

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

鹊肾树属 que shen shu shu

Dimerocarpus Gagnepain; *Diplocos* Bureau; *Diplothorax* Gagnepain; *Epicarpurus* 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 \pm 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 \pm 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 \pm 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 \pm 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 \pm 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 \times 3–6 cm, membranous to papery, margin entire or \pm 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) \times 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 \times 2–3.5 cm, leathery, scabrous, base obtuse to \pm 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; brac-

teoles 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 acumen; 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; *Phyllochlamyx 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 aquifolioides* 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, oblate, 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].

