarse. Stipules caducous, brown, ovate-lanceolate, ca. 1 cm, membranous. Leaves spirally arranged; petiole stiff and thick; 4–8 mm; leaf blade elliptic to ovate-elliptic, 6–12 × 3–6 cm, leathery, coarse, base obtuse to cuneate and slightly oblique, margin entire, apex stiffly mucronate; basal lateral veins elongated, secondary veins 5 or 6 on each side of midvein, abaxially prominent. Figs axillary on normal leafy shoots, solitary or paired, pale yellow to red with yellow spots when mature, globose, 0.8–1.2 cm in diam., rough; peduncle (0.5–)0.7–2.4 cm. Gall flowers: pedicellate or subsessile; calyx lobes 4; ovary globose to obliquely ovate, smooth; style lateral, short; stigma enlarged or truncate. Female flowers: pedicellate; calyx lobes 4 or 5; ovary elliptic to globose, smooth; style thin; stigma 2-lobed. Fl. summer to autumn.

Broad-leaved evergreen forests at low elevations. Taiwan [Indonesia, Japan (Ryukyu Islands), Philippines].

**75. *Ficus ampelos*** N. L. Burman, Fl. Indica, 226. 1768.

菲律宾榕 fei lu bin rong

*Ficus kingiana* Hemsley; *F. tashiroi* Maximowicz.

Small trees, evergreen. Branchlets pale brown to pale reddish brown, slender, sometimes pendulous, hairy. Stipules

caducous, pale brown, linear-lanceolate, 6–10 mm, thinly membranous, with a few stiff hairs. Leaves spirally arranged; petiole coarse, 3–8 mm, with scurfy hairs; leaf blade oblong-elliptic to broadly lanceolate, 5–12 × 2–5 cm, ± leathery, ± scabrous, base slightly obliquely rounded or cuneate, margin entire; apex cuspidate or ± acute; basal lateral veins 2, extending to ca. 1/3 length of leaf blade, and prominent, secondary veins 5–7 on each side of midvein, abaxially prominent, and adaxially flat. Figs axillary on normal leafy shoots, solitary or paired, yellowish or reddish orange, globose to depressed globose, 5–6 mm in diam., slightly hispid; peduncle 4–8 mm, slightly hispid; involucre bracts 2 or 3. Gall flowers: sessile or shortly pedicellate; calyx lobes 4; ovary globose, stipitate; style lateral, short; stigma slightly 2-lobed. Female flowers: subsessile; ovary obliquely globose; style long; stigmas 2-lobed.

Broad-leaved evergreen forests; ca. 600 m. Taiwan [Indonesia, Japan (Ryukyu Islands), Philippines].

The epithet for this species is often given incorrectly as “*ampelas*.”

**76. *Ficus cumingii*** Miquel, London J. Bot. 7: 235. 1848.

糙毛榕 cao mao rong

*Ficus cumingii* var. *terminalifolia* (Elmer) Sata; *F. kusanoi* Hayata; *F. somae* Hayata; *F. terminalifolia* Elmer.

Shrubs or small trees, evergreen. Bark yellow or yellowish brown. Branchlets hispid, white, pale yellow, brown pubescent. Stipules triangular-lanceolate, 1–2 cm, thickly membranous. Leaves opposite to subopposite; petiole 1.5–3 cm, hispid; leaf blade elliptic to oblanceolate, 8–19 × 4–8 cm, papery, both surfaces hispid, base obtuse to oblique, margin toothed or undulate, apex acuminate to mucronate; basal lateral veins short, secondary veins 7 or 8 on each side of midvein, abaxially prominent, and adaxially flat. Figs axillary on normal leafy shoots, solitary or paired, yellowish orange to pale red, with yellowish white spots, obovoid to ± globose, 0.8–1.5 cm in diam., scabrous, sparsely hirsute; peduncle short; involucre bracts small, membranous. Male flowers: near apical pore, pedicellate; calyx lobes 4–6, white, hairy; stamen 1 or 2. Gall flowers: shortly pedicellate or subsessile; calyx lobes 4–6, with hyaline hairs; ovary smooth; style ± lateral. Female flowers: sessile or pedicellate; calyx 4–6-lobed, apex ciliate; ovary elliptic, shortly stipitate; style long, slender; stigmas lateral, enlarged. Achenes short, ellipsoid to lenslike.

Low elevations. Taiwan (Lan Yu) [Indonesia, New Guinea, Philippines].

**77. *Ficus semicordata*** Buchanan-Hamilton ex Smith in Rees, Cycl. 14: *Ficus* no. 71. 1810.

鸡嗉子榕 ji su zi rong

*Covellia cunia* (Buchanan-Hamilton ex Roxburgh) Miquel; *Ficus cunia* Buchanan-Hamilton ex Roxburgh.

Trees, 3–10 m tall, d.b.h. 15–25 cm, crown flat, spreading and umbrellalike. Bark gray, smooth. Branchlets white or brown pubescent. Stipules red, lanceolate, 2–3.5 cm, membranous, subglabrous. Leaves distichous; petiole thick, 5–10 mm, densely covered with stiff hairs; leaf blade oblong-lanceolate,

strongly asymmetric, 18–28 × 9–11 cm, papery, abaxially densely covered with stiff short hairs and small yellowish brown convex spots, adaxially coarse with stiff hairs on veins, base obliquely cordate on one side and auriculate on other side, margin with small teeth or entire, apex acuminate; basal lateral veins 3 or 4 on auriculate side of leaf blade, and extending into auriculate base, secondary veins 10–14 on each side of midvein. Figs on pendulous, eventually prostrate, leafless branchlets, ± underground at maturity, solitary, reddish purple when mature, globose, 1–1.5 cm in diam., stiffly hairy; peduncle 5–10 mm; involucre bracts pubescent; lateral bracts present. Male flowers: near apical pore; calyx lobes 3, red, oblanceolate, longer than stamens; stamens (1 or)2; filaments short; anthers white. Gall flowers: calyx lobes 4 or 5, linear-lanceolate; style lateral, short. Female flowers: basal bracteole 1; calyx lobes 4 or 5; ovary ovoid-ellipsoid; style lateral, long; stigma cylindrical, shallowly 2-lobed. Achenes broadly ovoid, apically slightly concave on one side, with ± small tubercles. Fl. May–Oct.

Forest margins, valleys, along trails; 600–1900(–2800) m. Guangxi, Guizhou, SE Xizang, Yunnan [Bhutan, C India, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

This species is used as a street or shade tree. Berg (in litt.) believes that some material from Xishuangbanna in S Yunnan might be *Ficus koutumensis* Corner (Gard. Bull. Singapore 17: 449. 1960), which is most closely related to *F. semicordata* and *F. prostrata*. Berg also suggests that this, and the following species, *F. prostrata*, with their geocarpic figs, might be better placed in *F.* subgen. *Sycomorus*.

**78. *Ficus prostrata*** (Wallich ex Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 297. 1867.

平枝榕 ping zhi rong

*Covellia prostrata* Wallich ex Miquel, London J. Bot. 7: 465. 1848.

Small trees. Stipules lanceolate, ca. 2 cm, membranous. Leaves alternate; petiole 1.5–3 cm; leaf blade obovate-lanceolate to oblong, ± asymmetric, 8–11 cm, thinly papery, smooth, base cuneate to slightly obtuse, margin entire, apex acuminate; basal lateral veins very short, secondary veins 8–10 on each side of midvein. Figs on pendulous, eventually prostrate, leafless branchlets, ± underground at maturity, solitary, ± pear-shaped, tuberculate, with scale-like hairs; peduncle 8–10 mm; involucre bracts ovate, apex irregularly acuminate; lateral bracts present. Male flowers: calyx lobes 3 or 4, linear; with 1(or 2) stamen; pistillode broadly ovoid to ± rhombic, with a persistent lateral style and linear stigma. Achenes obliquely ovoid.

Dense forests; 1200–1500 m. Yunnan (Gongshan) [Bangladesh, NE India, Sikkim, Vietnam].

The description is based on published records. No Chinese specimens have been seen by the authors. Berg (in litt.) suggests that this species would be better placed in *Ficus* subgen. *Sycomorus*.

**79. *Ficus heterophylla*** Linnaeus f., Suppl. Pl. 442. 1782.

山榕 shan rong

*Ficus heterophylla* var. *scabrella* (Roxburgh) King; *F. scabrella* Roxburgh.

Shrubs, procumbent. Branchlets becoming reddish brown, slender, shortly pubescent. Stipules caducous, short, membranous. Leaves distichous; petiole 0.5–1.5 cm; leaf blade ovate-lanceolate to ovate-elliptic, juvenile leaves usually pinnately lobed, (5–)7–10(–14) × (1.5–)2.5–4(–5) cm, papery, coarse with short and stiff hairs, base obtuse, rounded, or cordate, margin toothed or entire, apex slightly acuminate; secondary veins 4–8(–12) on each side of midvein. Figs axillary on leafy or older leafless branches, solitary, yellowish orange and smooth when mature, globose to pear-shaped, 1–2 cm in diam., tuberculate, coarsely hairy, base attenuate into slender stalk, apical pore navel-like, convex; peduncle 4–6 mm, pubescent; involucre bracts triangular, small. Male flowers: near apical pore; pedicellate; calyx deeply 3- or 4-lobed; stamen 1. Gall flowers: pedicellate; calyx lobes 3 or 4; ovary ovoid; style lateral, short; stigma enlarged. Female flowers: pedicellate; calyx lobes 4, white; style persistent, lateral, long; stigma cylindrical. Achenes shortly ellipsoid, surface with a transparent membrane. Fl. Jul–Nov.

Moist valleys, along streams; 400–800 m. Guangdong, Hainan, S Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

**80. *Ficus cyrtophylla*** (Wallich ex Miquel) Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 282. 1867.

歪叶榕 wai ye rong

*Covellia cyrtophylla* Wallich ex Miquel, London J. Bot. 7: 460. 1848; *Ficus asymmetrica* H. Léveillé & Vaniot.

Shrubs or trees, 3–6 m tall, d.b.h. 5–6 cm. Bark gray, smooth. Branchlets densely covered with short stiff hairs. Stipules caducous, lanceolate, hairy. Leaves distichous; petiole 1–1.4 cm, densely covered with short stiff hairs; leaf blade oblong to oblong-obovate, strongly asymmetric, 9–15 × 5–8 cm, papery, abaxially densely covered with short stiff brown hairs, glabrescent, adaxially very rough, with papillate cystoliths, and short stiff hairs, glabrescent, base oblique, apex acuminate to caudate; basal lateral veins short, secondary veins 4 or 5 on each side of midvein. Figs axillary on normal leafy shoots, paired or clustered, yellowish orange when mature, ovoid, 8–10 cm in diam., densely covered with short stiff hairs, base attenuate into short stalk; peduncle 3–5 mm; involucre bracts small, with short and stiff hairs; lateral bracts small and scattered. Male flowers: near apical pore; calyx lobes 4, white; stamen 1. Gall flowers: style lateral, short. Female flowers: pedicel hairy; calyx lobes 5, white, linear, hairy; style lateral, long; stigma enlarged. Achenes shortly ellipsoid. Fl. May–Jun.

Open forests; 500–1300 m. Guangxi, Guizhou, SE Xizang, Yunnan [Bhutan, NE India, Myanmar, Sikkim, Thailand, Vietnam].

**81. *Ficus praetermissa*** Corner, Gard. Bull. Singapore 17: 474. 1960.

钩毛榕 gou mao rong

Shrubs, erect, 3–6 m tall. Branchlets cylindrical, with barbed hairs and pubescent when young. Stipules small. Leaves alternate; petiole 5–10 mm, with barbed hairs; leaf blade obovate-falcate, strongly asymmetric, 7–13(–25) × 3.5–5(–9) cm, ±

leathery, abaxially pale green, densely covered with cystoliths, sparse barbed hairs, and pubescence, adaxially dark green, with sparse bent pubescence, and barbed hairs, base narrowly cuneate, margin with apical 1/3 sparsely toothed, apex acute to caudate with a 1.5–2 cm cauda; basal lateral veins thin, secondary veins 5 or 6 on each side of midvein. Figs axillary on normal leafy shoots, paired or clustered, globose, 5–7 mm in diam., with barbed hairs, pedunculate; involucre bracts lanceolate; lateral bracts absent; apical bracts radially arranged. Male flowers: sessile or pedicellate; calyx lobes 4, obovate, membranous. Gall flowers: pedicellate; calyx lobes 4, lanceolate; ovary smooth; style short. Female flowers: calyx lobes spatulate, longer than ovary; ovary white; style persistent, ± lateral. Achenes short, oblong, smooth.

Mountains, valleys. S Yunnan [N India, Laos, Myanmar, Thailand, Vietnam].

Chinese and Indian material named as *Ficus asperiuscula* Kunth & Bouché belongs here. True *F. asperiuscula* is restricted to Indonesia (Java and Sumatra).

**82. *Ficus tinctoria*** G. Forster, Fl. Ins. Austr. 76. 1786.

梁料榕 liang liao rong

Trees, small trees, or shrubs, sometimes epiphytic. Bark slightly coarse. Branchlets brown. Stipules subulate-lanceolate, 5–10 mm, thick. Leaves distichous; petiole thick, 8–10 mm; leaf blade elliptic to ovate-elliptic, asymmetric, 3–13 × 2.5–6 cm, larger in juvenile plants, ± leathery to stiffly leathery, abaxially slightly rough, glabrous, base broadly cuneate to ± cordate, margin entire or toothed, apex obtuse to acute; venation abaxially conspicuous, not dark brown when dry; basal lateral veins short, secondary veins 5–8 on each side of midvein, and prominent on both surfaces. Figs axillary on normal leafy shoots, solitary or paired, globose to globose-pear-shaped, or ± pear-shaped, 8–10 mm in diam., with sparse small tubercles, slightly rough, base attenuate into stalk, apical pore navel-like; peduncle very short; involucre bracts ovate, margin revolute when dry. Male flowers: near apical pore; calyx lobes 4–6, white, linear; stamen 1; rudimentary ovary present. Gall flowers: calyx lobes 4–6, similar to male flowers; ovary obliquely ovoid; style lateral. Female flowers: calyx lobes 4, thin, transparent, linear; style persistent, lateral, short; stigma enlarged. Achenes ellipsoid, keeled, with tubercles. Fl. and fr. winter to Jul.

Moist valleys, rocks. Fujian, Guangxi, Guizhou, Hainan, Taiwan, SE Xizang, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam, Australia].

1a. Procumbent shrubs ..... 82b. subsp. *swinhoei*

1b. Trees, small trees, shrubs, or epiphytes.

2a. Figs ca. 10 mm in diam. .... 82a. subsp. *tinctoria*

2b. Figs to 8 mm in diam. .... 82c. subsp. *gibbosa*

**82a. *Ficus tinctoria*** subsp. *tinctoria*

梁料榕(原亚种) liang liao rong (yuan ya zhong)

Small trees, epiphytic when young. Leaf blade elliptic to ovate-elliptic, one side wider, 8–13 × 4–6 cm, ± leathery, abaxially

slightly coarse, glabrous, base broadly cuneate, margin entire, apex obtuse to acute; secondary veins 5–8 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, globose to globose-pear-shaped, ca. 1 cm in diam., slightly rough. Fl. and fr. winter to Jun.

Hainan, Taiwan [Indonesia, New Guinea, Philippines; Australia].

**82b. *Ficus tinctoria*** subsp. *swinhoei* (King) Corner, Gard. Bull. Singapore 17: 476. 1960.

匍匐斜叶榕 pu fu xie ye rong

*Ficus swinhoei* King, Ann. Roy. Bot. Gard. (Calcutta) 1: 81. 1888; *F. fenicis* Merrill.

Procumbent shrubs. Leaf blade elliptic, 3–7 × 2.5–3.5 cm, stiffly leathery, rough, stoma concave, base ± cordate, apex obtuse; venation not brown when dry. Figs ± globose, ca. 8 mm in diam.; peduncle ca. 1.5 mm.

Rocky areas. Taiwan [Philippines].

**82c. *Ficus tinctoria*** subsp. *gibbosa* (Blume) Corner, Gard. Bull. Singapore 17: 476. 1960.

斜叶榕 xie ye rong

*Ficus gibbosa* Blume, Bijdr. Fl. Ned. Ind. 466. 1825; *F. cuspidifera* Miquel; *F. gibbosa* var. *cuspidifera* (Miquel) King; *F. gibbosa* var. *parasitica* (Willdenow) King; *F. gibbosa* var. *rigida* Miquel; *F. michelii* H. Léveillé; *F. parasitica* Willdenow; *F. pseudobotryoides* H. Léveillé & Vaniot; *F. reticulata* Thunberg; *F. rhomboidalis* H. Léveillé & Vaniot; *F. tinctoria* subsp. *parasitica* (Willdenow) Corner.

Trees or shrubs, epiphytic. Leaf blade of various shapes and sizes, ovate-elliptic to ± rhombic, strongly asymmetric, less than 13 × 5 on large trees, more than 13 × 5–6 cm when epiphytic, ± leathery, abaxially puberulent and not brown when dry, adaxially rough but becoming smooth with age, margin entire or toothed even on same tree; secondary veins 5–7 on each side of midvein, yellow green when dry. Figs globose, 1–8 mm in diam. Fl. and fr. Jun–Jul.

Moist valleys, on rocks. Fujian, Guangxi, Guizhou, Hainan, Taiwan, SE Xizang, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam].

The well-known taxon *Ficus parasitica* is included here, together with its many synonyms, because it only differs in minor, quantitative characters, most notably rather larger leaves and figs.

**83. *Ficus virgata*** Reinwardt ex Blume, Bijdr. Fl. Ned. Ind. 454. 1825.

島榕 dao rong

*Ficus decaisneana* Miquel; *F. esmeralda* F. M. Bailey; *F. firmula* Miquel; *F. inaequifolia* Elmer; *F. magnifica* Elmer; *F. philippinensis* Miquel; *F. philippinensis* f. *magnifica* (Elmer) Sata; *F. philippinensis* f. *setibracteata* (Elmer) Sata; *F. pinkiana* F. Mueller; *F. setibracteata* Elmer; *F. trematocarpa* Miquel; *F. virgata* var. *philippinensis* (Miquel) Corner.

Medium-sized trees, evergreen, usually epiphytic. Branchlets pale yellow to yellowish brown, smooth. Stipules caducous,

yellow and white, lanceolate, 1.5–2.5 cm, thinly membranous. Leaves alternate; petiole thick, curved, 0.5–1.5 cm, with scurfy hairs; leaf blade narrowly ovate, ± symmetric, 16–22 × 4–6.5 cm, leathery, glabrous, stoma impressed, base slightly oblique, apex mucronate; basal lateral veins not elongated, secondary veins 6–11 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, yellowish orange to purplish brown when mature, ovoid, 8–10 mm in diam., smooth; peduncle 3–6 mm; involucre bracts absent. Male flowers: calyx lobes 4, white or yellow; stamen 1(or 2), rudimentary ovary absent. Gall flowers: sessile or shortly pedicellate; calyx lobes 4; ovary ellipsoid to obovoid, smooth; style lateral or apical; stigma enlarged. Achenes ellipsoid, 8–10 mm in diam.

Low elevations. Taiwan [Indonesia, Japan (Ryukyu Islands), New Guinea, Philippines; NE Australia, Pacific Islands].

**84. *Ficus subulata*** Blume, Bijdr. Fl. Ned. Ind. 461. 1825.

假斜叶榕 *jia xie ye rong*

*Ficus sikkimensis* Miquel; *F. subulata* f. *inaequifolia* Sata.

Shrubs, scandent but male plants erect. Young branchlets thin. Stipules subulate, 1.5–2 cm, apically curved, sometimes persistent. Leaves alternate; petiole 1–1.4 cm; leaf blade olivaceous to yellowish green when dry, obliquely elliptic to obovate-elliptic, usually asymmetric, 8–15 × 2.5–7 cm, papery, puberulent when young, glabrescent, abaxially slightly papillate tuberculate, margin entire, apex acute to acuminate; venation inconspicuous; basal lateral veins short, secondary veins 7–10 on each side of midvein. Figs axillary on normal leafy shoots, sometimes on leafless older branchlets, paired or clustered, reddish orange when mature, globose to ovoid, 2–5(–9) mm in diam., with small sparse tubercles, pedunculate or sessile with base attenuate into slender stalk; involucre bracts sometimes sheathlike, one side extending to middle of peduncle; lateral bracts present. Male flowers: near apical pore; calyx tubular, 4-

lobed, fleshy; stamen 1; rudimentary ovary globose. Gall flowers: scattered; calyx lobes similar to those of male flowers; ovary globose; stigma capitate. Female flowers: calyx lobes connate, apically lobed, hairy; style persistent, lateral, elongated. Achenes shortly ellipsoid. Fr. May–Aug.

Sparse forests; below 800(–1600) m. Guangdong, Guangxi, Guizhou, Hainan, Xizang, Yunnan [Bhutan, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Thailand].

**85. *Ficus heteropleura*** Blume, Bijdr. Fl. Ned. Ind. 466. 1825.

尾叶榕 *wei ye rong*

*Ficus caudatifolia* Warburg; *F. caudatilongifolia* Sata; *F. rostrata* Lamarck var. *urophylla* (Wallich ex Miquel) Koorders; *F. urophylla* Wallich ex Miquel.

Shrubs, scandent. Branchlets and petioles with scurfy hairs. Stipules lanceolate, small. Leaves alternate; petiole 5–15 cm; leaf blade elliptic to obovate, 8–15 × 3–6 cm, ± leathery, base slightly asymmetric, attenuated and decurrent on petiole, margin entire or undulate from middle to apex, apex acute to caudate with a 1–2 cm cauda; veins abaxially conspicuous; basal lateral veins not elongated, secondary veins 3 or 4 on each side of midvein. Figs axillary on normal leafy shoots, paired or solitary, ± globose, 8–10 mm in diam., with short thick hairs, base attenuate into a 5–10 mm stalk, apical pore navel-like, convex, sessile. Male flowers: near apical pore, subsessile; calyx lobes 4, linear; stamen 1; rudimentary ovary present. Gall flowers: shortly pedicellate; calyx lobes 3; ovary ± globose; style lateral, short, curved. Female flowers: calyx lobes deeply 3-lobed; style persistent, long; stigma funnelliform. Achenes obliquely ovoid, coarse. Fl. Jan–Aug.

Forests; 100–400 m. Hainan, Taiwan (Lan Yu) [Bangladesh, Bhutan, Cambodia, NE India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

**6. *Ficus* subgen. *Synoecia*** Miquel ex Mildbraed & Burret, Bot. Jahrb. Syst. 46: 174. 1912.

薜荔榕亚属 *bi li rong ya shu*

Climbers, often epiphytic or epilithic, climbing by short adventitious roots, sometimes a freestanding tree when mature (*Ficus yunnanensis*); dioecious. Leaves usually distichous, rarely spiral, on climbing stems often asymmetric, different from ones on non-climbing stems, margin entire; wax glands in axils of main basal veins, rarely on nodes of leafy stems. Figs usually axillary on normal leafy stems, less often cauliflorous, interfloral bracts absent, internal bristles often present, apical pore relatively small with up to 3 upper bracts visible; peduncle with 3 basal bracts in a collar. Perianth lobes glabrous or rarely hairy. Male flowers: around apical pore or scattered; stamen 1 or 2(or 3); pistillode usually absent. Female flowers: stigma usually 2-parted, subulate. Fruit an achene.

About 75 species: from Sri Lanka and Japan to Australia and the Solomon Islands; 14 species (six endemic) in China.

Members of *Ficus* subgen. *Synoecia* are pollinated by fig wasps belonging to the genus *Wiebesia*.

- 1a. Figs 5–7 cm in diam., often cauliflorous; male flowers scattered, pedicellate; stamen 1; anthers not mucronate ..... 86. *F. aurantiaca*  
 1b. Figs 0.4–3(–5) cm in diam., often axillary on leafy shoots; male flowers grouped near apical pore or if scattered then sessile; stamens 2; anthers usually mucronate.  
 2a. Free standing tree ..... 96. *F. yunnanensis*  
 2b. Root climber or scandent shrub (*F. sagittata* a tree when mature).

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- 3a. Leaf blade with 15–17 lateral veins on each side of midvein ..... 99. *F. polynervis*
- 3b. Leaf blade with 3–9 lateral veins on each side of midvein.
- 4a. Leaves dimorphic (leaf blade on fertile branchlets different in shape than ones on sterile branches);  
figs pear-shaped to ± globose, or cylindric, 3–5 cm in diam. .... 93. *F. pumila*
- 4b. Leaves uniform in shape; figs usually globose (pear-shaped in *F. pubigera*), less than 2.5 cm in diam.
- 5a. Petiole 3.5–7 cm; leaves spirally arranged ..... 90. *F. laevis*
- 5b. Petiole 0.4–2.2 cm (2.5–3.5 cm in *F. sarmentosa* var. *luducca*); leaves distichous.
- 6a. Inside of fig without bristles.
- 7a. Leaf apex obtuse to occasionally rounded.
- 8a. Leaf blade 6–11 × 3.5–5 cm; peduncle 10–12 mm; involucre bracts connate for  
basal half ..... 88. *F. hederacea*
- 8b. Leaf blade 3–3.5 × 1.5–3 cm; peduncle ca. 3 mm; involucre bracts free ..... 98. *F. guangxiensis*
- 7b. Leaf apex acute, acuminate, mucronate, or caudate.
- 9a. Figs hairy when young, 0.8–1.5 cm in diam. .... 89. *F. sagittata*
- 9b. Figs glabrous, 0.6–0.8 cm in diam. .... 97. *F. napoensis*
- 6b. Inside of fig with bristles among flowers, usually conspicuous.
- 10a. Stipules ca. 4 cm; fig surface tuberculate ..... 91. *F. pubigera*
- 10b. Stipules 0.5–0.8 cm; fig surface smooth.
- 11a. Secondary veins 7–9 on each side of midvein, tertiary veins honeycomblike  
..... 94. *F. sarmentosa*
- 11b. Secondary veins 3–7 on each side of midvein, venation not honeycomblike.
- 12a. Leaf blade 5.4–10.8 cm wide, abaxially brown villous when young;  
margin with indistinct glandular teeth; figs 1.6–1.9 cm in diam.;  
peduncle 0.7–0.8 cm ..... 87. *F. trichocarpa*
- 12b. Leaf blade 1.8–5 cm wide, abaxially shortly tomentose or  
pubescent and sparsely strigose; margin without glandular  
teeth; figs 0.8–1 cm in diam.; peduncle 1–1.5 cm.
- 13a. Leaf blade abaxially shortly tomentose when young, adaxially  
glabrous; peduncle ca. 10 mm ..... 92. *F. dinganensis*
- 13b. Leaf blade abaxially pubescent and sparsely strigose, adaxially  
coarsely scattered strigose; peduncle 10–15 mm ..... 95. *F. guizhouensis*

**86. *Ficus aurantiaca*** Griffith, Not. Pl. Asiat. 4: 394. 1854.

橙黄榕 cheng huang rong

*Ficus aurantiacea* var. *parvifolia* Corner; *F. kallicarpa* Miquel; *F. lanyuensis* S. S. Ying; *F. megacarpa* Merrill; *F. terasoensis* Hayata.

Shrubs, scandent, large, evergreen, rooting freely from stems and branches. Branchlets reddish brown, glabrous. Stipules caducous, linear-lanceolate, 5–10 mm, membranous, glabrous. Petiole 5–10 mm, scurfy; leaf blade elliptic to obovate, 2.5–6.5 (or longer) × 1.5–4 cm, leathery, abaxially sparsely puberulent, tessellate-punctate, adaxially subglabrous, glossy, base cuneate to obtuse, margin entire or revolute, apex acute or rounded; basal lateral veins 2, secondary veins 3 or 4 on each side of midvein, and abaxially prominent. Figs axillary on leafy or on leafless branchlets, solitary, paired, or clustered, yellowish orange to reddish brown, broadly ovoid to globose, 5–7 cm in diam., sparsely pubescent; peduncle 6–12 mm, thick; involucre bracts 3 or 4, thin. Male flowers: many, scattered, long-pedicellate; calyx lobes 2 or 3; stamen 1; filament long. Gall flowers: pedicellate or sessile; calyx lobes 3 or 4, linear; ovary obliquely ovoid, smooth; style slightly lateral; stigma 2-lobed. Female flowers: sessile; calyx lobes 3, linear; ovary oblong, smooth; style terminal or subterminal, slender; stigma 2-lobed.

Low elevations. S Taiwan [Indonesia, Myanmar, Philippines, Thailand, Vietnam].

There is a number of earlier usages of the name *Ficus aurantiaca*, such as Noronha (1790), but these are all *nomina nuda*. Berg (in litt.) suggests that this species is not separable from *F. punctata*.

**87. *Ficus trichocarpa*** Blume var. **obtusa** (Hasskarl) Corner, Gard. Bull. Singapore 18: 19. 1960.

钝叶毛果榕 dun ye mao guo rong

*Ficus obtusa* Hasskarl, Cat. Hort. Bot. Bogor. 75. 1844; *F. ahernii* Merrill.

Shrubs, scandent. Branches with aerial roots; branchlets dark brown, brown villous when young but becoming subglabrous. Stipules with brown hairs. Petiole 0.7–2.2 cm, with sparse or dense brown pubescence; leaf blade broadly ovate to broadly oblong, 8–11.5 × 5.4–10.8 cm, brown villous when young, glabrescent or abaxially subglabrous, base obtuse to ± cordate, margin with indistinct glandular teeth, apex obtuse to rounded; basal lateral veins 2–4, secondary veins 4–6 on each side of midvein. Figs single, paired, or clustered, globose to obconic, 1–1.8 × 1.6–1.9 cm, inside with bristles; peduncle 7–8 mm, hairy, involucre bracts triangular, persistent. Gall flowers: calyx lobes thin; ovary reddish brown. Female flowers: calyx lobed, sepals thin.

Low elevations. Taiwan (Lan Yu, Lu Dao) [Indonesia, Philippines].

*Ficus trichocarpa* var. *trichocarpa* occurs in Indonesia, Malaysia, Philippines, Thailand, and Vietnam, but not in China.

**88. *Ficus hederacea*** Roxburgh, Fl. Ind., ed. 1832, 3: 538. 1832.

藤榕 teng rong

*Ficus cantoniensis* E. Bodinier ex H. Léveillé; *F. scandens* Roxburgh (1832), not Lamarck (1786), nor Buchanan-Hamilton (1826).

Shrubs, scandent. Stems and branchlets with aerial roots at nodes; branchlets pubescent when young. Stipules caducous, ovate. Leaves distichous; petiole thick, 1–2 cm; leaf blade elliptic to ovate-elliptic, 6–11 × 3.5–5 cm, thickly leathery, with hairs when young, both sides with papillate cystoliths, base broadly cuneate to obtuse, margin entire, apex obtuse to occasionally rounded; basal lateral veins extending to 1/3 to 1/2 of leaf blade length, secondary veins 3–5 on each side of midvein, abaxially prominent, and adaxially impressed. Figs axillary on leafy or on leafless branchlets, solitary or paired, yellowish green to red when mature, globose, 0.7–1.4 cm in diam., with thick and short hairs when young, inside without bristles, apical pore navel-like, slightly convex; peduncle 1–1.2 cm; involucre bracts 3, connate for basal half. Male flowers: few, scattered, sessile; calyx lobes 3 or 4; stamens 2; filaments free; anthers not mucronate. Gall flowers: pedicellate; calyx lobes 4, lanceolate; ovary obovate, hard, black; style subapical, short; stigmas curved. Female flowers: pedicellate or sessile; calyx lobes 4, linear. Achenes ellipsoid, dorsally keeled; stigmas extended. Fl. May–Jul.

Forests in mountains; 500–700 (–1500) m. Guangdong, Guangxi, S Guizhou, Hainan, S and W Yunnan [Bhutan, N India, Laos, Myanmar, Nepal, Sikkim, Thailand].

**89. *Ficus sagittata*** Vahl, Symb. Bot. 1: 83. 1790.

羊乳榕 yang ru rong

*Ficus compressicaulis* Blume; *F. lanaensis* Merrill ex Sata; *F. ramentacea* Roxburgh.

Trees when mature, epiphytic vine when young. Branchlets pubescent, glabrescent, nodes with short roots. Stipules



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caducous, ovate-lanceolate, pubescent. Petiole ca. 1.5 cm, sparsely pubescent; leaf blade ovate to ovate-elliptic, 7–13(–20) × (3–)5–10(–14) cm, leathery, base rounded, ± cordate, or cordate, margin entire or slightly undulate, apex acute to mucronate; veins abaxially with hairs when young, glabrescent; basal lateral veins 2 or 4, secondary veins 5 or 6 on each side of midvein. Figs axillary on leafy or on leafless branchlets, solitary or paired, occasionally in clusters or on shortly tuberculate branchlets from leafless branches, reddish orange when mature, ± globose, 0.8–1.5 cm in diam., hairy when young, base attenuate into a short stalk, inside without bristles, apical pore navel-like; peduncle short; involucre bracts caducous. Male flowers: near apical pore; calyx lobes 3; stamens 2; filaments connate; anthers mucronate. Gall flowers: calyx lobes 3; ovary obovoid; style lateral, short. Female flowers: calyx basally connate, apically 3-lobed; style lateral, long; stigma cylindrical. Achenes ellipsoid. Fl. Dec–Mar.

Guangdong, SW Guangxi, Hainan, S Yunnan [Bhutan, India, Indonesia, Myanmar, Philippines, Sikkim, Thailand, Vietnam; Pacific Islands].

**90. *Ficus laevis*** Blume, Bijdr. Fl. Ned. Ind. 437. 1825.

光叶榕 *guang ye rong*

*Ficus jaminii* H. Léveillé & Vaniot.

Shrubs, scandent, often epiphytic, usually glabrous. Stipules caducous, 0.8–1.2 cm. Leaves spirally arranged; petiole 3.5–7 cm; leaf blade rounded to broadly ovate, 10–20 × 8–15 cm, membranous, glabrous or abaxially sparsely brown pubescent, with hairs on midvein, base rounded to slightly cordate, margin entire, apex obtuse or mucronate; veins abaxially conspicuous; basal lateral veins extending to 2/3 of leaf blade length, secondary veins 3 or 4 on each side of midvein. Figs axillary on normal leafy branches, solitary or paired, purple when mature, globose, 1.5–2.5 cm in diam., inside densely setose; peduncle 2–3 cm; involucre bracts triangular-ovate; apical bracts convex; calyx lobes 5 and red for all flowers. Male flowers: in 1 or several rows near apical pore; calyx lobes narrowly lanceolate; stamens 2; filaments free or slightly connate; anthers mucronate. Gall flowers: ovary globose, glabrous; style subapical, short; stigmas enlarged. Female flowers: style persistent, as long as achenes; stigma 2-lobed. Achenes ellipsoid, keeled. Fl. and fr. Apr–Jun.

Rain forests, mountain slopes; 800–1900 m. Guangxi, Guizhou, Yunnan [India, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

**91. *Ficus pubigera*** (Wallich ex Miquel) Kurz, Forest Fl. Burma 2: 450. 1877.

褐叶榕 *he ye rong*

Shrubs, scandent. Old branchlets glabrous, young branchlets densely covered with coarse dark brown hairs. Stipules caducous, lanceolate, ca. 4 cm. Leaves distichous; petiole ca. 1 cm, sparsely pubescent; leaf blade brown when dry, oblong to oblong-elliptic, 7–35 × 2.5–15 cm, ± leathery, glabrous, abaxially pubescent and glabrescent, densely covered with brownish red short pubescence or densely brown tomentose, adaxially glabrous or pubescent among veins, base cuneate to occasionally rounded, margin entire, apex shortly acuminate; basal lateral veins not extending to 1/3 of leaf blade length, secondary veins 5–7 on each side of midvein. Figs axillary on leafy or on leafless branchlets, globose, pear-shaped, or conic, 1–2(–5) cm in diam., surface sparsely tuberculate, glabrous, pubescent, or densely covered with brown scale-like hairs, inside with bristles, sessile or pedunculate, apical pore slightly navel-like; involucre bracts reniform, pubescent. Male flowers: near apical pore, pedicellate; calyx lobes 4, oblanceolate, unequal in size; stamens 2; filaments very short; anthers oblong, mucronate. Gall flowers: pedicellate; calyx lobes 4, ± spatulate, unequal in size; style subapical. Female flowers: subsessile; calyx lobes 4; style subapical; stigma small. Achenes oblong, slightly depressed, 2–2.5 mm. Fl. Apr–Aug, fr. Jun–Aug.

Rain forests, forests, mountain slopes, limestone areas; 400–1400 m. Guangdong, Guangxi, Guizhou, SE Xizang, Yunnan [Bhutan, India, Laos, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

*Ficus pubigera* Miquel (Ann. Mus. Bot. Lugduno-Batavi 3: 294. 1867) is an invalid name, so it does not have priority.

The variation within this species is considerable, and some of the varieties may deserve specific status.

- 1a. Leaf blade adaxially densely covered with brownish red short pubescence; figs conic ..... 91d. var. *reticulata*
- 1b. Leaf blade adaxially glabrous or pubescent among veins; figs pear-shaped or globose.
  - 2a. Leaf blade 30–35 × 10–15 cm, densely brown tomentose ..... 91b. var. *anserina*
  - 2b. Leaf blade 7–12 × 2.5–5 cm, abaxially glabrous or pubescent and glabrescent.
    - 3a. Leaf blade oblong, abaxially pubescent and glabrescent, adaxially glabrous or pubescent

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among veins; figs pubescent  
 ..... 91a. var. *pubigera*

3b. Leaf blade oblong-elliptic,  
 glabrous; figs glabrous ..... 91c. var. *maliformis*

**91a. *Ficus pubigera* var. *pubigera***

褐叶榕(原变种) he ye rong (yuan bian zhong)

*Pogonotrophe pubigera* Wallich ex Miquel, London J. Bot. 7: 76. 1848; *Ficus howii* Merrill & Chun.

Leaf blade brown when dry, oblong, 7–11 × 2.5–4 cm, ± leathery, abaxially pubescent and glabrescent, adaxially glabrous or pubescent among veins. Figs sessile, globose, 1–2 cm in diam., sparsely tuberculate, pubescent. Gall flowers: pedicellate; calyx lobes ± spatulate; style subapical. Fl. Apr–Aug.

Limestone areas; 400–800 m. Guangdong, Guangxi, Yunnan [India, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

**91b. *Ficus pubigera* var. *anserina* Corner, Gard. Bull. Singapore 18: 5. 1960.**

鳞果褐叶榕 lin guo he ye rong

Shrubs, large. Leaf blade narrowly elliptic, 30–35 × 10–15 cm, abaxially densely brown tomentose. Figs pear-shaped, 4–6 × 4–5 cm, ringed on surface, densely covered with rust-colored scale-like hairs; peduncle 3–15 mm. Gall flowers: calyx lobes slightly recurved. Fl. Apr–May, fr. Jun–Aug.

Rain forests; 700–800 m. S Yunnan [Laos].

**91c. *Ficus pubigera* var. *maliformis* (King) Corner, Gard. Bull. Singapore 18: 6. 1960.**

大果褐叶榕 da guo he ye rong

*Ficus foveolata* (Wallich ex Miquel) Wallich ex Miquel var. *maliformis* King, Ann. Roy. Bot. Gard. (Calcutta) 1: 134. 1888.

Leaf blade abaxially brown, oblong-elliptic, 8–12 × 3–5 cm, glabrous. Figs globose, 1.5–2.5 cm in diam., with tubercles, glabrous. Gall flowers: calyx lobes not recurved.

Forests. Guangxi, Guizhou, SE Xizang, S Yunnan [Bhutan, NE India, N Myanmar, Sikkim].

**91d. *Ficus pubigera* var. *reticulata* S. S. Chang, Acta Phytotax. Sin. 22: 72. 1984.**

网果褐叶榕 wang guo he ye rong

Leaf blade abaxially densely covered with brownish red short pubescence. Figs sessile, red, conic, ca. 1.3 cm in diam., reticulate on surface. Fl. and fr. May–Aug.

• Mountain slopes; 1300–1400 m. Yunnan.

**92. *Ficus dinganensis* S. S. Chang, Guihaia 3: 300. 1983.**

定安榕 ding an rong

Shrubs, scandent. Branchlets densely covered with short brown pubescence. Stipules lanceolate, ca. 5 mm, densely covered with bent hairs. Leaves distichous; petiole 1–1.2 cm, densely brown pubescent when young; leaf blade ovate to ovate-elliptic, 3–7.5 × 1.8–4 cm, thinly leathery, abaxially densely covered with short brown tomentum when young, adaxially glabrous, base cuneate, margin entire, apex acuminate to obtuse; basal lateral veins 2 and elongated to 1/2 of blade, midvein and secondary veins abaxially prominent, and adaxially impressed, secondary veins 3 or 4 on each side of midvein. Figs axillary on normal leafy branches, solitary or paired, globose, 8–9 mm in diam., densely covered with short brown pubescence when young, inside with abundant bristles; peduncle ca. 1 cm, densely covered with short brown pubescence when young, glabrescent; involucre bracts ovate-triangular, ca. 1.5 mm wide; bracts subapical, navel-like, glabrescent. Female flowers: ca. 2.5 mm; calyx lobes 4, red, linear, ca. 1.5 mm; ovary globose-ellipsoid, ca. 1.5 mm; style subapical; stigmas 2-lobed. Fl. Apr–Aug.

• Limestone areas. Hainan.

**93. *Ficus pumila* Linnaeus, Sp. Pl. 2: 1060. 1753.**

薜荔 bi li

Shrubs, climbers or scandent. Rooting branchlets sterile. Stipules lanceolate, with yellow brown silklike hairs. Leaves distichous, leaf blade on fertile branchlets different in shape than ones on sterile branches, ovate-cordate, ovate-elliptic, or

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oblong-ovate, 5–12 × 2–5 cm, abaxially pubescent, base rounded to slightly cordate, margin entire, apex obtuse, acute, or acuminate; veins conspicuous, honeycomblike; basal lateral veins elongated, secondary veins 3 or 4 on each side of midvein, abaxially prominent, and adaxially impressed. Figs axillary on normal leafy branches, solitary, yellowish green to pale red when mature, pear-shaped to ± globose or cylindric, 4–8 × 3–5 cm, shortly yellow pubescent when young, basally attenuate into a short stalk, apical pore truncate, navel-like, or acuminate; peduncle to ca. 1 cm, thick; involucre bracts triangular-ovate, densely covered with long pubescence, persistent. Male flowers: many, in several rows near apical pore, pedicellate; calyx lobes 2 or 3, linear; stamens 2; filaments short. Gall flowers: pedicellate; calyx lobes 3 or 4, linear; style lateral, short. Female flowers: pedicel long; calyx lobes 4 or 5; achenes ± globose, with adherent liquid. Fl. and fr. May–Aug.

Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Vietnam].

The position of *Ficus pumila* var. *lutchuensis* Koidzumi (Bot. Mag. (Tokyo) 39: 14. 1925) is uncertain as no material has been seen by the authors. It most likely belongs to var. *pumila*.

- 1a. Leaf blade ovate-cordate to ovate-elliptic;  
figs pear-shaped to ± globose, apical pore  
truncate or navel-like ..... 93a. var. *pumila*
- 1b. Leaf blade oblong-ovate; figs cylindric,  
apical pore acuminate ..... 93b. var. *awkeotseang*

**93a. *Ficus pumila* var. *pumila***

薜荔(原变种) bi li (yuan bian zhong)

*Ficus hanceana* Maximowicz; *F. stipulata* Thunberg.

Leaves of 2 types. Leaves on sterile branchlets subsessile; leaf blade ovate-cordate, ca. 2.5 cm, ± leathery, base slightly asymmetric, apex acuminate. Leaves on fertile branchlets: petiole 5–10 mm; leaf blade ovate-elliptic, 5–10 × 2–3.5 cm, leathery, abaxially yellow brown pubescent, adaxially glabrous. Figs pear-shaped to ± globose, 4–8 × 3–5 cm; peduncle short, thick; apical pore truncate or navel-like. Fl. and fr. May–Aug.

Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Vietnam].

This variety is very common in China. The leaves are used medicinally and the fruit are used to make a jelly.

**93b. *Ficus pumila* var. *awkeotsang* (Makino) Corner, Gard. Bull. Singapore 18: 6. 1960.**

爱玉子 ai yu zi

*Ficus awkeotsang* Makino, Bot. Mag. (Tokyo) 18: 151. 1904; *F. nagayamae* Yamamoto.

Leaf blade oblong-ovate, 7–12 × 3–5 cm, abaxially densely covered with rust-colored pubescence. Figs cylindric, 6–8 × 3–4 cm; peduncle ca. 1 cm, densely covered with thick hairs; apical pore acuminate.

- Fujian, Taiwan, SE Zhejiang.

This variety is cultivated for its edible fruit.

**94. *Ficus sarmentosa* Buchanan-Hamilton ex Smith in Rees, Cycl. 14: *Ficus* no. 45. 1810.**

匍茎榕 pu jing rong

Shrubs or woody vines. Branchlets grayish white when dry, rugose, glabrous, subglabrous, or densely white-hairy. Stipules lanceolate-ovate, ca. 8 mm, thinly membranous. Leaves distichous; petiole ca. 1 cm, subglabrous; leaf blade ovate, ovate-elliptic, elliptic-lanceolate, lanceolate, or oblong, 8–12 × 3–4 cm, ± leathery, both surfaces glabrous or abaxially sparsely brown pubescent, base rounded to broadly cuneate, margin entire, apex acute to acuminate; secondary veins 4–12 on each side of midvein, and abaxially slightly raised, tertiary veins honeycomblike. Figs axillary on leafy or on leafless branchlets, solitary or occasionally paired, blackish purple when mature, globose, ± globose, or conic, sometimes slightly depressed, 0.5–2 cm in diam., glabrous, sparsely pubescent, or densely covered with brown hairs, inside with bristles, apical pore slightly concave, sessile or pedunculate; peduncle 0.5–1.5 cm or shorter; involucre bracts triangular, triangular-ovate, or ovate-lanceolate, 2–6 mm, with scattered bristles. Male flowers: near apical pore, pedicellate; calyx lobes 3 or 4, oblanceolate; stamens 2; filaments very short; anthers mucronate. Gall flowers: pedicellate; calyx lobes 4, obovate-spatulate; ovary elliptic; style short; stigma shallowly funneliform. Female flowers: pedicellate; calyx lobes spatulate; ovary obovate; style subapical; stigma thin and long. Achenes ovoid-ellipsoid, with adherent liquid. Fl. May–Jul.

Forests, evergreen broad-leaved forests, scrub, mountains, plains, on rocks or trees; 600–2500 m. Anhui, Fujian, Gansu,

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Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, NW India, Japan, Kashmir, Korea, Myanmar, Nepal, Pakistan, Sikkim, N Vietnam].

- 1a. Apical bracts conspicuous; involucre bracts  
3–6 mm; figs conic ..... 94h. var. *henryi*
- 1b. Apical bracts not conspicuous; involucre  
bracts ca. 3 mm or less; figs globose to ±  
globose.
  - 2a. Figs 0.5–1 cm in diam.
    - 3a. Leaf blade green, whitish green  
to yellow green when dry, base  
cuneate; veins flat; secondary  
veins 5 or 6 on each side of  
midvein ..... 94f. var. *lacrymans*
    - 3b. Leaf blade abaxially white to  
pale grayish brown, base rounded;  
veins conspicuous; secondary  
veins 6–8 on each side of  
midvein ..... 94g. var. *impressa*
  - 2b. Figs 1–2 cm in diam., rarely smaller  
in var. *luducca*.
    - 4a. Leaf blade veins abaxially slightly raised.
      - 5a. Peduncle 5–15 mm ... 94a. var. *sarmentosa*
      - 5b. Peduncle shorter than  
5 mm ..... 94b. var. *nipponica*
    - 4b. Leaf blade veins abaxially conspicuously raised.
      - 6a. Leaf blade 4–7 cm; basal lateral veins elongated; secondary  
veins 4–6 on each side of  
midvein ..... 94c. var. *thunbergii*
      - 6b. Leaf blade (4–)10–15 cm;  
basal lateral veins short;  
secondary veins 6–12 on  
each side of midvein.
        - 7a. Petiole 2.5–3.5 cm; secondary veins 10–12 on each side  
of midvein; figs 0.8–1.2  
cm in diam. .... 94d. var. *luducca*
        - 7b. Petiole 1–1.2 cm; secondary veins 6–8 on each side  
of midvein; figs 1.5–2  
cm in diam. .... 94e. var. *duclouxii*

**94a. *Ficus sarmentosa* var. *sarmentosa***

匍茎榕(原变种) pu jing rong (yuan bian zhong)

*Ficus foveolata* (Wallich ex Miquel) Wallich ex Miquel; *F. reticulata* (Miquel) Miquel (1867), not Thunberg (1786); *Pogonotrophe foveolata* Wallich ex Miquel; *P. reticulata* Miquel.

Vines or scandent shrubs, woody. Branchlets glabrous, rugose, grayish white when dry. Leaves distichous; petiole ca. 1 cm, subglabrous; leaf blade ovate to oblong, 8–12 × 3–4 cm, ± leathery, abaxially greenish white or pale yellow when dry, adaxially glabrous or sparsely brown pubescent; secondary veins 7–9 on each side of midvein and abaxially slightly raised, tertiary veins honeycomblike. Figs blackish purple when mature, globose to ± globose, slightly depressed, 1.5–2 cm in diam., glabrous, apical pore slightly concave; peduncle 0.5–1.5 cm; involucre bracts triangular, ca. 3 mm, adaxially with scattered bristles.

Forests; 1800–2500 m. Xizang [Bhutan, Myanmar, Nepal, Sikkim].

**94b. *Ficus sarmentosa* var. *nipponica* (Franchet & Savatier) Corner, Gard. Bull. Singapore 18: 7. 1960.**

白背爬藤榕 bai bei pa teng rong

*Ficus nipponica* Franchet & Savatier, Enum. Pl. Jap. 1: 436. 1875; *F. chaffanjoni* H. Léveillé & Vaniot; *F. fortunati* H. Léveillé; *F. foveolata* (Wallich ex Miquel) Wallich ex Miquel var. *nipponica* (Franchet & Savatier) King; *F. oxyphylla* Miquel; *F. rufipes* H. Léveillé & Vaniot, p.p. (Cavalerie 340); *F. sarmentosa* subsp. *nipponica* (Franchet & Savatier)

Ohashi; *F. seguinii* H. Léveillé; *F. wrightii* Benth.

Scandent shrubs, woody. New branchlets pale brown. Leaf blade elliptic-lanceolate, abaxially pale yellow or grayish yellow. Figs globose, 1–1.2 cm in diam., apical pore navel-like, convex; peduncle shorter than 5 mm; involucre bracts triangular-ovate, 2–3 mm.

Mountains, plains; 600–1200 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Japan, Korea].

**94c. *Ficus sarmentosa* var. *thunbergii*** (Maximowicz) Corner, Gard. Bull. Singapore 18: 7. 1960.

少脉爬藤榕 shao mai pa teng rong

*Ficus thunbergii* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 552. 1881; *F. foveolata* (Wallich ex Miquel) Wallich ex Miquel var. *thunbergii* (Maximowicz) King.

Scandent shrubs. Leaf blade shortly elliptic-ovate, 4–7 cm, leathery, abaxially densely covered with long brown pubescence, more so on veins; secondary veins 4–6 on each side of midvein. Figs axillary on normal leafy branchlets, solitary or occasionally paired, ellipsoid-globose, 1.5–2 cm in diam., densely brown pubescent, apical pore slightly convex; peduncle ca. 1 cm, thick, with hairs.

Zhejiang [Japan, Korea].

**94d. *Ficus sarmentosa* var. *luducca*** (Roxburgh) Corner, Gard. Bull. Singapore 18: 7. 1960.

长柄爬藤榕 chang bing pa teng rong

*Ficus luducca* Roxburgh, Fl. Ind., ed. 1832, 3: 534. 1832; *F. longepedata* H. Léveillé & Vaniot; *F. sarmentosa* var. *luducca* f. *sessilis* Corner; *F. sordida* Handel-Mazzetti; *F. trichopoda* H. Léveillé (1913), not Baker (1883).

Vines, procumbent. Branchlets subglabrous, with conspicuous lenticels. Petiole 2.5–3.5 cm, thick; leaf blade narrowly elliptic-lanceolate, 4–10 × 4–5 cm, abaxially yellow brown, base cuneate, apex acuminate to caudate; basal lateral veins short, secondary veins 10–12 on each side of midvein, tertiary veins honeycomblike. Figs axillary on normal leafy branchlets, globose, (0.7–)0.8–1.2 cm in diam., sparsely tuberculate; peduncle short to absent.

Guangdong, Guangxi, Guizhou, Hubei, Shaanxi, Xizang, Yunnan [NW India, Kashmir, Nepal, Pakistan].

**94e. *Ficus sarmentosa* var. *duclouxii*** (H. Léveillé & Vaniot) Corner, Gard. Bull. Singapore 18: 6. 1960.

大果藤爬榕 da guo teng pa rong

*Ficus duclouxii* H. Léveillé & Vaniot, Mem. Real Acad. Ci. Barcelona, ser. 3, 6: 149. 1907.

Shrubs, procumbent or scandent. Branchlets and young leaves densely covered with white pubescence. Petiole 1–1.2 cm; leaf blade elliptic-ovate, 12–15 cm, base rounded to cuneate, apex obtuse or mucronate; secondary veins 6–8 on each side of midvein. Figs globose, 1.5–2 cm in diam., glabrous, sessile.

• Sichuan, Yunnan.

The fruit are eaten as a cold jelly in Yunnan.

**94f. *Ficus sarmentosa* var. *lacrymans*** (H. Léveillé) Corner, Gard. Bull. Singapore 18: 6. 1960.

尾尖爬藤榕 wei jian pa teng rong

*Ficus lacrymans* H. Léveillé, Fl. Kouy-Tchéou, 431. 1914–1915; *F. botryoides* H. Léveillé & Vaniot (1907), not Baker (1887); *F. kwangtungensis* Merrill.

Shrubs, procumbent or scandent. Petiole ca. 5 mm; leaf blade green, whitish green to yellow green when dry, lanceolate-ovate, 4–8 × 2–2.5 cm, ± leathery, base cuneate, apex acuminate to caudate; veins flat on both surfaces, secondary veins 5 or 6 on each side of midvein. Figs axillary on leafy or on leafless branchlets, paired, globose, 5–9 mm in diam., glabrous or sparsely pubescent.

Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan [N Vietnam].

**94g. *Ficus sarmentosa* var. *impressa*** (Champion ex Benth.) Corner, Gard. Bull. Singapore 18: 6. 1960.

爬藤榕 pa teng rong

*Ficus impressa* Champion ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 76. 1854; *F. baileyi* Hutchinson; *F. bodinieri* H. Léveillé & Vaniot; *F. foveolata* (Wallich ex Miquel) Wallich ex Miquel var. *impressa* (Champion ex Benth.) King; *F. leucodermis* Handel-Mazzetti var. *saxicola* Handel-Mazzetti; *F. martini* H. Léveillé & Vaniot (1907), not Miquel (1867).

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Shrubs, procumbent or scandent. Petiole 5–10 mm; leaf blade abaxially white to pale grayish brown, lanceolate, 4–7 × 1–2 cm, leathery, base rounded, apex acuminate; veins conspicuous, secondary veins 6–8 on each side of midvein. Figs axillary on leafy or on leafless branchlets, paired, globose, 7–10 mm in diam., pubescent when young.

• On trees or rocks. Anhui, Fujian, Gansu, Guangdong, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

**94h. *Ficus sarmentosa* var. *henryi*** (King ex Oliver) Corner, Gard. Bull. Singapore 18: 6. 1960.

珍珠莲 zhen zhu lian

*Ficus foveolata* (Wallich ex Miquel) Wallich ex Miquel var. *henryi* King ex Oliver, Hooker's Icon. Pl. 19: t. 1824. 1889; *F. arisanensis* Hayata; *F. foveolata* var. *arisanensis* (Hayata) Kudô; *F. oxyphylla* Miquel var. *henryi* (King ex Oliver) T. Yamazaki.

Shrubs, procumbent or scandent, woody. Branchlets densely covered with brown long pubescence. Petiole 5–10 mm, with hairs; leaf blade ovate-elliptic, 8–10 × 3–4 cm, leathery, abaxially densely covered with brown or long pubescence, adaxially glabrous, base rounded to cuneate, apex acuminate; basal lateral veins extended, secondary veins 5–7 on each side of midvein, tertiary veins honeycomblike. Figs axillary on normal leafy branches, paired, conic, 1–1.5 cm in diam., densely covered with long brown pubescence, glabrescent, apical bracts erect, ca. 3 mm; peduncle short to absent; involucre bracts ovate-lanceolate, 3–6 mm.

• Evergreen broad-leaved forests, scrub. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang.

**95. *Ficus guizhouensis*** S. S. Chang, Acta Phytotax. Sin. 20: 96. 1982.

贵州榕 gui zhou rong

Shrubs, scandent. Branchlets and petioles shortly pubescent. Stipules lanceolate, ca. 5 mm, membranous. Leaves distichous; petiole 1–1.5 cm, densely covered with brown coarse hairs; leaf blade oblong to elliptic-oblong, 5–14 × 2–5 cm, ± leathery, abaxially pale green, densely brown pubescent and sparsely strigose, glabrescent, adaxially green, coarsely scattered strigose, base cuneate to slightly obtuse, margin entire, apex acute to acuminate; veins abaxially raised, adaxially impressed; basal lateral veins extending to 1/2 of leaf blade length, secondary veins 4 or 5 on each side of midvein. Figs axillary on normal leafy branches, paired or solitary, ± globose, 8–10 mm in diam., densely covered with brown pubescence when young, carpodermis without stone cells, inside with abundant bristles; peduncle 1–1.5 cm, densely covered with coarsely brown hairs; involucre bracts triangular-ovate; apical bracts 3, concave. Male flowers: near apical pore or scattered, pedicellate; calyx lobes 4; stamens 2; filaments short, free; anthers ellipsoid, ca. 1 mm, not mucronate. Gall flowers: ca. 4 mm; calyx lobes 4, basally yellow, apically red; ovary oblong; style lateral, short; stigma funnelliform. Female flowers: sessile; calyx lobes 4. Achenes ellipsoid, smooth, ca. 3 mm. Fl. Apr–May, fr. Jun–Jul.

• Limestone areas. Guangxi, Guizhou, SE Yunnan.

**96. *Ficus yunnanensis*** S. S. Chang, Acta Phytotax. Sin. 22: 69. 1984.

云南榕 yun nan rong

Trees, 7–8 m tall. Branchlets 3–4 mm in diam., longitudinally rugose, densely coarsely hairy. Stipules lanceolate, 1–1.5 cm, densely covered with yellowish brown bent hairs, somewhat persistent. Petiole 0.5–1.2 cm, densely covered with yellow coarse stiff hairs; leaf blade obliquely ovate, 7–16 × 3.5–8 cm, papery, adaxially with coarse hairs, base rounded and oblique, margin entire, apex acuminate to caudate with a 1–2 cm cauda; veins abaxially conspicuously raised; basal vein extending to 1/3 or 1/2 of leaf blade length, densely covered with yellow long pubescence. Figs axillary on normal leafy branches, ovoid-globose to globose, 2–3 cm in diam., densely covered with yellowish brown coarse hairs or glabrescent in middle, subsessile; involucre bracts triangular, densely covered with yellow stiff hairs; apical bracts ± erect, hairy, inside with bristles. Gall flowers: scattered near apical pore, sessile or shortly pedicellate; calyx lobes 4, red, obovate-elliptic; ovary ellipsoid; style lateral; stigmas silklike. Female flowers: many, pedicellate; calyx lobes 4, red, obovate to elliptic, ca. 1 mm, glabrous; ovary sessile, obovoid; style lateral; stigmas funnelliform.

• Mixed forests; 1800–2400 m. Yunnan.

**97. *Ficus napoensis*** S. S. Chang, Guihaia 3: 305. 1983.

那坡榕 na po rong

Shrubs, scandent. Branchlets and petioles densely covered with short rust-colored pubescence. Stipules lanceolate, 4–7 mm, densely covered with white pubescence. Leaves distichous; petiole 5–10 mm; leaf blade obovate to ovate-elliptic, 2.5–7.5 × 1.5–3.5 cm, ± leathery, abaxially densely covered with short rust-colored pubescence, adaxially green and

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glabrous or with scattered bent bristles, base cuneate to rounded, margin entire, apex acuminate to caudate with a 4–6 mm cauda; midvein and secondary veins abaxially raised, adaxially impressed; basal lateral veins extending to 1/2 of leaf blade length, secondary veins 3–7 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, globose, 6–8 mm in diam., glabrous, inside without bristles, apical pore navel-like, convex; peduncle 5–7 mm, densely covered with rust-colored pubescence; involucre bracts ovate-triangular, ca. 2 mm. Female flowers: pedicel ca. 1 mm; calyx lobes 4, basally yellow, apically red, oblanceolate, ca. 1.5 mm; style subapical. Achenes oblong. Fl. Apr–May, fr. Jun–Jul.

- Limestone areas; 1000–1100 m. Guangxi.

**98. *Ficus guangxiensis*** S. S. Chang, Guihaia 4: 115. 1984.

广西榕 *guang xi rong*

Scandent shrubs or vines. Branchlets densely long brown pubescent. Stipules lanceolate, ca. 4 mm, membranous, densely covered with short brown pubescence, glabrescent, basal ones bractlike and persistent. Leaves distichous, clustered apically on branchlets; petiole 4–6 mm, densely covered with short brown pubescence; leaf blade obovate, 3–3.5 × 1.5–3 cm, leathery, abaxially greenish white with raised veins, adaxially dark green, base cuneate, margin entire, apex obtuse; veins abaxially raised and adaxially impressed, secondary veins 5–7 on each side of midvein. Figs axillary on normal leafy shoots, solitary or paired, ovoid-ellipsoid, 6–7 × 4–5 mm, densely covered with brown long pubescence, inside without bristles, apical pore navel-like; peduncle ca. 3 mm, densely brown, long pubescent when young; involucre bracts ovate-triangular, ca. 2 mm wide. Male flowers: ca. 2.5 mm; pedicel ca. 1 mm; calyx lobes 4, red, obovate-lanceolate, ca. 1.5 mm; stamens 2; filament short; anthers ca. 1.5 mm, mucronate.

- Limestone areas; 400–500 m. Guangxi.

**99. *Ficus polynervis*** S. S. Chang, Guihaia 3: 302. 1983.

多脉榕 *duo mai rong*

## MORACEAE

Shrubs, scandent. Branchlets sparsely pale brown pubescent. Leaves distichous; stipules lanceolate, ca. 1 cm. Petiole 2.2–3 cm; leaf blade oblong to oblong-lanceolate, 10–17 × 4–8 cm, leathery, base cuneate, margin entire, apex acuminate to obtuse; midvein or secondary veins raised on both side, basal lateral veins 2, short, secondary veins 15–17 on each side of midvein. Figs axillary on normal leafy shoots, solitary, yellow when mature, woody when dry, globose, 2–2.2 cm in diam., glabrous, carpodermis with abundant stone cells, apical pore navel-like; peduncle short to absent; involucre bracts ovate-elliptic, small. Male flowers: calyx lobes 4; stamens 2; anthers mucronate. Gall flowers: pedicellate; calyx lobes 4, obovate-lanceolate; ovary sessile; style glabrous.

- Mixed forests; 1300–1500 m. SE Yunnan.