

PITTOSPORACEAE

海桐花科 hai tong hua ke

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Trees or shrubs, evergreen, glabrous or pubescent, occasionally spiny. Leaves alternate, occasionally opposite, estipulate; leaf blade mostly leathery, margin entire, rarely dentate or lobed. Inflorescences umbellate, corymbose, paniculate, or a solitary flower, bracteate and bracteolate. Flowers usually bisexual, sometimes polygamous, actinomorphic, rarely zygomorphic, usually 5-merous (except ovary). Sepals usually free or slightly connate. Petals free or connate, white, yellow, blue, or red. Stamens opposite sepals; filament filiform; anther basifixed or dorsifixed, 2-loculed, dehiscent longitudinally or by pores. Ovary superior, of 2 or 3(–5) carpels, usually 1-loculed or incompletely 2–5-loculed; ovules numerous, anatropous; placentation parietal, axile, or basilar. Style short, simple or 2–5-lobed, persistent or deciduous. Fruit a capsule dehiscent by adaxial suture, or a berry. Seeds numerous; testa thin; endosperm well developed; embryo small.

Nine genera and ca. 250 species: tropical and subtropical regions of Africa, Asia, Australia, and Pacific Islands, especially Australia; one genus and 46 species (33 endemic) in China.

Chang Hung-ta & Yan Su-zhu. 1979. Pittosporaceae. In: Chang Hung-ta, ed., Fl. Reipubl. Popularis Sin. 35(2): 1–36.

1. PITTOSPORUM Banks ex Gaertner, Fruct. Sem. Pl. 1: 286. 1788, nom. cons.

海桐花属 hai tong hua shu

Tobira Adanson, nom. rej.

Trees, shrubs, or sometimes subshrubs, evergreen, pubescent or glabrous. Leaves alternate, appearing opposite or pseudovercillate, usually clustered at branchlet apex; leaf blade leathery or sometimes membranous, margin entire, undulate-dentate, or rugose. Inflorescences terminal or axillary, umbellate, corymbose, paniculate, or a solitary flower. Flowers bisexual, rarely polygamous. Sepals 5, free, usually short and small. Petals 5, free or partly connate. Stamens 5; filament glabrous; anther dorsifixed, ± sagittate, longitudinally dehiscent. Ovary superior, usually stipitate, of 2 or 3(–5) carpels, 1-loculed or incompletely 2–5-loculed, pubescent or glabrous; ovules usually numerous, sometimes 1–4; placentas parietal and equal in number to carpels, or basilar owing to reduction of ovules. Style short, simple or 2–5-lobed, usually persistent. Capsule ellipsoid or globose, sometimes compressed, dehiscent by 2–5 valves; pericarp woody or leathery, usually with horizontal striae adaxially. Seeds usually surrounded by glutinous or greasy material.

About 150 species: Bangladesh, Bhutan, China, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Sikkim, Singapore, Sri Lanka, Thailand, Vietnam; tropical and S Africa (including Madagascar), SW Asia (Yemen), Atlantic Islands (Madeira), Australia, Indian Ocean Islands (Mascarenes, Seychelles), Pacific Islands; 46 species (33 endemic) in China.

Pittosporopsis nervosa Gagnepain (Notul. Syst. (Paris) 13: 136. 1947) was transferred to *Pittosporum* by Gowda, as *P. nervosum* (Gagnepain) Gowda (J. Arnold Arbor. 32: 327. 1951). As well as the type specimen from Vietnam, *Poilane 25530* (holotype, P), Gowda cited a collection from S Yunnan (Simao Xian), *Henry 11778B* (NY). However, Chang and Yan (Acta Sci. Nat. Univ. Sunyatseni 1974(2): 43. 1974) demonstrated that Gagnepain's protologue, as well as the collection *Henry 11778* (IBSC), also from Simao Xian, clearly belongs to *Pittosporopsis* in the Icacinaceae.

Pittosporum yunnanense Franchet (Bull. Soc. Bot. France 33: 415. 1886) is *Osmanthus yunnanensis* (Franchet) P. S. Green in the Oleaceae (see Fl. China 15: 291. 1996).

- 1a. Placentas (2 or)3–5, in middle part of capsule valves; capsule dehiscent by (2 or)3–5 valves; inflorescences umbellate.
- 2a. Placentas 2; capsule usually dehiscent by 2(or 3) valves.
- 3a. Ovary and capsule pubescent.
 - 4a. Young branchlets glabrous 15. *P. elevaticostatum*
 - 4b. Young branchlets pubescent.
 - 5a. Sepals erect, 3–4 mm; petals free, ca. 8 mm; leaf blade 3–5 × 1–1.7 cm 16. *P. parvilimbium*
 - 5b. Sepals reflexed, ca. 2 mm; petals united below middle, ca. 10 mm; leaf blade 3–7 × 1.5–2.5 cm 17. *P. reflexisepalum*
- 3b. Ovary and capsule glabrous.
 - 6a. Capsule valves ca. 1 mm thick 20. *P. perglabratum*
 - 6b. Capsule valves ca. 0.4 mm thick.

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- 7a. Funicles 6–8 on each capsule valve, in pairs along middle of placenta, creamy yellow, slender, flat, 1–2 mm; capsule cylindric, 1.4–1.5 cm; leaf blade narrowly lanceolate or narrowly oblong, 7–12 × 1.5–2.5 cm 18. *P. henryi*
- 7b. Funicles 2 on each capsule valve, dark brown, short, knoblike; capsule ellipsoid, 1–1.2 cm; leaf blade broadly elliptic or ovate-elliptic, 6–10 × 2.5–4 cm 19. *P. merrillianum*
- 2b. Placentas 3–5; capsule dehiscing by 3–5 valves.
- 8a. Capsule valves woody, 1–2.5 mm thick; seeds 2–4 mm.
- 9a. Seeds more than 30; capsule valves 3–5, 2–2.5 mm thick; ovary pubescent 1. *P. crispulum*
- 9b. Seeds fewer than 25; capsule valves usually 3, less than 2 mm thick; ovary pubescent or glabrous.
- 10a. Capsule globose, 1.2–2 cm; ovary pubescent or glabrous.
- 11a. Capsule 1.5–2 cm in diam., glabrous, apex acute 2. *P. rehderianum*
- 11b. Capsule ca. 1.2 cm in diam., pubescent, apex rounded or obtuse 3. *P. tobira*
- 10b. Capsule ellipsoid or ovoid, less than 1.5 × 1 cm; ovary pubescent.
- 12a. Capsule valves 1.5–2 mm thick; seeds 4–8; sepals ca. 2.5 mm 4. *P. xylocarpum*
- 12b. Capsule valves ca. 1 mm thick; seeds ca. 15; sepals 4–7 mm.
- 13a. Leaf blade 6–11 × 2–4 cm; sepals 6–7 mm; capsule ca. 1.2 cm 5. *P. subulisepalum*
- 13b. Leaf blade 5–8 × 1.5–2.5 cm; sepals 4–5 mm; capsule 1.3–1.8 cm 6. *P. pauciflorum*
- 8b. Capsule valves thinly leathery, less than 1 mm thick; seeds 3–7 mm.
- 14a. Capsule globose or slightly trigonous-globose 14. *P. illicioides*
- 14b. Capsule ellipsoid, obovoid, or long cylindric.
- 15a. Ovary glabrous or sparsely puberulous.
- 16a. Capsule with 3 prominent abaxial sutures 7. *P. perryanum*
- 16b. Capsule without prominent abaxial sutures.
- 17a. Ovary slightly puberulous or glabrous; ovules 8–9; seeds 3–4 mm 8. *P. omeiense*
- 17b. Ovary glabrous; ovules ca. 18; seeds 5–6 mm 9. *P. glabratum*
- 15b. Ovary densely pubescent.
- 18a. Capsule 2–3 cm.
- 19a. Capsule stipe ca. 5 mm; petals 1.5–1.8 cm 10. *P. podocarpum*
- 19b. Capsule stipe 1–2 mm; petals 1–1.2 cm 11. *P. trigonocarpum*
- 18b. Capsule less than 1.5 cm.
- 20a. Leaf blade elliptic or narrowly oblong 12. *P. kweichowense*
- 20b. Leaf blade lanceolate or oblanceolate 13. *P. parvicapsulare*
- 1b. Placentas 2, at base or in proximal part of capsule valves, slightly connate at base; capsule ± compressed, dehiscing by 2 valves; inflorescences umbellate or paniculate, rarely racemose.
- 21a. Inflorescences compound, corymbose or paniculate.
- 22a. Inflorescences usually pedunculate, corymbose, appearing paniculate.
- 23a. Capsule more than 2 cm, valves more than 2 mm thick; leaf blade obtuse at apex 42. *P. viburnifolium*
- 23b. Capsule less than 1 cm, valves less than 1 mm thick; leaf blade acute at apex.
- 24a. Seeds 2–4(or 5); placentas at base of capsule valves.
- 25a. Leaf blade 4–6 cm wide; inflorescences 6–10 cm; young branchlets glabrous 43. *P. paniculiferum*
- 25b. Leaf blade 2–4 cm wide; inflorescences 4–6 cm; young branchlets pubescent 44. *P. kerrii*
- 24b. Seeds 5–16; placentas in lower part of capsule valves.
- 26a. Leaf blade oblong or oblong-lanceolate, 4–8 cm wide; seeds 5–8 45. *P. napaulense*
- 26b. Leaf blade obovate or oblong-obovate, 3–5 cm wide; seeds 10–16 46. *P. pentandrum*
- 22b. Inflorescences usually not pedunculate, umbellate or corymbose.
- 27a. Leaf blade oblong or elliptic, 10–20 × 4–8 cm; inflorescences more than 5 cm 37. *P. daphniphylloides*
- 27b. Leaf blade obovate-oblong, oblanceolate, or oblong-oblanceolate, 8–15 × 2–6 cm; inflorescences 3–4 cm.
- 28a. Seeds ca. 4; placentas at base of capsule valves; leaf blade obovate-oblong, 4–6 cm wide 38. *P. kwangsiense*
- 28b. Seeds more than 6; placentas in middle part of capsule valves; leaf blade obovate-lanceolate, 2–5 cm wide.
- 29a. Lateral veins more than 12-paired; seeds 6–8 39. *P. undulatifolium*
- 29b. Lateral veins fewer than 10-paired; seeds 7–16 or more.
- 30a. Capsule 8–9 mm in diam.; seeds more than 16 40. *P. johnstonianum*
- 30b. Capsule 7–8 mm in diam.; seeds 7–10 41. *P. brevicalyx*
- 21b. Inflorescences simple, umbellate, racemose, or corymblike.
- 31a. Capsule valves woody, 1–3 mm thick.

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- 32a. Leaf blade obovate-lanceolate, 7–10 × 2–3 cm; capsule 1.3–1.6 cm in diam.; seeds 16–24 21. *P. lenticellatum*
- 32b. Leaf blade oblanceolate, 4–6 × 1–2 cm; capsule 1–1.2 cm in diam.; seeds 10–12 22. *P. planilobum*
- 31b. Capsule valves thinly woody, less than 1 mm thick.
- 33a. Capsule ellipsoid, long pear-shaped, or obovoid, more than 1 cm.
- 34a. Young branchlets and inflorescences brown pubescent; inflorescences densely flowered 24. *P. balansae*
- 34b. Young branchlets and inflorescences glabrous; inflorescences sparsely flowered.
- 35a. Leaf blade narrowly lanceolate, falcate, 10–23 × 0.7–1.8(–2.2) cm; sepals ovate, ca. 3 mm 25. *P. qinlingense*
- 35b. Leaf blade oblong or oblanceolate, 7–12 × 2.5–4.5 cm; sepals triangular-ovate, ca. 2 mm 23. *P. tenuivalvatum*
- 33b. Capsule globose or compressed globose, less than 1 cm.
- 36a. Young branchlets pubescent or puberulous.
- 37a. Petals connate; leaf blade 2–3.5 × ca. 1 cm, apex obtuse; seeds ca. 4 26. *P. saxicola*
- 37b. Petals free; leaf blade 2.5–9 × 0.3–3.5 cm, apex acute or acuminate; seeds 4–18.
- 38a. Leaf blade 2.5–6 × 0.3–0.8 cm, apex acuminate 27. *P. angustilimbum*
- 38b. Leaf blade 6–9 × 2–3.5 cm, apex acute.
- 39a. Inflorescences racemose; seeds ca. 4; leaf veins indistinct 28. *P. tonkinense*
- 39b. Inflorescences umbellate; seeds 8–18; leaf veins distinct.
- 40a. Leaf blade rhombic or obovate, apex shortly acute; seeds 16–18; young branchlets gray pubescent 29. *P. truncatum*
- 40b. Leaf blade oblong, apex acute; seeds 8–10; young branchlets brown pubescent 30. *P. fulvipilosum*
- 36b. Young branchlets glabrous.
- 41a. Leaf blade linear, lanceolate, or oblong, widest below middle.
- 42a. Leaf blade linear or narrowly lanceolate, sometimes oblanceolate; petals connate 35. *P. heterophyllum*
- 42b. Leaf blade oblong or lanceolate; petals free 36. *P. leptosepalum*
- 41b. Leaf blade obovate or oblanceolate, widest above middle.
- 43a. Leaf blade 3–6 cm, apex rounded 31. *P. pulchrum*
- 43b. Leaf blade 6–12 cm, apex acute.
- 44a. Inflorescences glabrous; sepals connate, forming a shallow cup, glabrous; petals connate 34. *P. tubiflorum*
- 44b. Inflorescences pubescent; sepals free.
- 45a. Inflorescences with scalelike leaves at base; sepals pubescent; petals free 32. *P. kunmingense*
- 45b. Inflorescences without scalelike leaves at base; sepals glabrous; petals connate proximally 33. *P. oligophlebium*

1. *Pittosporum crispulum* Gagnepain, Bull. Soc. Bot. France 55: 546. 1908.

皱叶海桐 zhou ye hai tong

Pittosporum lignilobum Hu & F. T. Wang.

Shrubs to 3 m tall. Young branchlets red-brown after drying, glabrous; previous year's branchlets not lenticellate. Leaves clustered at branchlet apex, biennial; petiole 1–1.5 cm; leaf blade pale green abaxially, dark green and slightly shiny adaxially, dull green after drying, oblanceolate or lanceolate, 8–18 × 3–5 cm, thinly leathery, glabrous, lateral veins 13–20-paired, base cuneate, margin slightly rugose or sinuate, apex acuminate. Inflorescences 2–4, clustered in leaf axils at branchlet apex, umbellate, 2–5-flowered; pedicels 1–2 cm, glabrous. Sepals slightly connate at base, triangular-ovate, ca. 3 mm, glabrous, margin ciliate. Petals ca. 1.5 × 0.2–0.25 cm. Stamens ca. 1 cm; filament 5–7 mm; anther ca. 2 mm. Pistil 8–10 mm; ovary 2–3 mm, pubescent, wall ca. 0.5 mm thick; placentas 3–

5, parietal; ovules 10–15 per placenta in 4 rows; style 2–2.5 mm. Capsule ellipsoid or pear-shaped, 2.5–3 cm, dehiscent by 3–5 valves; pericarp ca. 2.5 mm thick, woody, pubescent abaxially; pedicel 1–2.5 cm; stipe 2–4 mm. Seeds 45–50 per valve in 2–4 rows, 2.5–3 mm; funicle 1–1.5 mm. Fl. Feb–May, fr. Jun–Oct.

• Damp places in forests, thickets; 500–1800 m. NW Guizhou (Chishui Xian), Hubei, Sichuan, Yunnan.

This species is used medicinally to treat nephritis and stop vomiting.

2. *Pittosporum rehderianum* Gowda, J. Arnold Arbor. 32: 297. 1951.

厚圆果海桐 hou yuan guo hai tong

Shrubs to 3 m tall. Young branchlets dull brown after drying, glabrous; old branchlets gray-brown, lenticellate. Leaves 4- or 5-clustered at branchlet apex, appearing pseudovercillate,

biennial; petiole 5–10 mm; leaf blade pale green abaxially, brownish after drying, dark green and shiny adaxially, oblanceolate, 5–12 × 2–4 cm, leathery or thinly so, glabrous, lateral veins 6–9-paired, slightly prominent abaxially, indistinct adaxially after drying, reticulate veins indistinct on both surfaces, base cuneate, margin flat, apex acuminate. Inflorescences terminal, umbellate, glabrous; bracts ovate, 1–4 mm, glabrous; pedicels 5–10 mm. Sepals slightly connate at base, triangular-ovate, ca. 2 mm, glabrous. Petals free, yellow, 10–12 mm. Stamens shorter than petals, 7–8 mm. Pistil equaling stamens; ovary glabrous; placentas 3, parietal; ovules 24–27. Capsule globose, angular, 1.5–2 cm in diam., dehiscent by 3 broadly ovate (when open) valves; pericarp 1–2 mm thick, woody; pedicel 1–2 cm. Seeds ca. 8 or 21–24 per capsule, red, becoming black after drying, ca. 3.5 mm; funicle ca. 3 mm. Fl. Mar–May, fr. May–Nov.

• Forests, thickets, slopes, bases of slopes, river sides; 700–2400 m. SE Gansu, W Hubei, S Shaanxi, W Sichuan, W Yunnan.

- 1a. Seeds 21–24 per capsule 2a. var. *rehderianum*
1b. Seeds ca. 8 per capsule 2b. var. *ternstroemioides*

2a. *Pittosporum rehderianum* var. *rehderianum*

厚圆果海桐(原变种) hou yuan guo hai tong (yuan bian zhong)

Seeds 21–24 per capsule.

• Forests, slopes, river sides; 700–1300 m. SE Gansu, W Hubei, S Shaanxi, W Sichuan.

2b. *Pittosporum rehderianum* var. *ternstroemioides* (C. Y. Wu) Z. Y. Zhang & Turland, *Novon* 12: 154. 2002.

厚皮香海桐 hou pi xiang hai tong

Pittosporum ternstroemioides C. Y. Wu in C. Y. Wu & H. W. Li, *Fl. Yunnan*. 3: 320. 1983.

Seeds ca. 8 per capsule.

• Thickets, bases of slopes; ca. 2400 m. W Yunnan (Longling Xian).

3. *Pittosporum tobira* (Thunberg) W. T. Aiton, *Hortus Kew*. 2: 27. 1811.

海桐 hai tong

Shrubs or small trees to 6 m tall. Young branchlets lenticellate. Leaves clustered at branchlet apex, biennial; petiole ca. 2 cm; leaf blade dark green and shiny adaxially, dull after drying, obovate or obovate-lanceolate, 4–9 × 1.5–4 cm, leathery, lateral veins 6–8-paired, connected at margin, sometimes reticulate veins conspicuous between lateral veins, base narrowly cuneate, margin entire, revolute, apex rounded or obtuse, usually emarginate or slightly cordate. Inflorescences terminal or nearly so, umbellate or corymbose; bracts lanceolate, 4–5 mm; bracteoles 2–3 mm; pedicels 1–2 cm; flowers fragrant. Sepals lanceolate, 3–4 mm. Petals free, white at first, becoming yellow later, oblanceolate, 1–1.2 cm. Stamens dimorphic: filament 2–3 mm and anther nearly sterile in reduced stamens; filament 5–6 mm and anther yellow, oblong, and ca. 2 mm in fertile stamens. Ovary long ovoid, densely pubescent; placentas 3; ovules numerous, in 2 rows. Capsule globose, angular, ca.

1.2 cm in diam., dehiscent by 3 valves, ± pubescent; pericarp yellow-brown and shiny adaxially, ca. 1.5 mm thick, woody, horizontally striate; stipe 1–2 mm. Seeds numerous, red, angular, ca. 4 mm; funicle ca. 2 mm. Fl. Mar–May, fr. May–Oct.

Cultivated for ornament and possibly naturalized, forests, limestone areas, slopes, sandy seashores, roadsides; sea level to 1800 m. Native in N Taiwan; introduced in Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Jiangsu, Sichuan, Taiwan, Yunnan, Zhejiang [native to S Japan and S Korea].

- 1a. Young branchlets and leaf blade pubescent; ovary densely pubescent; inflorescences, bracts, and sepals densely brown pubescent 3a. var. *tobira*
1b. Young branchlets and leaf blade sparsely pubescent; ovary sparsely puberulous; inflorescences, bracts, and sepals glabrous 3b. var. *calvescens*

3a. *Pittosporum tobira* var. *tobira*

海桐(原变种) hai tong (yuan bian zhong)

Euonymus tobira Thunberg, *Nova Acta Regiae Soc. Sci. Upsal.* 3: 208. 1780; *Pittosporum tobira* var. *chinense* S. Kobayashi.

Young branchlets and leaf blade pubescent. Inflorescences, bracts, and sepals densely brown pubescent. Ovary densely pubescent. Fl. Mar–May, fr. Jun–Oct.

Cultivated for ornament and possibly naturalized, forests, limestone areas, slopes, sandy seashores, roadsides; sea level to 1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Jiangsu, Sichuan, Yunnan, Zhejiang [native to S Japan and S Korea (including Cheju Island)].

3b. *Pittosporum tobira* var. *calvescens* Ohwi, *J. Jap. Bot.* 12: 331. 1936.

秃序海桐 tu xu hai tong

Pittosporum makinoi Nakai; *P. tobira* var. *fukienense* Gowda.

Young branchlets and leaf blade sparsely pubescent. Inflorescences, bracts, and sepals glabrous. Ovary sparsely puberulous. Fl. Mar–Apr, fr. May–Oct.

• Forests, coastal regions. Native in N Taiwan; semicultivated in E and S Fujian (Gu Shan, Xiamen Shi).

4. *Pittosporum xylocarpum* Hu & F. T. Wang, *Bull. Fan Mem. Inst. Biol.*, n.s., 1: 95. 1943.

木果海桐 mu guo hai tong

Shrubs to 3 m tall. Young branchlets slender, glabrous; old branchlets lenticellate. Leaves clustered at branchlet apex, biennial; petiole 6–15 mm; leaf blade yellow-brown abaxially after drying, green and shiny adaxially, oblanceolate or narrowly long elliptic, 6–13 × 2–4.5 cm, thinly leathery, glabrous abaxially, lateral veins 11–15-paired, slightly prominent abaxially, slightly prominent adaxially, reticulate veins indistinct, base cuneate, margin flat, apex acuminate. Inflorescences terminal, umbellate or corymbose, glabrous; peduncle ca. 5 mm; bracts

ca. 2 mm, membranous, caducous; pedicels unequal, 4–12 mm; flowers fragrant. Sepals slightly connate at base, slightly shiny, ovate, unequal, 1.5–2 mm. Petals proximally connate into a tube for ca. 2/3 their length, yellow, narrowly lanceolate, ca. 1.2 cm. Stamens ca. 8 mm; anther ca. 2 mm. Ovary long ovoid, ca. 5 mm; placentas (2 or)3; ovules 2–5 per placenta; stipe short, pubescent. Style ca. 3 mm. Capsule ovoid, ca. 1.5 cm, dehiscing by (2 or)3 valves; pericarp woody, 1.5–2 mm thick, horizontally striate. Seeds 4–8, red, becoming black after drying, 3–4 mm; funicle 1–1.5 mm. Fl. Apr–May, fr. Jun–Oct.

• Damp places in forests, forest margins, thickets, slopes; 200–1500 m. Guizhou, W Hubei, Sichuan, NE Yunnan (Zhenxiong Xian).

5. *Pittosporum subulisepalum* Hu & F. T. Wang, Bull. Fan Mem. Inst. Biol., n.s., 1: 100. 1943.

尖萼海桐 jian e hai tong

Shrubs. Branchlets slender, glabrous, lenticellate. Leaves biennial; petiole 5–10 mm; leaf blade pale green abaxially, dark green and shiny adaxially, oblong-obovate, rarely obovate or narrowly elliptic, 6–11 × 2–4 cm, thinly papery at first, soon becoming thinly leathery, glabrous abaxially, midvein convex abaxially, slightly concave adaxially, lateral veins 6–9-paired, slightly concave, reticulate veins prominent, base cuneate or decurrent, margin rugose, slightly revolute, apex acuminate. Inflorescences terminal, umbellate, 2–4-flowered, glabrous; pedicels 6–10 mm. Sepals free, linear-lanceolate, 6–7 mm, glabrous abaxially, margin ciliate. Petals yellow-green, narrowly oblong, ca. 9 × 2 mm. Stamens ca. 3.5 mm; filament stout, ca. 2.5 mm; anther sagittate. Pistil longer than stamens, ca. 6 mm; ovary long ovoid, brown pubescent; carpels 3; placentas 3; ovules 16 in total; style short; stigmas enlarged. Capsule ovoid, ca. 1.2 × 0.8 cm, dehiscing by 3 valves; pericarp woody; pedicel ca. 2 cm; stipe distinct. Fl. Mar–May, fr. Jun–Nov.

• Forests, thickets. Anhui, Hunan.

6. *Pittosporum pauciflorum* Hooker & Arnott, Bot. Beechey Voy. 168. 1833.

少花海桐 shao hua hai tong

Shrubs. Young branchlets glabrous; old branchlets lenticellate. Leaves borne on young branchlets, sometimes appearing pseudovercillate; petiole 8–15 mm, pubescent at first, soon glabrate; leaf blade dark green and shiny adaxially, narrowly oblong or narrowly oblanceolate, 5–8 × 1.5–2.5 cm, leathery, pubescent abaxially when young, soon glabrate, lateral veins 6–8-paired, together with reticulate veins convex abaxially and slightly concave adaxially, base cuneate, margin slightly revolute after drying, apex acute. Inflorescences in leaf axils at branchlet apex, appearing pseudovercillate, 3–5-flowered; bracts linear-lanceolate, 6–7 mm; pedicels ca. 1 cm, glabrous or puberulous. Sepals narrowly lanceolate, 4–5 mm, puberulous, margin ciliate. Petals 8–10 mm. Stamens 6–7 mm. Ovary long ovoid, gray tomentose; placentas 3; ovules ca. 18; stipe short. Style 2–3 mm. Capsule ellipsoid, ovoid, or long cylindrical, 1.2–1.8 × 0.7–1 cm, sparsely pubescent, dehiscing by 3 valves; pericarp ca. 1 mm thick, woody; placentas in middle part of valves. Seeds 5 or 6 per placenta, red, ca. 4 mm; funicle ca. 2 mm, slightly compressed. Fl. Apr–May, fr. May–Oct.

Thickets, valleys, stream sides, roadsides; 700–1000 m. Fujian, Guangdong, Guangxi, S Hunan, Jiangxi [Vietnam].

- 1a. Capsule ellipsoid or ovoid, ca. 1.2 × 1 cm 6a. var. *pauciflorum*
 1b. Capsule long cylindrical, ca. 1.8 × 0.7 cm 6b. var. *oblongum*

6a. *Pittosporum pauciflorum* var. *pauciflorum*

少花海桐(原变种) shao hua hai tong (yuan bian zhong)

Pittosporum ovoideum Gowda (1951), not H. T. Chang & S. Z. Yan (1974).

Capsule ellipsoid or ovoid, ca. 1.2 × 1 cm. Fl. Apr–May, fr. May–Oct.

Thickets, valleys, stream sides, roadsides; 700–1000 m. Fujian, Guangdong, Guangxi, S Hunan, Jiangxi [Vietnam].

6b. *Pittosporum pauciflorum* var. *oblongum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 87. 1978.

长果海桐 chang guo hai tong

Capsule long cylindrical, ca. 1.8 × 0.7 cm. Fr. Aug.

• Thickets. N Guangdong (Liashan Xian).

7. *Pittosporum perryanum* Gowda, J. Arnold Arbor. 32: 290. 1951.

缝线海桐 feng xian hai tong

Shrubs 1–2 m tall. Young branchlets glabrous, slightly lenticellate. Leaves usually 3–5-clustered at branchlet apex, biennial; petiole 8–15 mm; leaf blade pale green abaxially, yellow-green after drying, green and shiny adaxially, long elliptic, obovate-elliptic, or beltlike-lanceolate, 8–17 × 1–6 cm, thinly leathery, becoming submembranous, glabrous, lateral veins 7-paired, slightly prominent abaxially, slightly convex after drying, connected at 5–8 mm from margin, base cuneate, margin flat, apex acute. Inflorescences terminal, umbellate, 6–9-flowered, glabrous; bracts linear, 5–7 mm; pedicels 5–10 mm. Sepals ovate, ca. 2 mm, glabrous. Petals ca. 10 mm. Stamens 7–8 mm. Ovary glabrous; carpels 3 or 4; ovules 4–6 in each carpel. Style ca. 3 mm. Capsules 1–4, ellipsoid or occasionally narrowly cylindrical, 1.5–3(–4) × 1.4–1.7 cm, glabrous, with 3 prominently angled abaxial sutures, dehiscing by 3 or 4 valves; pericarp yellow adaxially, thinly leathery, not horizontally striate; pedicel thick and short, ca. 1 cm; stipe 2–3 mm. Seeds usually 8 or 9(–18) in total, in 2 rows per placenta, red, becoming yellow-red after drying, compressed rounded, ca. 6 mm; funicle ca. 3 mm. Fl. Mar–May, fr. May–Oct.

• Forests, thickets, valleys, slopes, stream sides; 600–1800 m. W Guangdong, S Guangxi, SE Guizhou, SW Hainan, SE Sichuan, S Yunnan.

- 1a. Leaf blade long elliptic or obovate-elliptic, 8–17 × 4–6 cm; capsule ellipsoid or occasionally narrowly tubelike, 2–3(–4) cm 7a. var. *perryanum*
 1b. Leaf blade beltlike-lanceolate, 9–13 ×

1–2 cm; capsule ellipsoid, ca. 1.5 cm 7b. var. *linearifolium*

7a. *Pittosporum perryanum* var. *perryanum*

缝线海桐(原变种) feng xian hai tong (yuan bian zhong)

Pittosporum membranifolium S. C. Huang ex W. Q. Yin.

Leaf blade long elliptic or obovate-elliptic, 8–17 × 4–6 cm. Capsule ellipsoid or occasionally narrowly tubelike, 2–3(–4) × 1.4–1.7 cm. Fl. Mar–May, fr. May–Oct.

• Forests, thickets, valleys, slopes, stream sides; 600–1800 m. W Guangdong (Xinyi Xian), S Guangxi, SW Hainan, SE Sichuan (Changning Xian, Hejiang Xian), S Yunnan.

The capsules can be used medicinally in the treatment of jaundice.

7b. *Pittosporum perryanum* var. *linearifolium* H. T. Chang & S. Z. Yan, Acta Sci. Nat. Univ. Sunyatseni 1974(2): 35. 1974.

狭叶缝线海桐 xia ye feng xian hai tong

Leaf blade beltlike-lanceolate, 9–13 × 1–2 cm. Capsule ellipsoid, ca. 1.5 cm. Fr. Aug.

• Dense forests, thickets, stream sides in valleys; 800–1100 m. SE Guizhou (Rongjiang Xian).

8. *Pittosporum omeiense* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 86. 1978.

峨眉海桐 e mei hai tong

Pittosporum glabratum Lindley var. *chinense* Pampanini, pro parte.

Shrubs ca. 2 m tall. Young branchlets glabrous; old branchlets lenticellate. Leaves 2–4-clustered at branchlet apex, appearing opposite or verticillate, biennial; petiole 5–8 mm; leaf blade pale brown and glabrous abaxially, dark green and shiny adaxially, dull green after drying, oblanceolate or narrowly oblong, 7–10 × 1.5–2.5 cm, leathery, lateral veins ca. 5-paired, slightly convex abaxially, indistinct adaxially, base narrowly cuneate, margin flat, apex caudate-acuminate. Inflorescences 1–4, terminal, corymbose-umbellate, 9–17-flowered; peduncle 5–8 mm, slightly pubescent; bracts linear, 4–5 mm; pedicels slender, 1.5–2 cm, puberulous. Petals oblanceolate, 10–11 mm, apex rounded or obtuse. Stamens 8–9 mm; filament 5–7 mm; anther 1.5–2 mm. Pistil 7–8 mm; ovary long ovoid, glabrous or puberulous, ovary wall very thin; placentas 2 or 3; ovules 8 or 9; style ca. 3 mm. Capsule ellipsoid; placentas in middle part of valves; stipe 2–6 cm, glabrous. Seeds 7 or 8, 3–5 mm; funicle slender, ca. 2 mm. Fl. Mar–May, fr. Jun–Nov.

• Forests, thickets, stream sides in valleys; 900–1800 m. Guizhou, NW Hubei, Sichuan.

9. *Pittosporum glabratum* Lindley, J. Hort. Soc. London 1: 230. 1846.

光叶海桐 guang ye hai tong

Shrubs 2–3 m tall. Young branchlets glabrous; old branchlets lenticellate. Leaves clustered at branchlet apex, biennial;

petiole 6–14 mm; leaf blade pale green and glabrous abaxially, green and shiny adaxially, obovate to narrowly so, oblong, oblanceolate, narrowly lanceolate, or beltlike, 3.5–18 × 1–5.5 cm, thinly leathery, lateral veins 5–8-paired, slightly prominent abaxially, slightly convex after drying, along with reticulate veins indistinct adaxially, base cuneate, margin flat, sometimes slightly rugose, apex truncate to obtuse or acute. Inflorescences 1–4 in leaf axils at branchlet apex, umbellate or corymbose, many flowered; bracts lanceolate, ca. 3 mm; pedicels 4–12 mm, puberulous or glabrous. Sepals ovate, ca. 2 mm, margin usually ciliate. Petals free, oblanceolate, 8–12 mm. Stamens (4–)6–7 mm. Ovary long ovoid, glabrous; placentas 3; ovules ca. 6 in each placenta. Style ca. 3 mm; stigmas slightly enlarged. Capsule ellipsoid, 2–2.5 cm, sometimes long tubelike and then 3–3.2 × 1–2 cm, dehiscent by 3 valves; pericarp thinly leathery; pedicel short and strong; style persistent. Seeds 6 or 7 per placenta, red, subglobose, 5–7 × 4–5 mm; funicle ca. 3 mm. Fl. Mar–Aug, fr. Jun–Dec.

Forests, thickets, slopes, valleys, river sides; 200–2000 m. Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan [Vietnam].

Records of *Pittosporum glabratum* from India (e.g., by Rehder and Wilson in Sargent, Pl. Wilson 3: 328. 1916) are based on misidentified plants of *P. podocarpum*.

- 1a. Leaf blade obovate to narrowly so, apex truncate to obtuse 9c. var. *wenxianense*
 1b. Leaf blade oblong, oblanceolate, narrowly lanceolate, or beltlike, apex acute.
 2a. Leaf blade oblong or oblanceolate, 5–15 × 2–5.5 cm 9a. var. *glabratum*
 2b. Leaf blade narrowly lanceolate or beltlike, 6–18 × 1–2.5(–3.2) cm 9b. var. *neriifolium*

9a. *Pittosporum glabratum* var. *glabratum*

光叶海桐(原变种) guang ye hai tong (yuan bian zhong)

Pittosporum fortunei Turczaninow.

Leaf blade oblong or oblanceolate, 5–15 × 2–5.5 cm. Fl. Mar–Aug, fr. Sep–Dec.

Forests, thickets, sunny slopes, river sides; 200–2000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan [Vietnam].

The roots can be used medicinally as an analgesic.

9b. *Pittosporum glabratum* var. *neriifolium* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 3: 328. 1916.

狭叶海桐 xia ye hai tong

Pittosporum cavaleriei H. Léveillé.

Leaf blade narrowly lanceolate or beltlike, 6–18 × 1–2.5(–3.2) cm. Fl. Mar–May, fr. Jun–Nov.

• Forests, thickets, slopes, valleys, stream sides; 600–1700 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan.

The roots can be used medicinally as an analgesic.

9c. *Pittosporum glabratum* var. *wenxianense* (G. H. Wang & Y. S. Lian) Z. Y. Zhang & Turland, *Novon* 12: 152. 2002.

文县海桐 *wen xian hai tong*

Pittosporum wenxianense G. H. Wang & Y. S. Lian, *Acta Phytotax. Sin.* 34: 210. 1996.

Leaf blade obovate to narrowly so, 3.5–7 × 2–3.5 cm, apex truncate to obtuse. Fr. Aug.

- About 1100 m. S Gansu (Wen Xian).

10. *Pittosporum podocarpum* Gagnepain, *Notul. Syst. (Paris)* 8: 211. 1939.

柄果海桐 *bing guo hai tong*

Shrubs ca. 2 m tall. Young branchlets glabrous, sparsely puberulent, or densely brown pubescent; old branchlets lenticellate. Leaves clustered at branchlet apex; petiole 8–15 mm; leaf blade green and shiny adaxially, becoming yellow-green after drying, obovate, oblanceolate, narrowly lanceolate, or beltlike, rarely oblong, 7–15 × 1–4 cm, thinly leathery, glabrous or pubescent abaxially, lateral veins (4–)6–8-paired, convex abaxially, prominent adaxially, reticulate veins indistinct, base cuneate, usually decurrent, margin flat, entire, apex acute or acuminate. Inflorescences in leaf axils at branchlet apex, 1–4-flowered, glabrescent to densely hairy; bracts small, deciduous; pedicels 2–3 mm, glabrous or shortly pilose. Sepals ovate, ca. 3 mm, glabrous or margin ciliate, rarely pilose. Petals 15–17 × 2–3 mm. Stamens 10–14 mm. Pistil ca. 1 cm; ovary long ovoid, densely brown villous; placentas (2 or)3; ovules 8–10; stipe 1–2.5 mm; style 3–4 mm, glabrous. Capsule pear-shaped, ellipsoid, or long ellipsoid, 2–3 cm, dehiscing by (2 or)3 valves; pericarp thinly leathery, rough abaxially, horizontally striate adaxially; stipe 5–8 mm. Seeds 3 or 4 in each valve, pale red after drying, compressed rounded, 6–7 mm; funicle 3–4 mm. Fl. Feb–May, fr. May–Oct.

Forests, thickets, slopes, river sides, shady places; 500–2700 (–3000) m. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, SE Xizang, Yunnan [NE India, Myanmar, N Vietnam].

This species differs from *Pittosporum glabratum* var. *neriifolium* in having a pubescent ovary.

- 1a. Young branchlets glabrous.
 - 2a. Leaf blade obovate or oblanceolate, rarely oblong, 7–13 × 2–4 cm 10a. var. *podocarpum*
 - 2b. Leaf blade narrowly lanceolate or beltlike, 8–15 × 1–2 cm 10c. var. *angustatum*
- 1b. Young branchlets sparsely puberulent or densely brown pubescent.
 - 3a. Young branchlets sparsely puberulent 10b. var. *hejiangense*
 - 3b. Young branchlets densely brown pubescent 10d. var. *molle*

10a. *Pittosporum podocarpum* var. *podocarpum*

柄果海桐(原变种) *bing guo hai tong* (*yuan bian zhong*)

Pittosporum glabratum var. *chinense* Pampanini, pro

parte; *P. glabratum* var. *ciliicalyx* Franchet; *P. monanthum* C. Y. Wu.

Young branchlets glabrous. Leaf blade obovate or oblanceolate, rarely oblong, 7–13 × 2–4 cm. Placentas (2 or)3. Ovary stipe 2–2.5 mm. Fl. Feb–May, fr. May–Oct.

Forests, slopes, river sides, shady places; 500–2700(–3000) m. Fujian, Gansu, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, SE Xizang, Yunnan [NE India, Myanmar, N Vietnam].

The roots, leaf blades, and capsules can be used medicinally.

10b. *Pittosporum podocarpum* var. *hejiangense* (H. Y. Su) Z. Y. Zhang & Turland, *Novon* 12: 153. 2002.

合江海桐 *he jiang hai tong*

Pittosporum hejiangense H. Y. Su, *Bull. Bot. Res.*, Harbin 4(4): 201. 1984.

Young branchlets sparsely puberulent. Leaf blade abaxially pubescent. Ovary stipe 1–2 mm. Capsule ellipsoid to long ellipsoid, densely brown puberulent. Fr. Aug.

- Forests on slopes; ca. 800 m. SE Sichuan (Hejiang Xian).

10c. *Pittosporum podocarpum* var. *angustatum* Gowda, *J. Arnold Arbor.* 32: 295. 1951.

线叶柄果海桐 *xian ye bing guo hai tong*

Young branchlets glabrous. Leaf blade narrowly lanceolate or beltlike, 8–5 × 1–2 cm. Placentas 3. Fl. Mar–May, fr. Jun–Oct.

Forests, thickets, valleys; 1000–2500 m. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, W Hunan, Shaanxi, Sichuan, Yunnan [NE India, N Myanmar].

10d. *Pittosporum podocarpum* var. *molle* W. D. Han in W. D. Han & Z. D. Zhu, *Bull. Nanjing Bot. Gard.* 1988–1989: 123. 1990.

毛花柄果海桐 *mao hua bing guo hai tong*

Young branchlets densely brown pubescent. Leaf blade narrowly lanceolate or beltlike. Inflorescences densely brown pubescent.

- Thickets; ca. 1000 m. S Fujian (Hua'an Xian), S Guizhou (Libo Xian).

11. *Pittosporum trigonocarpum* H. Léveillé, *Repert. Spec. Nov. Regni Veg.* 11: 492. 1913.

棱果海桐 *ling guo hai tong*

Shrubs. Young branchlets glabrous except young buds pubescent; old branchlets gray, lenticellate. Leaves clustered at branchlet apex, biennial; petiole ca. 1 cm; leaf blade green and shiny adaxially, pale green abaxially, obovate or oblong-lanceolate, 7–14 × 2.5–4 cm, leathery, glabrous, lateral veins ca. 6-paired, indistinct on both surfaces, base narrowly cuneate, margin flat, apex acute. Inflorescences 3–5, terminal, corymbose, many flowered; pedicels slender, 1–2.5 cm, glabrous. Sepals ovate, ca. 2 mm, margin ciliate. Petals free or partly connate, ca. 1.2 cm. Stamens ca. 8 mm. Pistil equaling stamens; ovary pu-

bescent; placentas 3, parietal; ovules 9–15. Capsule usually solitary, ellipsoid, becoming triangular or globose after drying, 2.5–2.7 × 1–1.2 cm, pubescent; pedicel ca. 1 cm; stipe less than 2 mm; persistent style ca. 3 mm. Funicle compressed, ca. 2 mm. Fl. Mar–May, fr. Jun–Oct.

• Forests, forest margins, thickets, slopes, valleys, river sides; 400–2000 m. NE Guangxi (Lingui Xian), S Guizhou, Hunan, Sichuan.

The roots and bark can be used medicinally for the treatment of asthma.

12. *Pittosporum kweichowense* Gowda, J. Arnold Arbor. 32: 296. 1951.

贵州海桐 *gui zhou hai tong*

Shrubs ca. 1.5 m tall. Young branchlets puberulous, soon glabrate; old branchlets gray-white, lenticels suborbicular. Leaves scattered on young shoots, annual or biennial; petiole ca. 5 mm; leaf blade yellow-green abaxially, dark green and shiny adaxially, narrowly oblong or lanceolate, 3–8 × 0.5–2.2 cm, leathery, glabrous abaxially, lateral veins 5–6-paired, indistinct on both surfaces, base cuneate, margin flat or occasionally rugose, apex subacute, rarely acuminate. Inflorescences axillary, 1- or 2-flowered; bracts ovate, ca. 1.5 mm, margin ciliate; pedicels 4–7 mm, brown pubescent. Sepals triangular-ovate, 1–1.5 mm, margin ciliate, apex obtuse. Petals free, yellow, ca. 7 mm. Filaments 4–5 mm; anthers ca. 1 mm. Ovary brown pubescent; stipe short; placentas 3, parietal; ovules 2 or 3 per placenta. Capsule solitary, terminal, yellow, obovoid or cylindrical, rarely oblong, 12–15(–20) × 6–8 mm, pubescent, dehiscent by 3 valves; placentas in middle part of valves; pericarp thin, long elliptic, not prominently horizontally striate; stipe slightly stout, 1–1.5 cm. Seeds 6–8, red, globose, 5–6 mm; funicle compressed, 2–3 mm. Fl. Feb–Apr, fr. May–Oct.

• Forests, thickets, limestone areas, slopes, river sides; 500–2000 m. SW Guizhou, W Hunan, SE Yunnan.

1a. Capsule obovoid 12c. var. *buxifolium*

1b. Capsule cylindrical.

2a. Leaf blade narrowly oblong,
1–2.2 cm wide 12a. var. *kweichowense*

2b. Leaf blade lanceolate,
0.5–0.8 cm wide 12b. var. *podocarpifolium*

12a. *Pittosporum kweichowense* var. *kweichowense*

贵州海桐(原变种) *gui zhou hai tong (yuan bian zhong)*

Pittosporum densinervatum H. T. Chang & S. Z. Yan; *P. longicarpum* S. K. Wu ex W. Q. Yin.

Leaf blade narrowly oblong, 3–8 × 1–2.2 cm. Sepals 1–1.5 mm. Capsule cylindrical.

• Forests, thickets, river sides; 500–2000 m. SW Guizhou (Anlong Xian), W Hunan (Zhijiang Xian), SE Yunnan (Wenshan Xian).

12b. *Pittosporum kweichowense* var. *podocarpifolium* (C. Y. Wu) Z. Y. Zhang & Turland, Novon 12: 153. 2002.

罗汉松叶海桐 *luo han song ye hai tong*

Pittosporum podocarpifolium C. Y. Wu in C. Y. Wu & H. W. Li, Fl. Yunnan. 3: 318. 1983.

Leaf blade lanceolate, 3–5 × 0.5–0.8 cm. Sepals 1–2 mm.

• Limestone areas, bases of slopes; ca. 800 m. SE Yunnan (Funing Xian).

12c. *Pittosporum kweichowense* var. *buxifolium* (K. M. Feng ex W. Q. Yin) Z. Y. Zhang & Turland, Novon 12: 153. 2002.

黄杨叶海桐 *huang yang ye hai tong*

Pittosporum buxifolium K. M. Feng ex W. Q. Yin in C. Y. Wu & H. W. Li, Fl. Yunnan. 3: 318. 1983.

Capsule obovoid.

• Limestone areas, slopes; 1500–1700 m. SE Yunnan (Guangnan Xian, Xichou Xian).

13. *Pittosporum parvicapsulare* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 87. 1978.

小果海桐 *xiao guo hai tong*

Shrubs. Young branchlets dark brown after drying, slender, glabrous, sparsely gray-lenticellate. Leaves clustered at branchlet apex, biennial; petiole 5–7 mm; leaf blade pale green abaxially, dark green adaxially, brownish after drying, oblong or oblong-ovate, 3.5–6 × 1.3–2.3 cm, leathery, glabrous, lateral veins 7–8-paired, convex abaxially, together with reticulate veins slightly concave adaxially, base cuneate, margin flat, apex acuminate. Flowers not seen. Inflorescence terminal, umbellate, 2–5-capsuled. Capsule ellipsoid, 6–8 × 4–5 mm, brown pubescent, dehiscent by (2 or)3 valves; pericarp less than 1 mm thick, not prominently horizontally striate adaxially; pedicel ca. 1 cm, glabrous; stipe indistinct; persistent style 2–2.5 mm. Seeds 9–12, 2–2.5 mm; funicle very short. Fl. Mar–May, fr. Jun–Oct.

• Forests, thickets. Guangxi, SE Guizhou (Liping Xian), Hunan, Jiangxi, Zhejiang.

This species has the smallest capsules among the Chinese species that have 3-valved capsules.

14. *Pittosporum illicioides* Makino, Bot. Mag. (Tokyo) 14: 32. 1900.

海金子 *hai jin zi*

Pittosporum illicioides var. *angustifolium* Huang ex S. Y. Lu; *P. illicioides* var. *oligocarpum* (Hayata) Kitamura; *P. illicioides* var. *stenophyllum* P. L. Chiu ex H. T. Chang & S. Z. Yan; *P. kobuskianum* Gowda; *P. oligocarpum* Hayata; *P. oligospermum* Hayata; *P. sahnianum* Gowda.

Shrubs ca. 5 m tall. Young branchlets glabrous; old branchlets lenticellate. Leaves 3–6-clustered at branchlet apex, appearing pseudovercillate; petiole 7–15 mm; leaf blade pale green abaxially, dark green adaxially, shiny after drying, obovate-lanceolate, oblanceolate, or narrowly lanceolate, 5–18 × 1.7–4.5 cm, thinly leathery, glabrous, lateral veins 6–8-paired, slightly convex abaxially, inconspicuous adaxially, reticulate veins indistinct abaxially, base narrowly cuneate, usually decurrent, margin flat or slightly rugose, apex obtuse or acumi-

nate. Inflorescences terminal, umbellate, 2–10-flowered; bracts small, deciduous; pedicels usually curved, slender, 1.5–3.5 cm, glabrous. Sepals ovate, ca. 2 mm, glabrous, apex obtuse. Petals 8–9 mm. Stamens ca. 6 mm. Ovary long ovoid, puberulous; stipe short; placentas 3, parietal; ovules 5–8 per placenta. Capsule subglobose, ± triangular or with 3 longitudinal folds, 9–12 mm in diam., dehiscent by 3 valves; placentas in middle part of valves; pericarp thinly woody; pedicel usually curved, slender, 2–4 cm; stipe ca. 1.5 mm. Seeds 8–17, ca. 3 mm; funicle compressed, ca. 1.5 mm. Fl. Mar–May, fr. Jun–Nov.

Forests, thickets, valleys, stream sides; 100–2200 m. Anhui, Fujian, N Guangdong, Guangxi, Guizhou, Hubei, Hunan, S Jiangsu (Yixing Xian), Jiangxi, Sichuan, Taiwan, Zhejiang [Japan].

Pittosporum illicioides var. *angustifolium* (described from Taiwan) represents the extreme of a continuous range of variation, with leaf blades linear, 5–15 × 0.6–2 cm.

Fats and oils can be extracted from the seeds for making soaps, and fibers from the stems can be made into paper.

15. *Pittosporum elevaticostatum* H. T. Chang & S. Z. Yan, *Acta Phytotax. Sin.* 16(4): 87. 1978.

突肋海桐 tu lei hai tong

Shrubs ca. 2 m tall. Young branchlets glabrous; old branchlets brown, lenticels small. Leaves clustered at branchlet apex, appearing opposite or verticillate; petiole 1 cm; leaf blade slightly shiny adaxially, narrowly oblanceolate, 6–13 × 2–3.5 cm, leathery, glabrous abaxially, midvein convex adaxially, lateral veins 8–10-paired, convex abaxially, slightly visible adaxially, reticulate veins concave and indistinct abaxially, base narrowly cuneate, apex acute. Inflorescences terminal or nearly so, umbellate; pedicels 1–1.7 cm, glabrous. Sepals ovate, 2.5–3 mm, glabrous, slightly connate at base, margin ciliate, apex obtuse. Petals ca. 7 mm. Stamens ca. 5 mm; filament 3–4 mm; anther ca. 1 mm. Pistil equaling stamens; ovary pubescent; placentas 2(or 3), parietal; ovules 8–15; style ca. 2.5 mm. Capsules 1 or 2, subglobose, 1–1.2 cm in diam., usually dehiscent by 2(or 3) valves; pericarp ca. 1 mm thick; pedicel 1–2.5 cm; stipe ca. 2 mm; persistent style ca. 2.5 mm. Seeds 10–15, red, 3–4 mm; funicle ca. 2 mm. Fl. Mar–May, fr. Jun–Oct.

• Forests, forest margins, thickets, slopes, valleys, stream sides; 800–1300 m. N Guizhou (Yinjiang Xian, Zunyi Shi), W Hubei, E Sichuan.

16. *Pittosporum parvilimbium* H. T. Chang & S. Z. Yan, *Acta Phytotax. Sin.* 16(4): 88. 1978.

小叶海桐 xiao ye hai tong

Shrubs. Young branchlets gray-brown pubescent, gray-white lenticellate. Leaves usually ca. 10-clustered at branchlet apex, biennial; petiole 3–5 mm, pubescent at first, soon glabrate; leaf blade green and shiny adaxially, oblanceolate, 3–5 × 1–1.7 cm, thinly leathery, densely pubescent when young, later glabrate, lateral veins 6-paired, indistinct on both surfaces, reticulate veins slightly prominent adaxially, base cuneate, apex obtuse or subacute. Inflorescences 1–5, subterminal in leaf axils near branchlet apex, corymbose, 1.5–2 cm, pubescent, 3–5-flowered; peduncle and pedicels pubescent; bracts linear-lan-

ceolate, 4–6 mm, pubescent; bracteoles linear, ca. 3 mm. Sepals slightly connate at base, narrowly lanceolate, 3–4 mm, pubescent. Petals free, ca. 8 mm. Stamens 6–7 mm. Pistil equaling stamens; ovary brown pubescent; ovary wall thin; placentas 2, parietal; ovules ca. 16; stipe short; style ca. 4 mm, glabrous. Capsule not seen. Fl. Mar–May, fr. Jun–Oct.

• Forests, thickets. Guangxi (Liuzhou Shi).

17. *Pittosporum reflexisepalum* C. Y. Wu in C. Y. Wu & H. W. Li, *Fl. Yunnan.* 3: 326. 1983.

折萼海桐 zhe e hai tong

Shrubs small, 60–130 cm tall. Young branchlets pubescent. Petiole 3–7 mm; leaf blade ovate-lanceolate, 3–7 × 1.5–2.5 cm, lateral veins indistinct, base cuneate, margin entire, slightly involute, apex abruptly acuminate. Inflorescence terminal, subumbellate, 5–9-flowered, with leaflike bracts at base; pedicels slender, 10–15 mm, pubescent. Sepals usually reflexed or spreading, ca. 2 mm, pubescent. Petals connate below middle, pale yellow, ca. 1 cm. Capsule not seen. Fl. May–Jun.

• Limestone slopes; 1300–1600 m. SE Yunnan (Guangnan Xian).

This species is close to *Pittosporum parvilimbium*, but differs in having sepals reflexed and petals united below the middle.

18. *Pittosporum henryi* Gowda, *J. Arnold Arbor.* 32: 319. 1951.

小柄果海桐 xiao bing guo hai tong

Shrubs ca. 1.5 m tall. Young branchlets gray, slender, glabrous; old branchlets occasionally sparsely lenticellate. Leaves 3–5-clustered at branchlet apex, appearing opposite; petiole 6–10 mm; leaf blade pale green abaxially, green adaxially, slightly shiny after drying, narrowly lanceolate or narrowly oblong, slightly curved, 6–12 × 1.5–2.5 cm, leathery, glabrous, lateral veins 5–7-paired, slightly convex abaxially, indistinct adaxially, reticulate veins indistinct on both surfaces, margin flat. Flowers not seen. Infructescences terminal, umbellate, 2–6-capsuled; bracts numerous, scalelike, broadly ovate, ca. 2 mm, membranous, glabrous, margin ciliate. Capsule cylindrical or ellipsoid, 1.3–1.5 × 0.7–0.8 cm; pericarp elliptic, ca. 1.5 × 1.1 cm, less than 0.4 mm thick, thinly leathery, prominently horizontally striate adaxially; placentas in middle part of valves; pedicel ca. 1 cm, glabrous; stipe ca. 2 mm; persistent style ca. 2 mm, 2-lobed. Seeds 8–12 in total, ca. 4 mm; funicle ca. 2 mm. Fl. Mar–May, fr. Jun–Oct.

• Forests, forest margins, thickets, valleys; 800–1500 m. Chongqing (Nanchuan Xian), Guizhou, SE Sichuan (Xingwen Xian).

19. *Pittosporum merrillianum* Gowda, *J. Arnold Arbor.* 32: 319. 1951.

滇越海桐 dian yue hai tong

Shrubs. Branches verticillate or dichotomous; bark brown or grayish, speckled with large lenticels. Leaves loosely crowded toward branchlet apex; petiole usually ca. 10 mm; leaf blade shining, broadly elliptic or ovate-elliptic, 6–10 × 2.5–4 cm, firm and thickly leathery, glabrous, margin entire, slightly recurved, apex subacute. Flowers not seen. Infructescences terminal,

shortly thyrsoid, subtended loosely at the base by 3 or 4 leaves with subglobose dormant buds in axils; peduncle short and thick, 5–6 mm; pedicels short and thick, 4–5 mm. Capsule reddish brown, ellipsoid, slightly compressed, 2-valved, glabrous; pericarp reflexed after dehiscing, broadly elliptic, ca. 12 × 10 mm, ca. 1 mm thick, woody, smooth adaxially, not striate either side of placenta; placenta bulging into a ridge in middle of valves and there bearing 2 brown, knoblike funicles. Seeds 3 or 4 per capsule, shining pinkish black, 5–6 mm, smooth, covered with a light brown, thin, dry ariloid coat.

Sparse forests; 1100–1900 m. SE Yunnan (Funing Xian, Pingbian Xian, Wenshan Xian) [Vietnam].

Described from Vietnam, this species was first reported from China by Wu (Index Fl. Yunnan. 1: 326. 1984). Gowda also described var. *poilanei* Gowda (J. Arnold Arbor. 32: 320. 1951) from Vietnam; it was distinguished from var. *merrillianum* only by having the leaf blade larger and oblong or elliptic-oblong.

20. *Pittosporum perglabratum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 89. 1978.

全秃海桐 quan tu hai tong

Shrubs or small trees, 3–4 m tall. Young branchlets glabrous; old branchlets brown, lenticellate. Leaves clustered at branchlet apex; petiole 4–8 mm; leaf blade dark yellow-green after drying abaxially, green and shiny adaxially, oblong or oblong-ob lanceolate, 5–7 × 2–2.5 cm, leathery, glabrous, lateral veins 5–6-paired, slightly convex on both surfaces, reticulate veins indistinct, base cuneate, margin dentate distally, apex acute. Inflorescences terminal, umbellate, ca. 10-flowered; bracts ovate, ca. 1.5 mm; pedicels 1–1.5 cm. Sepals ovate, ca. 2 mm, glabrous, apex obtuse. Petals free, 8–9 mm. Stamens 6–7 mm. Pistil equaling stamens; carpels 2; placentas parietal, 2; ovules ca. 12; stipe short, glabrous; style slightly longer than ovary. Capsule long ellipsoid, 10–12 × 6–7 mm, glabrous, dehiscing by 2 valves; pericarp ca. 1 mm thick, horizontally striate adaxially; placentas longitudinal, long; stipe ca. 2 mm; persistent style 2–3 mm. Seeds ca. 8, ca. 3.5 mm; funicle very short. Fl. Mar–May, fr. Jun–Oct.

• Forests, thickets, slopes, valleys, stream sides; 800–1900 m. E Guizhou, Sichuan (Guan Xian).

21. *Pittosporum lenticellatum* Chun ex H. Peng & Y. F. Deng, Novon 11: 440. 2001.

卵果海桐 luan guo hai tong

Pittosporum ovoideum H. T. Chang & S. Z. Yan (1974), not Gowda (1951).

Shrubs ca. 3 m tall. Young branchlets stout, pubescent; old branchlets lenticellate. Leaves clustered at branchlet apex, biennial; petiole compressed, 1–1.5 cm, narrowly winged distally; leaf blade pale green abaxially, dark green and shiny adaxially, obovate-lanceolate, 7–10 × 2–3(–4.5) cm, thickly leathery, pubescent on both surfaces at first, later glabrate, lateral veins 8–10-paired, convex abaxially, visible adaxially, reticulate veins prominent, base cuneate, decurrent, margin flat, apex acuminate, sometimes obtuse or rounded. Inflorescences in leaf axils at branchlet apex, umbellate; bracts linear, ca. 8 mm; pedicels

stout, 1–1.5 cm, pubescent. Sepals lanceolate, ca. 5 × 1–1.5 mm, sparsely pubescent. Petals free, 9–10 × ca. 2 mm. Stamens ca. 6 mm. Ovary pubescent; ovary wall ca. 0.5 mm thick; placentas 2, parietal; ovules 11 or 12 per placenta. Style ca. 4 mm. Capsule strongly compressed globose, 1.3–1.6 cm in diam., dehiscing by 2 valves; pericarp compressed adaxially, 2–3 mm thick, horizontally convex striate. Seeds 16–24, ca. 3 mm; funicle very short. Fl. Mar–May, fr. Jun–Oct.

• Forests, thickets, limestone mountains; 200–1100 m. N Guangxi, SE Guizhou.

The name *Pittosporum ovoideum* has been applied in the sense of *P. lenticellatum*, but its holotype in fact belongs to *P. pauciflorum*. Peng and Deng (Novon 11: 440–441. 2001) discussed the situation in detail.

22. *Pittosporum planilobum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 89. 1978.

扁片海桐 bian pian hai tong

Trees small. Bark black-brown. Young branchlets dark brown after drying, pubescent, glabrate; old branchlets lenticellate. Leaves 4–7-clustered at branchlet apex, biennial; petiole 5–10 mm; leaf blade green and shiny adaxially, oblanceolate, 4–6 × 1–2 cm, leathery, pubescent abaxially at first, soon glabrate, lateral veins ca. 6-paired, slightly convex on both surfaces, reticulate veins prominent abaxially, base narrowly cuneate, margin flat, apex acute. Inflorescences terminal, umbellate, 8–17-flowered; bracts narrowly lanceolate, 9–10 mm, pubescent; bracteoles linear, 7–8 mm; pedicels 1–1.5 cm, pubescent. Sepals linear-lanceolate, 5–7 mm, pubescent. Petals subequaling sepals. Stamens 4–5 mm. Pistil equaling stamens; ovary long ovoid, ca. 2 mm, pubescent; ovary wall ca. 0.5 mm thick; placentas 2, parietal; ovules ca. 12; stipe very short; style ca. 2 mm, glabrous. Capsule compressed globose, 10–12 mm in diam., dehiscing by 2 valves; pericarp pale yellow and compressed adaxially, 1–1.5 mm thick, woody, horizontally ca. 10-striate. Seeds 10–12, ca. 3.5 mm. Fl. Feb–May, fr. May–Oct.

• Forests, slopes, limestone areas; 200–1300 m. NE Guangxi (Guilin Shi, Lingui Xian).

23. *Pittosporum tenuivalvatum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 87. 1978.

薄片海桐 bo pian hai tong

Shrubs or small trees. Young branchlets glabrous; old branchlets gray, sparsely lenticellate. Petiole 1–1.5 cm; leaf blade pale green abaxially, dark green adaxially, oblong or oblanceolate, 7–12 × 2.5–4.5 cm, membranous, glabrous abaxially, lateral veins 7–9-paired, slightly visible abaxially, indistinct adaxially, reticulate veins indistinct, base cuneate, margin slightly rugose, apex acute or acuminate. Inflorescences terminal, umbellate, 2–8-flowered; peduncle short; pedicels slender, ca. 1 cm, glabrous. Sepals triangular-ovate, ca. 2 mm, glabrous, margin ciliate. Petals free, ca. 10 × 1–1.5 mm. Stamens 7–8 mm. Pistil ca. 6 mm; ovary pubescent; placentas 2, parietal; ovules 4–22; stipe short; style ca. 2.5 mm, glabrous. Infructescence 1- or 2-capsuled; pedicels slender, 1.5–2 cm. Capsule obovoid, ca. 2 cm, dehiscing by 2 valves; pericarp obovate, 2–2.5 × 1–1.6 cm, ca. 0.4 mm thick; placentas at base to middle of

valves; stipe 3–4 mm. Seeds 8–12, subglobose, 6–7 mm; funicle slender, ca. 2.5 mm. Fl. Mar–May, fr. Jun–Oct.

• Forests, thickets; ca. 1500 m. NW Guangxi (Donglan Xian, Lingyun Xian).

24. *Pittosporum balansae* Aug. de Candolle, Bull. Herb. Boissier, sér. 2, 4: 1071. 1904.

聚花海桐 ju hua hai tong

Shrubs. Young branchlets brown pubescent, soon glabrate. Leaves clustered at branchlet apex, appearing opposite or verticillate, biennial; petiole 5–15 mm, pubescent at first, later glabrate; leaf blade green and shiny adaxially, oblong, lanceolate, or narrowly lanceolate, 5–16 × 1–5 cm, thinly leathery, pubescent abaxially at first, soon glabrate, lateral veins 6–7-paired, slightly convex abaxially, indistinct adaxially, reticulate veins indistinct, base cuneate, margin flat, apex acute to long acuminate. Inflorescences 1 or 2 in leaf axils at branchlet apex, umbellate, 3–9-flowered; peduncle 1–1.5 cm or sometimes absent, brown pubescent; bracts narrowly lanceolate, shorter than sepals; pedicels 2–5 mm, pubescent. Sepals lanceolate, 5–6 mm, shortly pubescent. Petals white or pale yellow, ca. 8 mm. Stamens ca. 6 mm. Ovary pubescent; carpels 2; placentas 2, parietal; ovules 4 per placenta; stipe 5–7 mm, pubescent. Capsule compressed ellipsoid, 1.6–2.5 cm, dehiscent by 2 valves; pericarp thin; placentas at base to middle of valves. Seeds ca. 8 per capsule, darkish red, irregularly oblong or subglobose, 4–6 × 5–7 mm; funicle ca. 1.5 mm. Fl. Mar–May, fr. Jun–Dec.

Forests, thickets, river banks, stream sides; 1500–1800 m. W Guangdong, SW Guangxi, Hainan, W Yunnan [N Myanmar, Vietnam].

- 1a. Leaf blade oblong, 2–5 cm wide 24a. var. *balansae*
 1b. Leaf blade lanceolate or narrowly so,
 1–3.5 cm wide.
 2a. Leaf blade lanceolate, 1–3.5 cm
 wide, apex long acuminate
 24c. var. *chatterjeeanum*
 2b. Leaf blade narrowly lanceo-
 late, 1–1.5(–2) cm wide,
 apex acute to acuminate 24b. var. *angustifolium*

24a. *Pittosporum balansae* var. *balansae*

聚花海桐(原变种) ju hua hai tong (yuan bian zhong)

Pittosporum confertum Merrill & Chun.

Leaf blade oblong, 6–16 × 2–5 cm, apex acute. Fl. Mar–May, fr. Aug–Dec.

Dense forests, stream sides. W Guangdong, SW Guangxi, Hainan [Vietnam].

24b. *Pittosporum balansae* var. *angustifolium* Gagnepain in Lecomte, Fl. Indo-Chine, Suppl. 1: 215. 1939.

窄叶聚花海桐 zhai ye ju hua hai tong

Pittosporum baileyianum Gowda.

Leaf blade narrowly lanceolate, 7–11 × 1–1.5(–2) cm, apex acute to acuminate. Fl. Mar–May, fr. Jun–Dec.

Forests, thickets. W Guangdong, SW Guangxi, Hainan [Vietnam].

24c. *Pittosporum balansae* var. *chatterjeeanum* (Gowda) Z. Y. Zhang & Turland, Novon 12: 152. 2002.

披针叶聚花海桐 pi zhen ye ju hua hai tong

Pittosporum chatterjeeanum Gowda, J. Arnold Arbor. 32: 318. 1951.

Leaf blade lanceolate, 5–12 × 1–3.5 cm, apex long acuminate.

Thickets along river banks; 1500–1800 m. W Yunnan (Lushui Xian) [N Myanmar].

The holotype was cited from Myanmar, although the locality given, Gangfang (as “Kang-fang”), is now in adjacent Yunnan; the two paratypes were cited from a locality still in Myanmar.

25. *Pittosporum qinlingense* Y. Ren & X. Liu, Acta Phytotax. Sin. 40: 170. 2002.

秦岭海桐 qin ling hai tong

Shrubs ca. 2 m tall. Young branchlets glabrous; old branchlets lenticellate. Leaves clustered at branchlet apex; petiole 6–11 mm; leaf blade yellow-green abaxially, turning yellow-brown after drying, green adaxially, narrowly lanceolate, falcate, 10–23 × 0.7–1.8(–2.2) cm, thinly leathery, lateral veins 7–18-paired, slightly convex abaxially, slightly indistinct adaxially, sometimes very indistinct on both surfaces, base narrowly cuneate, margin slightly undulate, apex acuminate. Inflorescences in leaf axils, umbellate, 3–5-flowered; peduncle very short; scalelike leaves present, ovate, abaxially and at margin densely brown pubescent; pedicels slender, unequal, 6–8 mm; bracts ovate-lanceolate, ca. 2 mm, deciduous. Flowers ca. 3.5 mm in diam. Sepals ovate, ca. 3 mm, base slightly connate, margin shortly ciliate. Petals connate proximally, yellow, ca. 12 mm, free part ovate-orbicular, margin irregularly and shortly ciliate. Stamens unequal; filaments filiform, 6–8 mm; anthers ca. 2 mm. Ovary ovoid, ca. 4 mm; carpels 2; placentas 2; ovules 6 per placenta; styles 4–5 mm; stigma inflated. Capsule ovoid, ca. 3 cm, glabrous, dehiscent by 2 valves; pericarp woody, less than 1 mm thick. Seeds 10–12 per capsule, red, turning black-brown after drying, ca. 3.5 mm; funicle ca. 4 mm. Fl. Apr–Jun, fr. Jun–Aug.

• Forests, thickets; 1000–1300 m. S Gansu (Kang Xian), S Shaanxi (Foping Xian).

26. *Pittosporum saxicola* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 3: 329. 1916.

石生海桐 shi sheng hai tong

Shrubs to 2 m tall. Old branchlets gray-brown, slender; young branchlets puberulous. Leaves clustered at branchlet apex, biennial; petiole 1–5 mm; leaf blade shiny adaxially, narrowly oblong, 2–3.5 × ca. 1 cm, leathery, glabrous abaxially, lateral veins 4–8-paired, convex abaxially, concave adaxially, base cuneate, margin reflexed, slightly sinuate, apex obtuse. Inflorescences terminal, solitary flowers or umbellate; bracts lanceolate, 1–2 mm, membranous, deciduous; pedicels 3–8 mm, puberulous; flowers fragrant. Sepals free, ovate, ca. 2 mm, margin ciliate, apex obtuse. Petals connate proximally, together tubular or campanulate, free and flat distally, yellow, 7–8 mm.

Stamens 5–6 mm; anther rhombic. Pistil shorter than stamens; ovary glabrous or puberulous; placentas 2, parietal; style slightly stout. Capsule compressed globose, 6–8 mm in diam., verrucate, dehiscent by 2 valves; style persistent. Seeds ca. 4. Fl. Mar–May, fr. Jun–Oct.

- Forests, thickets, slopes. NC Sichuan (Li Xian, Mao Xian).

This species is perhaps a dry-habitat variant of *Pittosporum heterophyllum*.

27. *Pittosporum angustilimbum* C. Y. Wu in C. Y. Wu & H. W. Li, Fl. Yunnan. 3: 328. 1983.

窄叶海桐 zhai ye hai tong

Shrubs to 1 m tall. Petiole 2–3 mm; leaf blade linear or linear-lanceolate, 2.5–6 × 0.3–0.8 cm, thinly leathery, lateral veins indistinct adaxially, base narrowly cuneate, margin entire, slightly revolute, apex acuminate. Inflorescence terminal, umbellate, 1–3-flowered; pedicels 6–11 mm, glabrous. Calyx shallowly cupular; sepals triangular, unequal, 1–2 mm. Petals free, pale yellow, 5–7 mm. Ovary glabrate. Capsule not seen. Fl. May.

- Thickets on slopes; ca. 1800 m. NW Yunnan (Weixi Xian).

This species is close to *Pittosporum heterophyllum* and *P. saxicola*, but differs in having free petals and a glabrate ovary.

28. *Pittosporum tonkinense* Gagnepain, Bull. Soc. Bot. France 55: 547. 1908.

四子海桐 si zi hai tong

Shrubs ca. 5 m tall. Terminal buds and young branchlets brown pubescent; old branchlets glabrous, sparsely and inconspicuously lenticellate. Leaves clustered at branchlet apex; petiole 5–10 cm; leaf blade shiny adaxially, dark green after drying, narrowly oblong, 6–9 × 2–3.5 cm, hard leathery, glabrous abaxially, lateral veins ca. 5-paired, visible abaxially, indistinct adaxially, reticulate veins indistinct on both surfaces, base cuneate, apex acute. Inflorescences terminal, umbellate or racemose, ca. 2 cm, brown pubescent; peduncle very short; bracts deciduous; bracteoles lanceolate, ca. 1 mm, pubescent; pedicels 5–8 mm, pubescent. Sepals ovate, ca. 2 mm, apex obtuse. Petals 6–7 mm. Stamens ca. 5 mm. Ovary pubescent; placentas in middle part of valves; ovules ca. 4; stipe very short. Style pubescent proximally. Capsule globose, 6–8 mm in diam., glabrous, dehiscent by 2 valves; pericarp thinly woody, horizontally striate adaxially. Seeds ca. 4, compressed globose, ca. 5 mm; funicle very short. Fl. Jan–May, fr. Jan–Oct.

Forests, slopes, limestone areas, roadsides; 600–1800 m. Guangxi, Guizhou, SE Yunnan [Vietnam].

This species is the only one in China with an umbellate-racemose inflorescence. Gowda (J. Arnold Arbor. 32: 337. 1951) included *Pittosporum tonkinense* in the synonymy of *P. tetraspermum* Wight & Arnott, which, in the strict sense, is distributed in India. *Pittosporum calcicola* C. Y. Wu (in C. Y. Wu & H. W. Li, Fl. Yunnan. 3: 326. 1983) was described from Xichou Xian, SE Yunnan, and was said to differ from *P. tonkinense* in several characters, but these fall within the range of variation of *P. tonkinense*. The name is anyway invalid under Art. 8.1 and 37 of the St. Louis Code because two type specimens were indicated.

29. *Pittosporum truncatum* Pritzl in Diels, Bot. Jahrb. Syst. 29: 378. 1900.

崖花子 ya hua zi

Shrubs many branched, 2–3 m tall. Young branchlets gray pubescent, soon glabrate. Leaves clustered at branchlet apex; petiole 5–8 mm; leaf blade dark green, shiny adaxially, obovate or rhombic, 5–8 × 2.5–3.5 cm, hard leathery, white pubescent abaxially at first, soon glabrate, lateral veins 7–8-paired, slightly convex abaxially, prominent adaxially, reticulate veins visible abaxially, indistinct adaxially, apex acute. Inflorescences in leaf axils at branchlet apex, solitary flowers or umbellate; pedicels slender, 1.5–2 cm, glabrous or sparsely white tomentose. Sepals ovate, ca. 2 mm, glabrous, margin ciliate. Petals oblanceolate, ca. 8 mm. Stamens ca. 6 mm. Ovary ovoid, brown pubescent; placentas 2, parietal; ovules 16–18. Capsule shortly ellipsoid, 9–11 × 7–8 mm, dehiscent by 2 valves; pericarp thin, horizontally small striate adaxially. Seeds 16–18; funicle slender, compressed, ca. 1.5 mm. Fl. Mar–May, fr. Jun–Oct.

- Forests, thickets, valleys, stream sides; 300–2600 m. Gansu, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, NE Yunnan (Yongshan Xian).

30. *Pittosporum fulvipilosum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 88. 1978.

褐毛海桐 he mao hai tong

Shrubs or small trees ca. 5 m tall. Young branchlets brown pubescent; old branchlets dark brown, glabrous, sparsely lenticellate. Leaves clustered at branchlet apex, annual or biennial; petiole 1–1.5 cm, pubescent at first, soon glabrate; leaf blade yellow-brown abaxially after drying, dark green and shiny adaxially, oblong, 6–9 × 2.5–3.5 cm, leathery, pubescent on both surfaces when young, soon glabrate, lateral veins 10–12-paired, slightly convex abaxially, slightly visible adaxially, reticulate veins prominent abaxially, indistinct adaxially, base cuneate, decurrent, margin slightly rugose, apex acute. Inflorescences terminal, umbellate, numerous flowered; bracts linear, 2–3 mm; pedicels 1–1.5 cm, brown pubescent. Sepals free, ovate-lanceolate, ca. 2.5 mm, pubescent, margin ciliate. Petals 7–8 mm. Stamens 4–5 mm. Ovary ovoid, brown pubescent; ovary wall ca. 0.4 mm thick; placentas 2, parietal; ovules 8–12. Style 1–2 mm. Capsule globose, slightly compressed, ca. 1 cm in diam., dehiscent by 2 valves; pericarp woody, 0.7–1 mm thick, horizontally striate adaxially; placentas slightly exserted in middle part of valves; pedicel 1–2 cm. Seeds 8–10; funicle very short. Fl. Feb–Apr, fr. May–Nov.

- Forests, thickets, limestone and sandstone areas. N Guangdong.

31. *Pittosporum pulchrum* Gagnepain, Bull. Soc. Bot. France 55: 546. 1908.

秀丽海桐 xiu li hai tong

Shrubs ca. 3 m tall. Young branchlets black after drying, glabrous; old branchlets gray-brown, sparsely lenticellate. Leaves usually ca. 20, clustered at branchlet apex, biennial; petiole 5–8 mm; leaf blade pale green abaxially, green and shiny adaxially, yellow-green after drying, obovate or oblanceolate, 3–6 × 1.2–2 cm, thickly leathery, glabrous abaxially,

lateral veins 6–8-paired, slightly convex abaxially, concave adaxially after drying, reticulate veins indistinct abaxially, slightly concave adaxially, base cuneate, decurrent, margin reflexed, apex rounded, sometimes emarginate. Inflorescences terminal, umbellate, 3–5 cm, pubescent; bracts 2–5 mm; pedicels ca. 1.5 cm. Sepals ovate, pubescent. Petals white, narrowly oblong. Stamens shorter than petals. Ovary pubescent; placentas 2, parietal; ovules 14–16. Style 2-lobed, ca. 1.5 mm. Capsule globose, 7–8 mm, dehiscent by 2 valves; pericarp thinly woody, ca. 0.8 mm thick, pubescent abaxially, horizontally striate adaxially; placentas at base to middle part of valves; persistent style ca. 2 mm; stigmas enlarged. Seeds ca. 15, irregularly angular, 2–2.5 mm; funicle very short. Fl. Jan–Apr, fr. Mar–Oct.

Slopes in forests; 400–500 m. W Guangxi (Daxin Xian, Longzhou Xian, Tianyang Xian) [N Vietnam].

Pittosporum pulchrum var. *foliosum* Gagnepain (loc. cit.: 547) was also described from Vietnam together with the species; it was said to differ in having a shorter inflorescence.

32. *Pittosporum kunmingense* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 88. 1978.

昆明海桐 *kun ming hai tong*

Shrubs or small trees, ca. 4 m tall. Young branchlets gray-brown after drying, glabrous; old branchlets lenticellate. Leaves clustered at branchlet apex, biennial; petiole ca. 5 mm; leaf blade pale green abaxially after drying, dark green and slightly shiny adaxially, oblong-ob lanceolate or oblanceolate, 6–9 × 2–3 cm, thinly leathery, glabrous abaxially, lateral veins 6–7-paired, slightly convex abaxially, indistinct adaxially, reticulate veins indistinct on both surfaces, base cuneate, margin slightly sinuate, apex acute or acuminate. Inflorescence terminal or nearly so, umbellate or corymbose, 2–12-flowered, with scalelike leaves at base; bracts broadly ovate, ca. 2 mm, pubescent; bracteoles lanceolate, ca. 2 mm, pubescent; pedicels 6–12 mm, brown pubescent. Sepals slightly connate at base, ovate, ca. 2 mm, brown pubescent. Petals free, 10–12 mm. Filaments 5–7 mm; anthers ca. 1 mm. Ovary long ovoid, pubescent; ovary wall thin; placentas 2, parietal; ovules ca. 12; stipe prominent. Style slightly shorter than ovary, glabrous. Capsule not seen. Fl. Apr–May, fr. May–Nov.

• Forests, thickets, slopes; 800–1300 m. SW Guizhou (Luodian Xian, Xingren Xian), Yunnan.

33. *Pittosporum oligophlebium* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 89. 1978.

贫脉海桐 *pin mai hai tong*

Shrubs ca. 2 m tall. Young branchlets dark brown after drying, slender, glabrous; old branchlets not lenticellate. Leaves clustered at branchlet apex, appearing opposite or verticillate; petiole slender, 7–15 mm, glabrous; leaf blade dark green but not shiny adaxially, oblong or obovate, 7–14 × 2.5–3.5(–4.5) cm, thinly membranous, glabrous abaxially, lateral veins 4- or 5-paired, slightly convex abaxially, slightly visible adaxially, reticulate veins indistinct on both surfaces, base cuneate, margin flat, apex acute or acuminate. Inflorescences terminal, um-

bellate, 3–13-flowered, without scalelike leaves at base; bracts deciduous; pedicels slender, 2–2.5 cm, sparsely puberulous. Sepals slightly connate at base, ovate-lanceolate, glabrous abaxially, margin ciliate, apex subacute. Petals connate into a tube proximally, ca. 1.3 cm. Stamens 8–9 mm. Pistil equaling stamens; ovary pubescent; ovary wall thin; placentas 2, parietal; ovules 8–12; stipe shorter than ovary; style 4–5 mm, glabrous. Capsule not seen. Fl. Mar–May, fr. Jun–Nov.

• Forests, thickets, valleys; ca. 1800 m. W Yunnan (Longling Xian).

34. *Pittosporum tubiflorum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 89. 1978.

管花海桐 *guan hua hai tong*

Shrubs ca. 2 m tall. Young branchlets dark brown after drying, glabrous; old branchlets gray-brown. Leaves clustered at branchlet apex, biennial; petiole 3–6 mm; leaf blade pale yellow-green abaxially, green and shiny adaxially, brown-yellow after drying, oblanceolate, 6–9 × 1.3–2.6 cm, leathery, pubescent abaxially, lateral veins 5–7-paired, slightly convex abaxially, slightly visible adaxially, reticulate veins indistinct on both surfaces, base cuneate, margin flat, slightly sinuate, apex acute or acuminate. Inflorescences usually 3–5 clustered at branchlet apex, umbellate, numerous flowered; peduncle 2–3 mm; bracts broadly ovate, ca. 2 mm; bracteoles lanceolate, 1–1.5 mm; pedicels slender, ca. 1 cm, glabrous. Calyx shallowly cupular; sepals connate, ovate-triangular, 2.5–3 mm, glabrous or margin ciliate. Petals connate into a tube proximally, free and spreading in distal 1/3, ca. 1.2 cm. Stamens ca. 8 mm. Pistil longer than stamens; ovary long tubular, pubescent; ovary wall thin; placentas 2, parietal; ovules 4–8; stipe ca. 1.5 mm; style 3–4 mm. Infructescence 7–14-capsuled; pedicels 7–12 mm. Capsule long ellipsoid, 12–15 × 6–7 mm, 2-lobed; pericarp thinly woody, less than 1 mm thick; placentas at base to middle part of valves; stipe ca. 3 mm; persistent style 3–4 mm. Seeds 5–7; funicle very short. Fl. Mar–May, fr. Jun–Oct.

• Forests, damp valleys, among stones; 800–1500 m. Chongqing (Nanchuan Xian), E and N Guizhou (Leigong Shan, Zheng'an Xian), W Hunan (Zhijiang Xian).

35. *Pittosporum heterophyllum* Franchet, Bull. Soc. Bot. France 33: 415. 1886.

异叶海桐 *yi ye hai tong*

Shrubs ca. 2.5 m tall. Young branchlets gray-brown, glabrous; old branchlets not lenticellate. Leaves clustered at branchlet apex, biennial; petiole 3–4 mm or absent; leaf blade pale green abaxially, green and shiny adaxially, oblanceolate, narrowly lanceolate, beltlike, or linear, 4–8 × 0.3–2 cm, thinly leathery, glabrous abaxially, lateral veins 5–6-paired, together with reticulate veins indistinct on both surfaces, base cuneate, margin flat, apex subacute. Inflorescences terminal, umbel-like, 1–5-flowered; bracts deciduous; pedicels 2–15 mm, tomentose or glabrous. Sepals slightly connate at base, ovate, 2–2.5 mm, glabrous or margin ciliate, apex obtuse. Petals connate, lanceolate, ca. 6 mm, apex rounded. Stamens 4–5 mm; anther ca. 1.5 mm. Pistil slightly shorter than stamens; ovary pubescent or glabrous; placentas 2, parietal; ovules 5–8; style ca. 1.5 mm.

Capsule subglobose, slightly compressed, ca. 6 mm in diam., dehiscent by 2 valves; pericarp thinly woody; persistent style ca. 2 mm. Seeds 5–8, black after drying, ca. 2.5 mm; funicle very short. Fl. Mar–May, fr. May–Nov.

• Forests, valleys, slopes, stream sides, rocks; 800–3000(–4000) m. Sichuan, SE Xizang, N Yunnan.

- 1a. Leaves sessile; pedicels tomentose; ovary glabrous 35c. var. *sessile*
 1b. Leaves petiolate or very shortly so; pedicels glabrous; ovary pubescent.
 2a. Leaf blade oblanceolate, narrowly lanceolate, or linear, 4–8 × 1–2 cm, sometimes narrower; pedicels 7–15 mm 35a. var. *heterophyllum*
 2b. Leaf blade beltlike, ca. 5 × 0.3–0.4 cm; pedicels ca. 2 mm 35b. var. *ledoides*

35a. *Pittosporum heterophyllum* var. *heterophyllum*

异叶海桐(原变种) yi ye hai tong (yuan bian zhong)

Pittosporum truncatum Pritzl var. *tsaii* Gowda.

Leaves petiolate; leaf blade oblanceolate, narrowly lanceolate, or linear, 4–8 × 1–2 cm, sometimes narrower. Pedicels 7–15 mm, glabrous. Ovary pubescent. Fl. Mar–May, fr. Jun–Nov.

• Forests, valleys, slopes, stream sides; 800–3000(–4000) m. Sichuan, SE Xizang, N Yunnan.

The roots and bark are used medicinally in the treatment of broken bones, burns, and cuts.

35b. *Pittosporum heterophyllum* var. *ledoides* Handel-Mazzetti, Symb. Sin. 7: 448. 1931.

带叶海桐 dai ye hai tong

Pittosporum ledoides (Handel-Mazzetti) C. Y. Wu.

Leaves very shortly petiolate; leaf blade beltlike, ca. 5 × 0.3–0.4 cm. Pedicels ca. 2 mm, glabrous. Ovary pubescent. Fl. Mar–May, fr. May–Nov.

• Forests, rocks. NC Yunnan (Dayao Xian).

35c. *Pittosporum heterophyllum* var. *sessile* Gowda, J. Arnold Arbor. 32: 342. 1951.

无柄异叶海桐 wu bing yi ye hai tong

Leaves sessile; leaf blade narrowly lanceolate, 3–7 × 0.5–0.8 cm. Pedicels tomentose. Ovary glabrous.

• NC Yunnan (Dayao Xian).

36. *Pittosporum leptosepalum* Gowda, J. Arnold Arbor. 32: 338. 1951.

薄萼海桐 bo e hai tong

Shrubs or small trees, 3–4 m tall. Young branchlets dark brown, glabrous; old branchlets sparsely lenticellate. Leaves clustered at branchlet apex, biennial; petiole slender, 6–10 mm, glabrous; leaf blade pale green abaxially, dark green and shiny adaxially, dark green after drying, oblong or lanceolate, 5–8 × 1.5–2.5 cm, thinly leathery, glabrous abaxially, lateral veins 5–

7-paired, visible abaxially, indistinct adaxially, reticulate veins prominent abaxially, concave adaxially, base cuneate, margin slightly rugose, apex acuminate. Inflorescences in leaf axils at branchlet apex, umbel-like, numerous flowered; bracts deciduous; pedicels slender, ca. 1 cm, glabrous. Sepals free, linear-lanceolate, ca. 3 mm, glabrous. Petals free, pale yellow-white, narrowly lanceolate, 7–8 mm. Stamens 5–6 mm; filament slender; anther basifixed, ca. 1.5 mm. Pistil equaling stamens; ovary pubescent; placentas 2, parietal; ovules 11 or 12; stipe short; style ca. 2.5 mm. Capsule globose, 6–8 mm in diam., dehiscent by 2 valves; pericarp thin, horizontally striate adaxially; placentas in proximal part of valves. Seeds ca. 10, ca. 3 mm; funicle very short. Fl. Mar–May, fr. Jun–Nov.

• Forests in mountains. N Guangdong, NE Guangxi (Lingui Xian, Quanzhou Xian).

37. *Pittosporum daphniphyloides* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 34. 1911.

牛耳枫叶海桐 niu er feng ye hai tong

Shrubs or small trees, 2–5(–8) m tall. Young branchlets stout, glabrous, old ones red-brown, small-lenticellate. Leaves clustered at branchlet apex, biennial; petiole 1.5–3 cm, subterete; leaf blade pale green abaxially, green or dark green and shiny adaxially, brownish after drying, oblong or elliptic, rarely obovate-oblong, 10–20 × 4–8 cm, thinly or thickly leathery, glabrous abaxially, lateral veins 9–12-paired, convex abaxially, slightly concave adaxially, base cuneate or broadly so, decurrent, margin flat, reflexed after drying, apex acute or acuminate. Inflorescences 3–7, in leaf axils at branchlet apex, compoundly corymbose, many branched, 4–6 cm, pubescent; primary peduncle very short or absent; secondary ones 3–4.5 cm; tertiary ones 0.8–1.3 cm; bracts lanceolate, 2–3 mm, pubescent, deciduous; pedicels 2–7 mm. Sepals free or connate only at base, ovate or broadly so, unequal, 1.2–2 mm, pubescent abaxially, margin ciliate, apex subacute. Petals free, yellow, narrowly oblong, 6–7.5 mm, apex subobtusate. Stamens ca. 5 mm. Pistils equaling stamens; ovary glabrous; placentas 2(or 3), parietal; ovules ca. 24; style ca. 2 mm. Capsule globose or subglobose, slightly compressed, 6–10 mm in diam., dehiscent by 2 valves; pericarp thinly woody, horizontally striate adaxially; placentas exerted in middle part of valves; stipe distinct or very short; persistent style slender, ca. 1.5 mm. Seeds 10–23, red, black after drying, angular, ca. 2 mm; funicle very short. Fl. Mar–Jun, fr. Jun–Dec.

• Forests, thickets, valleys, ravines, slopes, cliffs, dry places; 500–2500 m. N Guizhou, SW Hubei, NW Hunan, S and W Sichuan, Taiwan.

- 1a. Leaf blade thinly leathery; seeds 10–15 37a. var. *daphniphyloides*
 1b. Leaf blade thickly leathery; seeds 17–23 37b. var. *adaphniphyloides*

37a. *Pittosporum daphniphyloides* var. *daphniphyloides*

牛耳枫叶海桐(原变种) niu er feng ye hai tong (yuan bian zhong)

Leaf blade thinly leathery. Seeds 10–15.

- Broad-leaved forests, thickets, slopes; 800–2500 m. Taiwan.

37b. *Pittosporum daphniphyloides* var. *adaphniphyloides* (Hu & F. T. Wang) W. T. Wang, Bull. Bot. Res., Harbin 9(1): 4. 1989.

大叶海桐 da ye hai tong

Pittosporum adaphniphyloides Hu & F. T. Wang, Bull. Fan Mem. Inst. Biol., n.s., 1: 101. 1943.

Leaf blade thickly leathery. Seeds 17–23.

- Forests, valleys, ravines, slopes, cliffs, dry places; 500–1500 m. N Guizhou, SW Hubei, NW Hunan, S and W Sichuan.

38. *Pittosporum kwangsiense* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 89. 1978.

广西海桐 guang xi hai tong

Shrubs or small trees. Buds ovoid; scales brown pubescent. Young branchlets gray-white, glabrous, many lenticellate. Leaves clustered at branchlet apex, biennial; petiole 7–12 mm; leaf blade green and shiny adaxially, yellow-green after drying, obovate-oblong, 10–15 × 4–6 cm, glabrous, lateral veins 5–7-paired, slightly convex abaxially, slightly visible adaxially, reticulate veins indistinct on both surfaces, base cuneate, margin flat, apex acute. Flowers not seen. Infructescences 3–5-capuled; peduncle 1.5–4 cm, glabrous; pedicels 5–12 mm. Capsule obovate, slightly compressed, 7–9 mm in diam, dehiscent by 2 valves; pericarp thinly woody; placentas basal. Seeds ca. 4, red, black after drying, compressed globose, 5–6 mm in diam.; funicle yellow-brown, broad, compressed, ca. 1 mm. Fl. Mar–May, fr. May–Nov.

- Forests, thickets. Guangxi, SC Yunnan (Zhenyuan Xian).

39. *Pittosporum undulatifolium* H. T. Chang & S. Z. Yan, Acta Sci. Nat. Univ. Sunyatseni 1974(2): 41. 1974.

波叶海桐 bo ye hai tong

Trees small, ca. 6 m tall. Bark black-brown. Young branchlets brown after drying, stout, glabrous; old branchlets numerous lenticellate. Leaves usually 4–6-clustered at branchlet apex; petiole 1.5–2 cm, compressed; leaf blade gray-green abaxially, dark green and shiny adaxially, oblong-oblong, 9–15 × 2–4 cm, leathery, glabrous abaxially, lateral veins 12–14-paired, prominent on both surfaces after drying, reticulate veins slightly convex abaxially, indistinct adaxially, base cuneate, margin reflexed after drying, sinuate-rugose, apex acute or acuminate. Inflorescences compoundly corymbose, with 2–5 corymbs; primary peduncle 2–2.5 cm, secondary ones 6–8 mm; pedicels 4–6 mm, puberulous. Sepals ovate, 1–1.5 mm, margin ciliate. Petals ca. 7 mm, apex reflexed. Filaments ca. 5 mm; anthers ca. 1 mm. Ovary pubescent; carpels 2; placentas 2, parietal; ovules ca. 12; stipe very short. Capsule compressed broadly ovoid, 8–9 mm in diam., dehiscent by 2 valves; pericarp thin, horizontally striate adaxially. Seeds 6–8, ca. 3 mm; funicle ca. 1 mm. Fl. Mar–May, fr. Jun–Oct.

- Forests, thickets; 1000–1600 m. SW Guizhou (Anlong Xian), C and S Sichuan.

40. *Pittosporum johnstonianum* Gowda, J. Arnold Arbor. 32: 335. 1951.

滇西海桐 dian xi hai tong

Trees small. Young branchlets glabrous, inconspicuously lenticellate; old branchlets conspicuously lenticellate. Petiole 1–1.5 cm; leaf blade pale green abaxially, green and shiny adaxially, dark green after drying, oblanceolate or oblong, 8–15 × 2–5 cm, thinly leathery, glabrous abaxially, lateral veins 8- or 9-paired, slightly convex abaxially, visible adaxially, reticulate veins indistinct on both surfaces, base cuneate, usually decurrent, margin flat, apex acuminate. Flowers not seen. Infructescences 3–5 in leaf axils at branchlet apex, glomerulate (when 3–4 cm wide) or laxly compoundly umbellate, glabrous; peduncle 1–3 cm, numerous lenticellate; pedicels 0.5–1.5 cm. Capsule globose, slightly compressed, 8–9 mm in diam., dehiscent by 2 valves; pericarp thin, orbicular, pubescent abaxially, horizontally striate adaxially; placentas at base to middle part of valves; stipe indistinct; persistent style ca. 2 mm. Seeds more than 16, angular, small, 1.5–2 mm; funicle very short. Fl. Mar–May, fr. May–Nov.

Forests, thickets, slopes; 1200–3100 m. SW Sichuan, W Yunnan [N Myanmar].

- 1a. Infructescences laxly compoundly umbellate, peduncle 2.5–3 cm, pedicels 0.5–1.5 cm 40a. var. *johnstonianum*
- 1b. Infructescences glomerulate, 3–4 cm wide, peduncle ca. 1 cm, pedicels 0.5–0.9 cm 40b. var. *glomerulatum*

40a. *Pittosporum johnstonianum* var. *johnstonianum*

滇西海桐(原变种) dian xi hai tong (yuan bian zhong)

Infructescences laxly compoundly umbellate; peduncle 2.5–3 cm; pedicels 0.5–1.5 cm. Fl. Mar–May, fr. May–Nov.

Forests, thickets, slopes; 1200–3100 m. SW Sichuan (Muli Xian), NW Yunnan (Gongshan Xian, Zhongdian Xian) [N Myanmar].

40b. *Pittosporum johnstonianum* var. *glomerulatum* C. Y. Wu in C. Y. Wu & H. W. Li, Fl. Yunnan. 3: 325. 1983.

密花海桐 mi hua hai tong

Infructescences glomerulate, 3–4 cm wide; peduncle ca. 1 cm; pedicels 0.5–0.9 cm. Fr. Jul–Aug.

- Forests; ca. 2900 m. W Yunnan (Zhenkang Xian).

41. *Pittosporum brevicalyx* (Oliver) Gagnepain, Bull. Soc. Bot. France 55: 545. 1908.

短萼海桐 duan e hai tong

Pittosporum pauciflorum Hooker & Arnott var. *brevicalyx* Oliver, Hooker's Icon. Pl. 16: t. 1579. 1887; *Euonymus provicarii* H. Léveillé; *P. brevicalyx* var. *brevistamineum* Gagnepain; *P. neelgherrense* Wight & Arnott var. *laxiflorum* Franchet.

Shrubs or small trees, ca. 10 m tall. Branchlets glabrous or young ones pubescent. Leaves clustered at branchlet apex, bi-

ennial; petiole 1–1.5 cm or more; leaf blade dark green and shiny adaxially, obovate-lanceolate, rarely obovate or oblong, 5–12 × 2–5 cm, thinly leathery, puberulous abaxially at first, soon glabrate, lateral veins 9–11-paired, slightly convex abaxially, prominent adaxially, base cuneate, margin flat, apex acuminate or long acuminate. Inflorescences 3–5 in leaf-axils at branchlet apex, corymbose, 3–4 cm, puberulous; peduncle 1–1.5 cm; bracts narrowly lanceolate, 4–6 mm, puberulous; pedicels ca. 1 cm. Sepals ovate-lanceolate, 2–2.5 mm, puberulous. Petals free, 6–8 mm. Stamens slightly shorter than or sometimes 1/2 as long as petals. Ovary ovoid, pubescent; placentas 2, parietal; ovules 7–10. Style usually puberulous. Capsule subglobose, compressed, 7–8 mm in diam., dehiscent by 2 valves; pericarp thin; placentas in proximal part of valves. Seeds 7–10, 3–4 mm; funicle very short. Fl. Mar–May, fr. Jul–Nov.

- Forests, thickets, slopes, limestone areas, roadsides; 600–3500 m; Guangdong, Guangxi, Guizhou, W Hubei, Hunan, Jiangxi, Sichuan, SE Xizang (Zayu Xian), Yunnan.

Two syntypes were cited in the protologue: “Ichang [Yichang], *Dr. Henry*,” which agrees with *P. brevicalyx* as currently understood, and “Kiukiang [Jiujiang], *Mr. Maries*,” which agrees with *P. illicioides*.

The roots, bark, and capsules can be used medicinally in the treatment of chronic bronchitis and coughs.

42. *Pittosporum viburnifolium* Hayata, Icon. Pl. Formos. 3: 32. 1913.

莢蒾叶海桐 jia mi ye hai tong

Shrubs. Young branchlets gray-brown, stout, lenticellate. Leaves clustered at branchlet apex, biennial; petiole stout, 1–2 cm; leaf blade dark green and shiny adaxially, obovate or obovate-lanceolate, 10–14 × 3–5 cm, thickly leathery, glabrous abaxially, lateral veins 8–10-paired, conspicuously convex abaxially, concave adaxially, base narrowly cuneate, margin flat, slightly reflexed after drying, apex rounded. Inflorescences terminal, paniculate, ca. 10 cm, brown pubescent; peduncle 8–15 mm; pedicels 5–10 mm. Sepals slightly connate at base, ovate, ca. 3 mm, glabrous or margin rarely ciliate. Petals oblong, 1–1.2 cm. Stamens ca. 7 mm; filament compressed linear. Ovary brown pubescent; stipe short. Style short, ca. 2 mm, glabrous; stigmas capitate. Capsule obovate, 2–2.5 cm in diam., dehiscent by 2 valves; pericarp thickly woody, ca. 3 mm thick, horizontally striate adaxially; placentas 2, parietal. Seeds ca. 7 mm. Fl. Feb–Apr, fr. Mar–Nov.

- Low broad-leaved forests, thickets along seashores, trailsides near lakes; sea level to 200 m. S Taiwan (including Lan Yu).

This species is close to *Pittosporum littorale* Merrill (from the Philippines), which differs in having inflorescences corymbose and capsules 4–5 cm in diam. It is also related to *P. moluccanum* (Lamarck) Miquel (from Indonesia and Malaysia), which differs in having leaf blades acute at the apex, and inflorescences corymbose, short, and small.

43. *Pittosporum paniculiferum* H. T. Chang & S. Z. Yan, Acta Phytotax. Sin. 16(4): 90. 1978.

圆锥海桐 yuan zhui hai tong

Pittosporum polycarpum H. T. Chang & S. Z. Yan.

Trees small, ca. 10 m tall. Young branchlets stout, glabrous; old branchlets lenticellate. Leaves clustered at branchlet

apex, biennial; petiole stout, 1.5–2.2 cm; leaf blade yellow-brown after drying abaxially, dark green and shiny adaxially, dark green after drying, elliptic or obovate-elliptic, 11–15 × 4–6 cm, thinly leathery, glabrous abaxially, midvein convex abaxially, concave adaxially, lateral veins 8–10-paired, slightly convex abaxially, indistinct adaxially, base cuneate, usually decurrent, margin flat, apex strongly narrowed, shortly triangular cuspidate, rarely acuminate. Flowers not seen. Inflorescences terminal, paniculate, 6–10 cm, with 8–10 branched corymbs; primary peduncle very short; primary axis 5–7 cm; secondary peduncles 4–5 cm, distal ones shorter, apical ones ca. 1.5 cm; tertiary peduncles 1–1.5 cm; pedicels 4–6 mm. Capsule subglobose or long ovoid, 5–7 mm in diam., dehiscent by 2 valves; pericarp thin, horizontally small striate adaxially; placentas at base of valves. Seeds 2–4 (or 5), black after drying, compressed globose, ca. 4 mm in diam.; funicle very short. Fl. Jan–Mar, fr. Feb–Oct.

- Forests, thickets, limestone slopes; 500–1600 m. C Sichuan (Emei Shan), S Yunnan.

44. *Pittosporum kerrii* Craib, Bull. Misc. Inform. Kew 1925: 16. 1925.

羊脆木 yang cui mu

Trees small, 4–10 m tall. Young branchlets ferruginous pubescent, prominently lenticellate. Leaves usually clustered at branchlet apex, biennial; petiole 1–2 cm; leaf blade brown-green abaxially, becoming brown after drying adaxially, oblanceolate to obovate-lanceolate or long elliptic, 6–15 × 2–5 cm, thickly leathery, glabrous abaxially, lateral veins 7–10-paired, convex abaxially, slightly visible adaxially, reticulate veins indistinct on both surfaces, base cuneate, margin entire, slightly reflexed or slightly rugose after drying, apex acute or acuminate. Inflorescences paniculate, with many corymbs; primary peduncle 2–4 cm, together with primary axis ferruginous pubescent; secondary peduncles 1–1.8 cm; corymbs 8–12-flowered; bracteoles lanceolate, 2–3 mm, deciduous, margin ciliate; pedicels 3–6 mm; flowers fragrant. Sepals free or slightly connate at base, ovate, 2–3 mm, glabrous abaxially, margin ciliate. Petals free, yellow-white, 6–7 mm. Stamens slightly shorter than petals; filament 3–4 mm; anther 1.5–2 mm. Ovary long ovoid, pubescent; placentas at base of ovary; ovules 2–4. Capsule obovate, compressed, 6–8 mm in diam., dehiscent by 2 valves; pericarp thinly woody, horizontally numerous striate adaxially. Seeds 2–4, black after drying, subreniform, 4–5 mm. Fl. Mar–May, fr. Jun–Oct.

Forests, mountains; 700–2300 m. S Yunnan [Laos, Myanmar, Thailand].

This species is close to *Pittosporum wightii* A. K. Mukherjee (*P. floribundum* Wight & Arnott, Oct 1834, not Royle, Jun 1834), from S India and Madagascar, which differs in having leaf blades smaller, thinly leathery, corymbs clustered into a compoundly umbellate inflorescence, and seeds 5–8.

The roots and bark can be used medicinally.

45. *Pittosporum napaulense* (de Candolle) Rehder & E. H. Wilson in Sargent, Pl. Wilson. 3: 326. 1916.

滇臧海桐 dian zang hai tong

PITTOSPORACEAE

Senecia napaulensis de Candolle, Prodr. 1: 347. 1824; *Celastrus verticillatus* Roxburgh (1824), not Ruiz & Pavón (1802); *Pittosporum floribundum* Wight & Arnott ex Royle (Jun 1834), not Wight & Arnott (Oct 1834); *P. napaulense* var. *rawalpindiense* Gowda; *P. verticillatum* Wallich.

Shrubs or small trees. Young branchlets brown, lenticellate. Leaves clustered at branchlet apex, biennial; petiole stout, 1–2 cm or more; leaf blade dark brown adaxially after drying, oblong or oblong-lanceolate, 8–20 × 4–8 cm, thickly leathery, glabrous abaxially, lateral veins convex adaxially, base cuneate, margin flat, reflexed after drying, apex acute or acuminate. Inflorescences terminal, paniculate or compoundly corymbose-paniculate, usually brown pubescent; pedicels 7–10 mm. Sepals slightly connate at base, ovate, 2–3 mm, glabrous or margin ciliate. Petals narrowly oblong, 5–6 mm. Stamens ca. 4 mm. Ovary ca. 2 mm, pubescent. Style ca. 1 mm, glabrous; stigmas capitate. Capsule globose, 6–7 mm in diam., dehiscent by 2 valves; pericarp orbicular, thin, horizontally striate adaxially; placentas at base of valves. Seeds 4–8, 2–3 mm in diam; funicle very short. Fl. Mar–May, fr. May–Nov.

Forests, thickets; 400–2000 m. SE Xizang, W Yunnan [Bangladesh, Bhutan, N India, Myanmar, Nepal, N Pakistan, Sikkim].

Pittosporum napaulense var. *rawalpindiense* was described from Bhutan, N India, N Pakistan, and Sikkim, and was distinguished from the type by having leaf blades lanceolate, long acuminate at the apex, and capsules only 4-seeded. It seems to be only an extreme state of *P. napaulense*.

46. *Pittosporum pentandrum* (Blanco) Merrill var. ***formosanum*** (Hayata) Z. Y. Zhang & Turland, Novon 12: 153. 2002.

台琼海桐 tai qiong hai tong

Pittosporum formosanum Hayata in Matsumura & Hayata, J. Coll. Sci. Imp. Univ. Tokyo 22: 32. 1906; *P. formosanum* var. *hainanense* Gagnepain; *P. pentandrum* var. *hainanense* (Gagnepain) H. L. Li.

Trees small or shrubs, ca. 12 m tall. Young branchlets ferruginous pubescent; old branchlets glabrous, inconspicuously lenticellate. Leaves clustered at branchlet apex, appearing pseudoverticillate, biennial or perennial; petiole 5–12 mm; leaf blade dark green and shiny adaxially, pale green abaxially, obovate or oblong-obovate, 4–10 × 3–5 cm, papery when young, soon becoming leathery, pubescent on both surfaces, later glabrate, lateral veins 7–10-paired, reticulate veins prominent adaxially, base narrowly cuneate, decurrent, margin entire or rugose, apex obtuse or shortly acute, sometimes rounded. Inflorescences terminal, paniculate, with numerous corymbs, densely ferruginous pubescent; primary peduncle and primary axis 4–8 cm; secondary peduncles 1.5–4 cm; tertiary peduncles 3–5 mm; bracts lanceolate, ca. 2 mm, deciduous; bracteoles ovate-lanceolate, 1.5–2 mm, glabrous or margin ciliate; pedicels 3–6 mm. Petals 5–6 mm. Filaments ca. 3 mm; anthers ca. 1 mm. Ovary ovoid, sparsely ferruginous pubescent at base; placentas 2, parietal, in proximal part of ovary; ovules 12–16. Capsule compressed globose, 6–9 mm in diam., glabrous, dehiscent by 2 valves; pericarp thinly woody, horizontally striate adaxially. Seeds ca. 10, irregularly angular, ca. 3 mm. Fl. May–Nov, fr. Oct–Dec.

Thickets, slopes, seashores; sea level to 300 m. S Guangxi (Hepu Xian), Hainan, S Taiwan (including Lan Yu) [Vietnam].

Pittosporum pentandrum var. *pentandrum* is distributed in Indonesia (N Sulawesi) and the Philippines.

PITTOSPORACEAE