

24. JUSTICIA Linnaeus, Sp. Pl. 1: 15. 1753.

爵床属 jue chuang shu

Hu Jiaqi (胡嘉琪 Hu Chia-chi), Deng Yunfei (邓云飞); Thomas F. Daniel

Adatoda Adanson; *Adhatoda* Miller; *Calophanoides* Ridley; *Ecbolium* Kuntze (1891), not Kurz (1871); *Gendarussa* Nees; *Mananthes* Bremekamp; *Rhaphidospora* Nees; *Rostellaria* Nees (1832), not C. F. Gaertner (1807); *Rostellularia* Reichenbach.

Herbs, subshrubs, or shrubs, cystoliths present. Leaves sessile or petiolate; leaf blade margin usually entire but sometimes sinuate or slightly serrate. Inflorescences dichasia (sometimes reduced to a single flower) in leaf axils or axillary or terminal spikes, racemes, or thyrses, sometimes branched and becoming panicles; bracts variable in shape, sometimes prominent and/or brightly colored; bracteoles 2, similar to or smaller than bracts. Calyx deeply 4- or 5-lobed; lobes equal or subequal. Corolla tubular or funnel-shaped; limb strongly 2-lipped; lower lip 3-lobed; upper lip entire to 2-lobed, internally rugulate (i.e., with a stylar furrow); lobes ascending cochlear in bud. Stamens 2; anthers 2-theous; thecae equally or unequally inserted, parallel to perpendicular, one or both spurred at base or sometimes lacking basal appendages; staminodes absent. Ovary with 2 ovules per locule; stigma slightly 2-lobed. Capsule with a sterile basal stalk and a fertile head (i.e., ± clavate), 2–4-seeded; retinacula present. Seeds compressed [to spheric].

About 700 species: tropical and temperate regions worldwide; 43 species (26 endemic, three introduced) in China.

Justicia betonica Linnaeus, *J. brandegeana* Wasshausen & L. B. Smith, and *J. carnea* Lindley are only cultivated in China so are not treated here.

1a. Calyx equally 4-lobed or unequally 5-lobed (i.e., with one lobe conspicuously smaller than others).

2a. Leaves sessile.

3a. Plants diffuse, to 8 cm tall; leaf blade lanceolate to narrowly lanceolate, glabrous 1. *J. demissa*

3b. Plants usually erect, to 100 cm tall; leaf blade oblong to broadly ovate, pubescent 2. *J. mollissima*

2b. Leaves petiolate.

4a. Leaf blade linear, to 5 mm wide 3. *J. neolinearifolia*

4b. Leaf blade ovate to elliptic to subcircular, usually wider than 5 mm.

5a. Bracts obovate-elliptic, broadest at or above middle, 2–3 mm wide 6. *J. hayatae*

5b. Bracts ovate to elliptic-lanceolate to oblong-lanceolate, mostly broadest near base, 0.6–1.3 mm wide.

6a. Spikes dense and cylindrical, ± densely pubescent 4. *J. procumbens*

6b. Spikes neither dense nor cylindrical, sparsely pubescent 5. *J. diffusa*

1b. Calyx equally 5-lobed.

7a. Flowers in axillary abbreviated spikes, spikes ca. 1 cm, usually solitary or several clustered.

8a. Leaf blade glabrous.

9a. Leaf blade linear to linear-lanceolate 7. *J. neesiana*

9b. Leaf blade ovate to broadly elliptic (rarely lanceolate).

10a. Bracts subcircular 8. *J. kwangsiensis*

10b. Bracts lanceolate 9. *J. albovidis*

8b. Leaf blade ± pubescent (sometimes glabrous or only pubescent along veins in *J. quadrifaria*).

11a. Corolla ca. 2 cm 10. *J. wardii*

11b. Corolla less than 1.5 cm.

12a. Bracts linear, lanceolate, or ovate, broadest at base, 1-veined.

13a. Bracts 2–3 mm 20. *J. siccanca*

13b. Bracts 5–6 mm 21. *J. xantholeuca*

12b. Bracts ovate to circular to elliptic to obovate to spatulate-obovate, broadest above base, pinnately veined.

14a. Leaf blade (2–)5.5–11.5 cm.

15a. Bracts ovate to obovate, with 3–4 mm petiole, apex obtuse; calyx 5–6 mm 17. *J. quadrifaria*

15b. Bracts obovate to circular, with 1–2 mm petiole, apex retuse or rounded; calyx ca. 1 cm 18. *J. kouytcheensis*

14b. Leaf blade 0.8–7(–10.5) cm.

16a. Leaf blade adaxially glabrous 13. *J. xylopoda*

16b. Leaf blade adaxially pubescent at least when young.

17a. Leaf blade sparsely pubescent, soon glabrescent or abaxially pilose along midvein 11. *J. championii*

17b. Leaf blade hispid, or densely grayish or white or yellowish pubescent.

18a. Bracts circular to subcircular 16. *J. hainanensis*

18b. Bracts not circular (sometimes subcircular in *J. xerobatica* and *J. xerophila*).

19a. Corolla white.

- 20a. Stems yellow pilose; leaf blade 3–5 mm wide 12. *J. xerophila*
 20b. Stems minutely white sericeous; leaf blade 5–8 mm wide 19. *J. xerobatica*
 19b. Corolla whitish yellow, yellow, or yellowish green.
 21a. Stems villous 14. *J. albovelata*
 21b. Stems sericeous 15. *J. yunnanensis*
 7b. Flowers in terminal or axillary elongated spikes (or racemes or panicles), or in axillary cymes, or in thyrses of 3-flowered cymes.
 22a. Flowers in terminal thyrses of 3-flowered cymes; both anther thecae spurred at base 22. *J. grossa*
 22b. Flowers in spikes or axillary cymes; only lower anther theca spurred at base.
 23a. Corolla 2.5–3 cm 23. *J. adhatoda*
 23b. Corolla 2.2 cm or less.
 24a. Flowers in axillary cymes 24. *J. vagabunda*
 24b. Flowers in terminal or axillary spikes (or panicles of spikes), or sometimes in racemes.
 25a. Bracts (at least lower ones) longer than calyx.
 26a. Bracts 1–1.5 cm 25. *J. ventricosa*
 26b. Bracts to 1 cm.
 27a. Leaf blade narrowly lanceolate, to 1.5 cm wide; basal bracts longer than calyx then gradually smaller with apicalmost ones shorter than calyx 26. *J. gendarussa*
 27b. Leaf blade lanceolate to ovate to elliptic to subcircular, often wider than 1.5 cm; all bracts longer than calyx.
 28a. Spikes interrupted; flowers distant on rachis; corolla yellow with purplish spots 27. *J. pseudospicata*
 28b. Spikes continuous; flowers dense on rachis; corolla pale white or yellowish green with purplish red dots or stripes.
 29a. Leaf blade margin entire; bracts ovate to elliptic, basally pale green and purplish red above middle, apex acuminate 28. *J. latiflora*
 29b. Leaf blade margin entire or crenate; bracts broadly obovate or flabellate, green, apex acuminate to obtuse and mucronate with 1–3 teeth 29. *J. austrosinensis*
 25b. Bracts equaling or shorter than calyx.
 30a. Leaves sessile.
 31a. Leaf blade oblanceolate to rarely lanceolate, 8–17 × 2.5–6.5 cm, abaxially rust-colored when dry 30. *J. ferruginea*
 31b. Leaf blade obovate, 15–26 × 7.5–15 cm, abaxially dark green when dry 31. *J. panduriformis*
 30b. Leaves petiolate.
 32a. Leaf blade base cordate to truncate.
 33a. Flowers usually 1 per rachis node; stems 4-angled; calyx ca. 4 mm; calyx and corolla pubescent with gland-tipped trichomes outside 32. *J. lianshanica*
 33b. Flowers usually 2–5 per rachis node; stems terete; calyx ca. 2 mm; calyx and corolla pubescent with non-glandular trichomes outside 33. *J. cardiophylla*
 32b. Leaf blade base (rounded to) cuneate to attenuate.
 34a. Stems short; leaves in a basal rosette 34. *J. austroguangxiensis*
 34b. Stems elongated; leaves cauline.
 35a. Flowers more than 1 per rachis node.
 36a. Shrubs to 2 m tall; leaf blade (2–)3–5.5 × 1.5–2.5 cm; inflorescences unbranched spikes 36. *J. microdonta*
 36b. Herbs to 1 m tall; leaf blade 4–12.5(–18) × 2.5–6.5(–8) cm; inflorescences unbranched or branched.
 37a. Leaf blade 10.5–12.5(–18) × 5–6.5(–8) cm; flowers in spikes 35. *J. leptostachya*
 37b. Leaf blade 4–9 × 2.5–4.5 cm; flowers in spiciform racemes (pedicel ca. 1 mm) 37. *J. damingensis*
 35b. Flowers 1 per rachis node.
 38a. Calyx lobes elliptic-lanceolate, apex obtuse or rounded 38. *J. amblyosepala*
 38b. Calyx lobes linear to lanceolate or narrowly triangular, apex acute.
 39a. Stems sharply 4-angled, slightly winged along angles 39. *J. acutangula*
 39b. Stems subterete to 4-angled, wingless.
 40a. Corolla tube 2–3 × as long as limb 40. *J. patentiflora*
 40b. Corolla tube less than 2 × as long as limb.
 41a. Calyx puberulent on both surfaces 41. *J. poilanei*
 41b. Calyx glabrous adaxially.
 42a. Leaf blade lanceolate, broadest below middle, 4.3–5 cm wide; bracts

- ca. 1.5 mm 42. *J. kamptiana*
- 42b. Leaf blade elliptic to obovate-elliptic, broadest at or above middle,
1.2–4.2 cm wide; bracts 3–4 mm 43. *J. caudatifolia*

1. *Justicia demissa* N. H. Xia & Y. F. Deng, *J. Trop. Subtrop. Bot.* 13: 534. 2005.

矮爵床 ai jue chuang

Rostellularia humilis H. S. Lo, *Fl. Hainan.* 3: 598. 1974, not *Justicia humilis* Michaux (1803).

Herbs 6–8 cm tall, diffuse, annual. Stems 4-angled, glabrous. Leaves sessile; leaf blade lanceolate to narrowly lanceolate, 1–2 × ca. 0.3 cm, glabrous, cystoliths inconspicuous, base cuneate, margin entire, apex obtuse. Spikes terminal, 2–4.5 cm, glabrous; bracts linear-lanceolate, ca. 3 mm, glabrous, margin membranous; bracteoles similar to bracts. Calyx ca. 5 mm, glabrous, 4-lobed to base; lobes linear, margin membranous, apex obtuse. Corolla not seen. Capsule ca. 6 mm, glabrous.

- Hainan.

2. *Justicia mollissima* (Nees) Y. F. Deng & T. F. Daniel, **comb. nov.**

喀西爵床 ka xi jue chuang

Basionym: *Rostellularia mollissima* Nees in Wallich, *Pl. Asiat. Rar.* 3: 101. 1832; *Justicia khasiana* C. B. Clarke; *J. procumbens* Linnaeus var. *latispica* C. B. Clarke; *Rostellularia khasiana* (C. B. Clarke) J. L. Ellis; *R. khasiana* var. *latispica* (C. B. Clarke) C. Y. Wu ex C. C. Hu; *R. mollissima* (Nees) Nees.

Herbs 60–100 cm tall. Stems 4-angled, erect, hispid. Leaves sessile; leaf blade oblong to broadly ovate, 3–4.5 × 0.3–0.5 cm, both surfaces hispid, secondary veins 4–6 on each side of midvein, base broadly cuneate, margin entire, apex acute to obtuse. Spikes 2.5–4 cm, hispid; bracts linear-oblong, ca. 8 × 2–3 mm, hispid; bracteoles linear, ca. 6 mm. Calyx ca. 8 mm, outside hispid, 4-lobed almost to base; lobes linear, margin ciliate. Corolla purplish red, 0.8–1.2 cm; lower lip spreading, 3-lobed; upper lip erect, apex emarginate. Staminal filaments ca. 6 mm, sparsely hirsute; anther thecae superposed, lower one white spurred at base. Ovary hirsute at tip; style ca. 8 mm, basal portion hirsute. Capsule ellipsoid, ca. 8 mm, pubescent. Seeds minutely reticulate. $2n = 18$.

Trailsides; 2100–2700 m. Yunnan [India].

“*Justicia mollissima*” was published as a nomen nudum (Wallich, *Numer. List*, no. 2445. 1830). The earliest name for this species is *Rostellularia mollissima*, dating from 1832. Nees’ name has not been transferred previously to *Justicia*.

3. *Justicia neolinearifolia* N. H. Xia & Y. F. Deng, *J. Trop. Subtrop. Bot.* 13: 534. 2005.

线叶爵床 xian ye jue chuang

Rostellularia linearifolia Bremekamp, *Proc. Kon. Ned. Akad. Wetensch.* C 60: 5. 1957; *Justicia linearifolia* (Bremekamp) H. S. Lo (1997), not Lamarck (1785); *J. linearifolia*

subsp. *liangkhwangensis* (H. S. Lo) H. S. Lo; *J. neolinearifolia* subsp. *liangkhwangensis* (H. S. Lo) N. H. Xia & Y. F. Deng; *R. linearifolia* subsp. *liangkhwangensis* H. S. Lo.

Herbs to 50 cm tall. Stems 4-angled, sulcate, pubescent. Petiole 2–4 mm, pubescent; leaf blade linear, 2–4 × 0.2–0.5 cm, sparsely pubescent, secondary veins 3–5 on each side of midvein, base rounded, margin entire, apex acute. Spikes terminal, 2–3.5 cm; rachis sparsely hirsute to subglabrous; bracts linear, ca. 6 × 1 mm, subglabrous, apex acute; bracteoles linear, ca. 5 × 1 mm, sparsely hirsute, apex acute. Calyx ca. 6 mm, outside sparsely hirsute, 4-lobed almost to base; lobes linear, apex acuminate. Corolla purplish red, ca. 8 mm; lower lip 3-lobed; upper lip 2-lobed. Staminal filaments ca. 5 mm, sparsely hirsute; anther thecae superposed, lower one spurred at base. Ovary hirsute; style ca. 8 mm, basal portion hirsute. Capsule ca. 6 mm, pubescent. Seeds ovate in outline, ca. 1 × 1 mm, verrucose.

Wetlands, trailsides. Guangdong, Guangxi, Yunnan [Thailand].

4. *Justicia procumbens* Linnaeus, *Sp. Pl.* 1: 15. 1753.

爵床 jue chuang

Ecbolium procumbens (Linnaeus) Kuntze; *Justicia hayatae* Yamamoto var. *decumbens* Yamamoto; *J. procumbens* var. *hirsuta* Yamamoto; *J. procumbens* var. *linearifolia* Yamamoto; *Rostellularia procumbens* (Linnaeus) Nees; *R. procumbens* var. *hirsuta* (Yamamoto) S. S. Ying; *R. procumbens* var. *linearifolia* (Yamamoto) S. S. Ying; *R. trichochila* Miquel.

Herbs 20–50 cm tall, procumbent. Stems 4-angled, sulcate, pubescent. Petiole 3–8 mm, pubescent; leaf blade elliptic, ovate-elliptic, or elliptic-oblong, 1.5–4 × 0.8–1.5 cm, subglabrous to sparsely hispid, cystoliths numerous, secondary veins 3–6 on each side of midvein and prominent, base broadly cuneate to subrounded and slightly decurrent onto petiole, margin entire or slightly undulate, apex acute to obtuse. Spikes terminal or axillary in upper leaf axils, cylindrical, 1–6 cm, dense; peduncle 0.5–7 cm, densely pilose; bracts ovate to elliptic-lanceolate, 2.5–8 × 0.6–1.3 mm, abaxially pilose, margin ciliate; bracteoles lanceolate, 2.5–5 mm, abaxially pilose, margin ciliate. Calyx 4–6 mm, 4-lobed to base; lobes linear, outside pilose along veins, 1-veined, margin yellowish white and ciliate. Corolla pink or white and red-spotted on lower lip, 5–8.5 mm; lower lip ca. 3 × 3.5 mm, 3-lobed, lobes ovate, middle lobe slightly larger and ca. 1 × 1–1.5 mm; upper lip ca. 3 mm, apex emarginate. Stamens exerted; filaments ca. 4 mm, glabrous; anther thecae superposed, lower one spurred at base, upper one mucicous. Ovary pubescent; style ca. 5 mm, pubescent. Capsule 4–6 mm, 4-seeded. Seeds ovate in outline, ca. 1 × 1 mm, rugose. Fl. and fr. all year. $2n = 18, 36$.

Wastelands, roadsides, lawns, open fields, littoral forests; near sea level to 1500 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philip-

pines, Sri Lanka, Thailand, Vietnam].

5. *Justicia diffusa* Willdenow, Sp. Pl. 1: 87. 1797.

小叶散爵床 xiao ye san jue chuang

Justicia diffusa var. *prostrata* Roxburgh ex C. B. Clarke; *Rostellaria hedyotidifolia* Nees; *Rostellularia diffusa* (Willdenow) Nees; *R. diffusa* var. *hedyotidifolia* (Nees) Kumari; *R. diffusa* var. *prostrata* (Roxburgh ex C. B. Clarke) H. S. Lo; *R. hedyotidifolia* (Nees) Nees.

Herbs 10–30 cm tall. Stems 4-angled, procumbent and diffuse, sulcate, sparsely pubescent. Petiole ca. 2 mm, pubescent; leaf blade lanceolate-elliptic, subcircular, or ovate, (0.7–)2–5 × 0.7–1.5 cm, glabrous or minutely pubescent, secondary veins 2–4 on each side of midvein, base cuneate, margin entire, apex acute. Spikes (1.5–)2.5–5 cm, neither dense nor cylindrical, sparsely hirsute; bracts oblong-lanceolate, 2–3 × ca. 1 mm, sparsely pubescent; bracteoles linear, ca. 2.5 × 1 mm, sparsely pubescent. Calyx 3.5–5 mm, outside sparsely pubescent, 4- or 5-lobed; lobes lanceolate, margin ciliate, apex acute. Corolla purplish red, ca. 6 mm; lower lip, 3-lobed, sparsely puberulent; upper lip emarginate. Staminal filaments ca. 4 mm, hirsute; anther thecae superposed, lower one spurred at base. Ovary pubescent; style ca. 5 mm, pubescent. Capsule oblong, ca. 5 mm, subglabrous to pubescent. Seeds subsmooth. $2n = 18$.

Grasslands, streamsides, sandy places. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Bangladesh, India, Myanmar, Sri Lanka, Thailand, Vietnam].

6. *Justicia hayatae* Yamamoto, Icon. Pl. Formosan. Suppl. 2: 34. 1926 [“*hayatai*”].

早田氏爵床 zao tian shi jue chuang

Justicia ciliata (Yamamoto) C. F. Hsieh & T. C. Huang (1974), not Jacquin (1762); *J. hayatae* var. *ciliata* Yamamoto; *J. procumbens* Linnaeus var. *hayatae* (Yamamoto) Ohwi; *Rostellularia hayatae* (Yamamoto) S. S. Ying; *R. procumbens* (Linnaeus) Nees var. *ciliata* (Yamamoto) S. S. Ying.

Herbs 30–50 cm tall. Stems 4-angled, sulcate, bifariously pubescent along sulcae. Petiole 1–9 mm, glabrous; leaf blade ovate, 1.5–3.5 × 0.8–2 cm, glabrous, abaxially pale green and without cystoliths, adaxially green and with numerous cystoliths, secondary veins 3 or 4 on each side of midvein, base attenuate and decurrent onto petiole, margin entire, apex acute. Spikes mostly terminal or axillary at upper leaf axils, 1–4 cm, elongate to 7 cm in fruit; peduncle (0–)0.5–2 cm, glabrous; bracts obovate-elliptic, 4–5 × 2–3 mm, glabrous, margin white, apex acute; bracteoles lanceolate-elliptic, ca. 5 × 1.2 mm. Calyx 4-lobed almost to base; lobes lanceolate, ca. 4 × 1 mm, glabrous, margin white. Corolla ca. 6 mm, glabrous, 2-lipped to half its length; lower lip oblong, ca. 3 × 3 mm, minutely 3-lobed; upper lip ovate, ca. 3 × 2 mm, apex emarginate. Stamens exserted; filaments ca. 2.5 mm, glabrous except for trichomes at base; anther thecae ovoid, ca. 1.3 mm, superposed, lower one spurred at base, upper one mucicous. Ovary glabrous; style ca. 6 mm, glabrous. Capsule with a brownish yellow short stipe, oblong, ca. 4 mm, glabrous, 4-seeded. Seeds ovate in outline, ca. 1 mm, rugose, glabrous.

• Seashores, sandy places. Hong Kong, Taiwan.

7. *Justicia neesiana* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 513. 1867.

狭叶爵床 xia ye jue chuang

Gendarussa neesiana Nees in Wallich, Pl. Asiat. Rar. 3: 105. 1832; *Adhatoda neesiana* (Nees) Nees; *Calophanoides multinodis* (Benoist) C. Y. Wu & H. S. Lo; *Justicia multinodis* Benoist.

Subshrubs to 30 cm tall. Stems basally woody, decumbent, and often rooting at nodes, then erect, apical portion much branched; branchlets blackish brown when dry, terete or ± 4-angled, pubescent at nodes. Leaves subsessile; leaf blade linear to linear-lanceolate, 1–3.5 × 0.2–0.8 cm, papery, glabrous, secondary veins 4 on each side of midvein, base attenuate, margin entire, apex obtuse to rounded. Spikes axillary, ca. 1 cm, 1–3-flowered; bracts lanceolate to spatulate-lanceolate, 4–6 mm; bracteoles subulate, ca. 1 mm, glabrous. Calyx ca. 5 mm, 5-lobed almost to base; lobes lanceolate-linear. Corolla white, 7–8 mm, pubescent; lower lip 3-lobed, lobes triangular and with an acute apex; upper lip triangular, 2-lobed. Staminal filaments pubescent on basal portion; anther thecae superposed, lower one with a white spur at base. Capsule ca. 5 mm, glabrous. Fl. Jun–Aug, fr. Aug–Oct.

On rocks, streamsides; 200–800 m. Hainan, Yunnan [Laos, Thailand, Vietnam].

Specimens misidentified as *Calophanoides loheri* (C. B. Clarke) Bremekamp by C. C. Hu (FRPS 70: 284. 2002) belong here.

8. *Justicia kwangsiensis* (H. S. Lo) H. S. Lo, Guihaia 17: 50. 1997.

广西爵床 guang xi jue chuang

Calophanoides kwangsiensis H. S. Lo, Acta Phytotax. Sin. 17(4): 86. 1979; *C. buxifolia* (H. S. Lo & D. Fang) C. Y. Wu & T. Y. Ding ex C. C. Hu; *Justicia buxifolia* H. S. Lo & D. Fang.

Shrubs to 50 cm tall, erect. Branches stout, 4-angled, sulcate; branchlets glabrous, densely punctate with grayish white cystoliths. Petiole 4–10 mm; leaf blade ovate to broadly elliptic, (0.5–)2–9 × 1–4 cm, leathery, glabrous, densely covered with cystoliths, secondary veins ca. 5 on each side of midvein, base broadly cuneate, margin entire, apex acuminate and sometimes shortly caudate. Spikes axillary, ca. 1 cm, 1–3-flowered; bracts subcircular, (1.5–)4–5 mm in diam., glabrous; bracteoles subulate, ca. 2 × 1 mm, glabrous. Calyx 5–6 mm, glabrous, 5-lobed almost to base; lobes narrowly lanceolate, apex acuminate. Corolla white, 7–9 mm; lower lip 3-lobed; upper lip triangular, 2-toothed. Staminal filaments glabrous; anther thecae superposed, lower one spurred at base. Capsule fusiform, ca. 8 mm, glabrous, 4-seeded. Seeds yellowish brown, tuberculate. Fl. Sep–Nov, fr. Dec–Feb.

• Limestone hills; below 700 m. Guangdong, Guangxi, Hainan.

9. *Justicia albiviridis* Benoist, Notul. Syst. (Paris) 5: 115. 1936.

大叶杜根藤 da ye du gen teng

Calophanoides alboviridis (Benoist) C. Y. Wu & H. S. Lo.

Herbs to 50 cm tall, perennial. Stems basally slightly decumbent then erect; young branches 4-angled, sulcate and striate, bifariously pubescent, glabrescent. Petiole 3–8 mm; leaf blade ovate to rarely lanceolate, (1–)3–9 × (0.5–)1.5–4 cm, papery, both surfaces glabrous, secondary veins 4 or 5 on each side of midvein, base slightly oblique and cuneate to subrounded, margin subentire, apex shortly acuminate. Spikes axillary, ca. 1 cm, (1–)3–5-flowered; bracts lanceolate, 1–3 mm, glabrous; bracteoles linear, ca. 1.5 mm. Calyx ca. 4 mm, 5-lobed; lobes lanceolate, outside glabrous except pubescent along midvein. Corolla white or greenish white, 8–9 mm, outside pubescent; lower lip elliptic, 3-lobed, lobes ovate with an obtuse apex; upper lip narrowly triangular, 2-lobed. Ovary slightly hirsute at tip; style basally hirsute. Capsule ca. 7 cm, glabrous. Seed light yellow, papillate. Fl. Aug–Sep, fr. Nov–Jan.

Wet places, streamsides; 200–600 m. Hainan [Vietnam].

10. *Justicia wardii* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 184. 1918.

高山杜根藤 gao shan du gen teng

Calophanoides wardii (W. W. Smith) C. Y. Wu ex C. C. Hu.

Shrubs to 60 cm tall, diffuse. Stems straw-colored, much branched, flexuous, densely grayish tomentose, soon glabrescent. Petiole ca. 5 mm, gray pilose; leaf blade elliptic-lanceolate, oblanceolate, or sometimes obovate, to 4.5 × 2 cm, papery, both surfaces first white tomentose then sparsely pilose, base cuneate, margin slightly undulate, apex shortly acuminate, acute, or rarely retuse. Spikes axillary, ca. 1 cm, (1–)3–5-flowered; peduncles 0–3 mm; bracts linear-lanceolate, ca. 5 mm, densely white villous; bracteoles linear, ca. 2 mm. Calyx to 8 mm, 5-lobed almost to base; lobes oblanceolate, outside densely villous, apex acute. Corolla ca. 2 cm, outside white villous; tube longer than limb; lower lip 3-lobed to middle, lobes oblong; upper lip 7–8 mm, shallowly 2-lobed. Staminal filaments glabrous, basally whitish; anther thecae superposed, lower one spurred at base. Ovary glabrous; style white villous. Capsule not seen. Fl. May.

• On rocks, thickets; ca. 1000 m. Yunnan.

11. *Justicia championii* T. Anderson in Bentham, Fl. Hongk. 264. 1861.

圆苞杜根藤 yuan bao du gen teng

Adhatoda chinensis Bentham, Hooker's J. Bot. Kew Gard. Misc. 5: 134. 1853; *Calophanoides chinensis* (Bentham) C. Y. Wu & H. S. Lo; *Dicliptera cyclostegia* Handel-Mazzetti; *Justicia chinensis* (Bentham) Druce (1917), not Linnaeus (1753).

Herbs to 50 cm tall. Stems 4-angled, sulcate, retrorsely pubescent. Petiole (0–)0.5–1.5 cm, sulcate, pubescent; leaf blade elliptic, oblong-elliptic, ovate, or lanceolate, 1–7(–10.5) × 0.5–2(–3.5) cm, sparsely pubescent when young, soon glabrescent or abaxially pilose along midvein, cystoliths adaxially numer-

ous, secondary veins 3–6 on each side of midvein, base cuneate to attenuate, margin entire, apex acute to obtuse. Spikes axillary, usually 3-flowered, several clustered; peduncle 2–4 mm, sparsely pubescent; bracts petiolate, subleaflike, circular to obovate-spatulate or sometimes elliptic, 5–11 × 2–6 mm, glabrous or adaxially sparsely pilose, veins 1–3 on each side of midvein, apex rounded to obtuse; bracteoles subulate to triangular, ca. 1 mm, glabrous or sparsely yellow puberulent, apex acute. Calyx 5-lobed almost to base; lobes yellowish white except for green along veins, linear-lanceolate, 6–7 mm, 1- or 2-veined, margin ciliate. Corolla white with 2 purplish red streaks, 7–10 mm, outside puberulent; lower lip ovate, ca. 4 × 3 mm, 3-lobed, middle lobe semicircular and ca. 0.8 × 1.3 mm, lateral lobes ovate and ca. 1.2 × 1 mm; upper lip lanceolate, ca. 3.5 × 1.5 mm, apex emarginate. Stamens exerted; filaments ca. 4 mm, glabrous; anther thecae superposed, lower one spurred at base, upper one mucous. Ovary glabrous; style ca. 6 mm, sparsely pubescent toward base; stigma capitate. Capsule 8–9 mm, glabrous, 4-seeded. Seeds oblong, ca. 2 × 1.5 mm, verrucose. Fl. and fr. Aug–Oct.

• Thickets, forests; 400–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Yunnan, Zhejiang.

Inflorescences of *Justicia championii* appear to be axillary clusters of flowers but are much-reduced spikes or racemes with a very short rachis.

12. *Justicia xerophila* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 214. 1919.

干地杜根藤 gan di du gen teng

Calophanoides xerophila (W. W. Smith) C. Y. Wu ex C. C. Hu.

Herbs to 10 cm tall. Stems basally semi-woody, slender and flexuous, yellow pilose. Petiole 1–3 mm, pilose; leaf blade lanceolate to oblanceolate, 0.8–1.5 × 0.3–0.5 cm, papery, both surfaces slightly pilose along veins, secondary veins ca. 3 on each side of midvein, base cuneate, margin ciliate and entire or apically 2 or 3 repandly toothed, apex acute to obtuse. Spikes axillary, ca. 1 cm, 1–3-flowered; bracts leaflike, broadly obovate to subcircular, 3–5 mm; bracteoles linear, ca. 2 mm. Calyx green, ca. 5 mm, outside slightly pilose to subglabrous, 5-lobed almost to base; lobes linear, apex acuminate. Corolla white, 7–8 mm, outside sparsely pilose; lower lip 3-lobed; upper lip emarginate. Staminal filaments ca. 4 mm, pilose; anther thecae superposed, lower one spurred at base. Ovary glabrous; style ca. 6 mm, subglabrous. Capsule ca. 5 mm, glabrous. Seeds ovate in outline, ca. 1 × 1 mm, tuberculate.

• Thickets on dry slopes. Yunnan.

13. *Justicia xylopoda* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 214. 1919.

木柄杜根藤 mu bing du gen teng

Calophanoides xylopoda (W. W. Smith) C. Y. Wu ex H. P. Tsui.

Shrubs 10–13 cm tall. Stems very short, much branched;

branches basally often cylindric, erect or decumbent, apically ascending, grayish or whitish pubescent, internodes sulcate. Petiole 1–3 cm, white pubescent; leaf blade ovate to narrowly ovate, 1–2.4 × 0.7–1.2 cm, papery, abaxially minutely and sparsely pilose on veins, adaxially glabrous, secondary veins 3 on each side of midvein, base cuneate and decurrent onto petiole, margin entire, apex ± obtuse. Spikes axillary, ca. 1 cm, usually 3-flowered; bracts ovate, ca. 1 cm, pubescent like leaves; bracteoles sublinear, ca. 1.5 mm. Calyx green, ca. 6 mm, 5-lobed to base; lobes linear-lanceolate, membranous, subequal, margin white, apex acuminate. Corolla yellow with purplish spots, ca. 1 cm, outside white pilose; lower lip broad, 3-lobed with center one larger; upper lip triangular, 2-lobed. Stamens inserted at apical part of corolla tube; filaments pilose around insertion; anther thecae superposed, lower one with a white spur at base. Ovary glabrous. Capsule not seen.

- Thickets on mountain slopes; 2300–2400 m. Sichuan, Yunnan.

14. *Justicia albovelata* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 182. 1918.

绵毛杜根藤 mian mao du gen teng

Calophanoides albovelata (W. W. Smith) C. Y. Wu ex H. P. Tsui.

Herbs 20–50 cm tall, perennial, much branched. Stems basally decumbent then erect and zigzag; young branchlets densely white villous. Petiole 3–5 mm, pubescent; leaf blade lanceolate, 3.5–4.5 × 0.8–1.5 cm, membranous, abaxially villous, adaxially densely white villous, secondary veins 4 or 5 on each side of midvein, base cuneate, margin entire, apex obtuse. Spikes axillary, ca. 1 cm, usually 3(or 4)-flowered; bracts spatulate-circular to obovate, 5–10 × 3–7 mm; bracteoles oblanceolate to linear. Pedicels ca. 2 mm. Calyx grayish green, 5–6 mm, 5-lobed almost to base; lobes linear-lanceolate, with dense white trichomes along veins, apex acuminate. Corolla whitish yellow to yellow, ca. 9 mm; tube slightly longer than limb, outside pilose; lower lip 3-lobed; upper lip short, 2-lobed. Staminal filaments basally hirsute; anther thecae superposed, lower one larger and with a white spur at base. Ovary glabrous. Capsule clavate, ca. 8 mm, glabrous, 4-seeded. Seeds ovate in outline, ca. 1.5 × 1.5 mm, verrucose. Fl. Sep.

- Thickets, streamsides; ca. 2700 m. Yunnan.

15. *Justicia yunnanensis* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 215. 1919.

滇杜根藤 dian du gen teng

Calophanoides yunnanensis (W. W. Smith) C. Y. Wu ex H. P. Tsui.

Shrubs to 45 cm tall. Stems basally unbranched, suberect, apically ascending, whitish sericeous. Petiole 2–5(–7) mm, pilose; leaf blade lanceolate to oblanceolate, ca. 2.5 × 1 cm, papery, both surfaces pilose, base narrowly cuneate and decurrent onto petiole, margin entire, apex ± obtuse. Spikes axillary, ca. 1 cm, usually 3–5-flowered; bracts surrounded by leaves, circular-spatulate to obovate, 5–10 mm; bracteoles linear to oblan-

ceolate. Pedicel short. Calyx light grayish green, ca. 5 mm, 5-lobed to base; lobes linear-lanceolate, midvein pale whitish yellow, apex acuminate. Corolla light whitish yellow, ca. 8 mm, outside minutely pilose; lower lip broad, 3-lobed with center one larger; upper lip triangular, 2-lobed. Stamens inserted at apical part of corolla tube, pilose around insertion; anther thecae superposed, lower one with a white spur at base. Capsule glabrous, 4-seeded. Seeds verrucose. Fl. Sep.

- Limestone slopes; ca. 1600 m. Yunnan.

Based on the known characters, *Justicia yunnanensis* appears remarkably similar to *J. albovelata*, if it is indeed distinct. We have refrained from making taxonomic alterations because no specimens of *J. yunnanensis* were studied.

16. *Justicia hainanensis* (C. Y. Wu & H. S. Lo) N. H. Xia & Y. F. Deng, J. Trop. Subtrop. Bot. 13: 533. 2005.

海南爵床 hai nan jue chuang

Calophanoides hainanensis C. Y. Wu & H. S. Lo, Fl. Hainan. 3: 597. 1974.

Herbs to 1 m tall. Stems 4-angled, sulcate, pubescent. Petiole 2–5 mm; leaf blade ovate to lanceolate-ovate, (0.5–)1.5–3 × (0.3–)0.5–1.8 cm, thickly papery, both surfaces hispid, secondary veins 3–5 on each side of midvein, base broadly cuneate to subrounded, margin entire, apex acute. Spikes axillary, ca. 1 cm, (1–)3–5-flowered; bracts shortly petiolate, circular to sub-circular, 2–5 mm in diam.; bracteoles small or absent. Calyx ca. 4.5 mm, hispid, 5-lobed almost to base; lobes linear-lanceolate. Corolla white, ca. 6 mm, outside densely pubescent; tube slightly enlarged; lower lip spreading, apex 3-lobed; upper lip erect, triangular and concave, apex emarginate. Staminal filaments ca. 2.5 mm; anther thecae superposed, lower one spurred at base. Ovary glabrous; style ca. 3 mm, glabrous. Capsule obovoid, ca. 6 mm, glabrous, 4-seeded. Seeds broadly ovate in outline, ca. 0.6 × 0.6 mm, compressed, verrucose. Fl. Jul–Nov, fr. Oct–Jan.

- Forests; 200–1100 m. Guangdong, Hainan.

17. *Justicia quadrifaria* (Nees) T. Anderson, J. Linn. Soc., Bot. 9: 514. 1867.

杜根藤 du gen teng

Gendarussa quadrifaria Nees in Wallich, Pl. Asiat. Rar. 3: 105. 1832; *Adhatoda quadrifaria* (Nees) Nees; *A. zollingeriana* Nees; *Calophanoides quadrifaria* (Nees) Ridley.

Herbs. Stems 4-angled, basally decumbent and usually rooting at nodes then erect, sulcate, bifariously pubescent, soon glabrescent. Petiole 0.4–2.5 cm, sparsely pubescent; leaf blade oblong, lanceolate, to rarely orbicular, (2–)6–8 × (1–)2–3.5 cm, both surfaces glabrous or only pubescent along veins, secondary veins 5–7 on each side of midvein, base narrowly cuneate and decurrent onto petiole, margin entire or slightly serrate, apex acute. Spikes axillary, ca. 1 cm, usually 3-flowered, solitary or several in a cluster; bracts with a 3–4 mm petiole, ovate to obovate, 3–8 × 3–5 mm, sparsely pubescent, pinnately veined, apex obtuse; bracteoles linear, ca. 1 mm, glabrous. Calyx 5–6 mm, outside puberulent, 5-lobed almost to base; lobes linear-lanceolate. Corolla white with purple spots on lower lip,

ca. 8 mm, outside pubescent; lower lip ca. 4×3 mm, patent, apex 3-lobed; upper lip oblong, erect, apex 2-lobed. Anthers with thecae superposed, lower ones spurred at base. Ovary glabrous; style ca. 6 mm, sparsely hirsute. Capsule ca. 8 mm, glabrous. Seeds ovate in outline, ca. 1.5×1 mm, verruculose, glabrous.

On rock in forested valleys; 800–1600 m. Chongqing, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Sichuan, Yunnan [India, Indonesia, Laos, Myanmar, Thailand, Vietnam].

18. *Justicia kouytcheensis* (H. Léveillé) E. Hossain, Notes Roy. Bot. Gard. Edinburgh 32: 407. 1973.

贵州杜根藤 gui zhou du gen teng

Ruellia repens Linnaeus var. *kouytcheensis* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 175. 1914; *Calophanoides kouytcheensis* (H. Léveillé) H. S. Lo.

Herbs to 40 cm tall. Stems basally decumbent and rooting at nodes. Petiole 1–2.5 cm; leaf blade oblong to rhombic, $5.5\text{--}11.5 \times 3.5\text{--}5.5$ cm, membranous, both surfaces pubescent especially along veins, secondary veins 6 or 7 on each side of midvein, base cuneate and decurrent onto petiole, margin entire or sometimes apically undulate-serrate, apex acuminate to subcaudate. Spikes axillary, ca. 1 cm, 1–3(–5)-flowered; bracts with a 1–2 mm petiole, obovate to circular, $7\text{--}8 \times 4\text{--}5$ mm, veins ca. 3 on each side of midvein, base broadly cuneate, apex retuse or rounded; bracteoles subulate, 1–2 mm. Calyx ca. 1 cm, 5-lobed almost to base; lobes lanceolate, subequal, outside white laterally, green along midvein, and pubescent. Corolla white, ca. 1.4 cm; lower lip patently 3-lobed; upper lip erect, 2-lobed. Staminal filaments ca. 5 mm, glabrous; anther thecae oblong, superposed, lower one smaller and with a white spur at base. Ovary glabrous; style ca. 9 mm, glabrous; stigma capitate, slightly enlarged. Capsule and seeds not seen. Fl. Aug–Oct.

• Limestone hills, thickets; 800–1300 m. Guizhou, Yunnan.

Justicia kouytcheensis is very similar to *J. quadrifaria*, and the putative distinctions between them require additional studies.

19. *Justicia xerobatica* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 213. 1919.

滇东杜根藤 dian dong du gen teng

Calophanoides xerobatica (W. W. Smith) H. P. Tsui.

Subshrubs to 30 cm tall, prostrate. Stems basally woody, slender, flexuous, and often rooting at nodes, apically ascending, minutely white sericeous. Petiole 2–3 cm, pilose; leaf blade subcircular, broadly obovate, or rarely narrowly lanceolate, $1\text{--}2 \times 0.5\text{--}0.8$ cm, softly membranous, both surfaces pilose on veins, base cuneate, margin entire, apex rounded to obtuse. Spikes axillary, ca. 1 cm, 1–3-flowered; bracts surrounded by leaves, leaflike, broadly obovate to subcircular, 3–4 mm; bracteoles ovate to nearly subulate-lanceolate, small. Calyx green, ca. 5 mm, 5-lobed almost to base; lobes linear-lanceolate, midrib pilose, margins scarios, apex acuminate. Corolla white (reportedly), ca. 9 mm, outside sparsely pilose. Mature capsule not seen. Fl. Sep.

• Limestone areas; 1200–1400 m. Sichuan, Yunnan.

Justicia xerobatica is very similar to *J. xerophila*. Further studies of both will be necessary to determine whether they should be treated as distinct from one another.

20. *Justicia siccanea* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 43. 1917.

旱杜根藤 han du gen teng

Calophanoides siccanea (W. W. Smith) C. Y. Wu ex C. C. Hu.

Shrubs to 60 cm tall, prostrate. Stems woody, flexuous, grayish tomentose, soon glabrescent. Petiole 3–8 cm, villous; leaf blade ovate to lanceolate, $1.5\text{--}4 \times 1\text{--}2$ cm, both surfaces sparsely pilose, secondary veins ca. 4 on each side of midvein, base cuneate, margin entire, apex rounded to acute. Spikes axillary, ca. 1 cm, 1–3-flowered; peduncle ca. 3 mm, grayish pubescent; bracts linear, 2–3 mm, abaxially grayish pubescent; bracteoles similar to bracts. Calyx ca. 7 mm, outside pubescent, 5-lobed to base; lobes linear. Corolla white tinged with red, ca. 1.3 cm, outside pubescent; lower lip very short, 3-lobed, lobes circular; upper lip shorter, apex emarginate. Staminal filaments ca. 4 mm, basal portion whitish villous; anther thecae superposed, lower one spurred at base. Ovary glabrous; style ca. 8 mm, white villous. Capsule ca. 7 mm, glabrous. Seeds ovate in outline, ca. 1×1 mm. Fl. Sep.

• On rocks by trailsides, open slopes; 2000–2200 m. Sichuan, Yunnan.

21. *Justicia xantholeuca* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 212. 1919.

黄白杜根藤 huang bai du gen teng

Calophanoides xantholeuca (W. W. Smith) C. Y. Wu ex C. C. Hu.

Shrubs to 30 cm tall. Stems 4-angled, much branched, sulcate, pilose then glabrescent. Petiole 2–5 mm, pilose; leaf blade lanceolate, $2\text{--}3 \times 0.7\text{--}1$ cm, papery, both surfaces pilose along veins, secondary veins ca. 3 on each side of midvein, base cuneate, margin entire, apex acute. Spikes axillary, 3–5-flowered; bracts lanceolate or ovate, 5–6 mm; bracteoles subulate, narrowly lanceolate, or ovate, smaller than bracts. Calyx grayish white, ca. 5 mm, white pilose along midvein, 5-lobed almost to base; lobes linear-lanceolate. Corolla white, ca. 8 mm, outside sparsely pilose; lower lip 3-lobed; upper lip emarginate. Staminal filaments ca. 5 mm, sparsely hirsute; anther thecae superposed, lower one spurred at base. Ovary glabrous; style ca. 6 mm, subglabrous. Capsule ca. 5 mm, glabrous. Seeds ovate in outline, ca. 1×1 mm, tuberculate-verrucose. Fl. Nov–Jan.

• Thickets on dry slopes; 400–800 m. Yunnan.

22. *Justicia grossa* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 535. 1885.

大爵床 da jue chuang

Shrubs 50–100 cm tall. Stems subterete, puberulent when young then glabrescent. Petiole 1.3–4 cm, glabrous or puberulent; leaf blade elliptic to lanceolate, $16\text{--}30 \times 5\text{--}9.5$ cm, abaxially glabrous or puberulent along veins, adaxially glabrous,

secondary veins 5–8 on each side of midvein, base broadly rounded to cuneate, margin crenulate, apex acuminate to attenuate and with an obtuse tip. Inflorescences terminal, thyrsoid of 3-flowered cymes, usually 3 or more branched, 5–15 × 2–3 cm; peduncle 1–3.5 cm; rachis hirsute; bracts ovate, elliptic, or lanceolate, 2–8 × 1–5 mm, abaxially puberulent; bracteoles lanceolate to rarely triangular, 1.5–3 × 0.5–1 mm, abaxially puberulent. Pedicel 1–5 mm, hirsute. Calyx ca. 6 mm, both surfaces gland-tipped pubescent, 5-lobed to base; lobes linear. Corolla greenish white with pale purple dots on lower lip, 1.2–1.5 cm, outside pubescent; tube 6–7 mm; limb 6–7 mm; lower lip 3-lobed, lobes ovate and ca. 2 × 1.5–2 mm; upper lip emarginate. Staminal filaments 4–6 mm, basal portion densely pubescent; anther thecae 1.5–2 mm, both spurred at base. Ovary pubescent; style pubescent. Capsule ca. 1.6 cm, densely pubescent. Seeds elliptic to circular in outline, ca. 3.5 × 3.5 mm, wrinkly verrucose.

Forests; 400–800 m. Hainan [Laos, Malaysia, Myanmar, Thailand, Vietnam].

23. *Justicia adhatoda* Linnaeus, Sp. Pl. 1: 15. 1753.

鸭嘴花 ya zui hua

Adhatoda vasica Nees.

Shrubs to 4 m tall. Branches thickened, ± 4-angled, lenticellate, pubescent when young but soon glabrescent. Petiole 0.8–3 cm, puberulent; leaf blade ovate to elliptic-ovate, 7–18 × 2–7 cm, abaxially puberulent, adaxially densely tomentose when young but glabrescent except tomentose along veins, secondary veins 9–12 on each side of midvein and meeting near margin, base broadly cuneate, margin entire, apex acuminate and sometimes slightly falcate. Spikes terminal or axillary, ovoid to broadly ovoid, 3–7 cm; peduncle 3–7 cm; bracts imbricate, ovate-oblong, 1–2 × 0.5–1.5 cm, puberulent, 3–7-veined, margin ciliate, apex acute; bracteoles linear-lanceolate, 1–1.4 × ca. 0.4 cm, puberulent, 3–5-veined, margin ciliate, apex acute. Calyx 5-lobed; lobes linear-oblong, ca. 10 × 3 mm, margin narrowly scarious and ciliate. Corolla white or pink with purplish or pinkish stripes outside, broadly tubular, 2.5–3 cm, outside pilose; tube basally cylindrical and ca. 5 mm wide for ca. 5 mm and then slightly inflated and bent upward; upper lip ovate-oblong, ca. 1.8 cm, erect, shallowly 2-lobed; lower lip oblong-circular, spreading, 3-lobed, middle lobe subcircular and ca. 9 × 5 mm, lateral lobes ovate and ca. 8 × 4.5 mm. Stamens exerted; filaments ca. 1.5 cm, declinate, glabrous except basally sericeous; anther thecae ellipsoid, ca. 3.5 mm, equal, superposed, lower one spurred at base. Ovary pubescent especially at tip; style ca. 2.5 cm, recurved, basal part pubescent; stigma simple. Capsule obovoid, 2.5–4 × ca. 0.5 cm. Seeds circular in outline. Fl. Jan–Mar, fr. Jun–Jul. $2n = 34$.

Roadsides, thickets. Naturalized or cultivated in Guangdong, Guangxi, Hainan, and Yunnan [probably native to India, Indonesia, Malaysia, Nepal, Pakistan, and Sri Lanka, but widely cultivated and naturalized in tropics, obscuring native distribution].

Justicia adhatoda is widely cultivated beyond its native range.

This species is used medicinally.

24. *Justicia vagabunda* Benoist, Notul. Syst. (Paris) 5: 114. 1936.

针子草 zhen zi cao

Rhaphidospora vagabunda (Benoist) C. Y. Wu ex C. C. Hu.

Shrubs to 1.3 m tall. Stems terete, zigzag, glabrous. Petiole 7–12 mm; leaf blade oblong-lanceolate, 6–14 × 2–5 cm, glabrous or sometimes pilose along midvein, base obliquely cuneate, margin entire or slightly undulate, apex acute to falcate. Cymes axillary, ca. 2 cm; peduncle 4–6 mm, pubescent; bracts subulate, 1–2 mm, pilose; bracteoles 2–5 mm, pilose. Calyx ca. 3.5 mm, outside pubescent; lobes 5, oblong-lanceolate. Corolla white with blue lines, 1–1.1 cm, outside pubescent; tube as long as limb; lower lip 3-lobed; upper lip triangular, apex emarginate. Staminal filaments ca. 4 mm, glabrous; anther thecae superposed, lower one spurred at base. Ovary pubescent at tip; style basal portion hirsute. Capsule not seen.

Forests, thickets, streamsides; 500–800 m. Yunnan [Cambodia, Vietnam].

25. *Justicia ventricosa* Wallich ex Hooker, Bot. Mag. 54: t. 2766. 1827.

黑叶小驳骨 hei ye xiao bo gu

Adhatoda ventricosa (Wallich ex Hooker) Nees; *Gendarussa ventricosa* (Wallich ex Hooker) Nees.

Subshrubs or perennial herbs, to 1 m tall. Stems subterete, glabrous. Winter buds ovoid, ca. 2 mm, pubescent. Petiole 0.5–1.5 cm, sulcate, glabrous; leaf blade elliptic to obovate, 6–17 × 2–6 cm, glabrous, midvein abaxially prominent and adaxially impressed, secondary veins 6–8 on each side of midvein, prominent on both surfaces, and meeting near margin, base attenuate, margin entire or slightly undulate, apex shortly acuminate to acute. Spikes terminal, 5–10 cm, densely flowered, usually with 1–3 flowers on each inflorescence node; peduncle ca. 1 cm; bracts leaflike, green to maroon, imbricate, broadly ovate to subcircular, 1–1.5 × 0.8–1 cm, abaxially pilose to subglabrous, pinnately veined, margin ciliate, apex acute; bracteoles linear, 3–5 × 1–2 mm, margin ciliate. Calyx 5-lobed; lobes linear-lanceolate, ca. 3 mm, margin ciliate. Corolla creamy white with purplish pink stripes on lips, 1.5–1.8 cm, outside pilose, inside pubescent; tube basally cylindrical and ca. 1.7 mm wide for ca. 1 cm; lower lip 3-lobed, lobes ovate, ca. 2 × 1 mm, and apex rounded; upper lip oblong-ovate, 2-lobed. Stamens exerted; filaments ca. 6 mm, glabrous; anther thecae ovoid, subequal, superposed, lower one with a white appendage at base. Ovary comose; style ca. 1.6 cm, base pilose. Capsule ca. 8 mm, pubescent, 4-seeded. Fl. Nov–Jan, fr. Apr–May. $2n = 30$.

Sparse forests, thickets. Naturalized or cultivated in Guangdong, Guangxi, Hainan, and Yunnan [native to Cambodia, Laos, Myanmar, N Thailand, and Vietnam].

This species is used medicinally.

26. *Justicia gendarussa* N. L. Burman, Fl. Indica, 10. 1768.

小驳骨 xiao bo gu

Gendarussa vulgaris Nees.

Subshrubs 0.7–1.5 cm tall, much branched. Stems subterete, swollen at nodes, glabrous. Petiole 3–10 mm; leaf blade narrowly lanceolate, 6–10 × 1–1.5 cm, glabrous, secondary veins 5–8 on each side of midvein, base cuneate to attenuate, margin subsinuate, apex acute to shortly acuminate. Spikes terminal or axillary, 3–12 cm, interrupted, usually in a leafy panicle; peduncle 0.5–1.5 cm; bracts triangular, 2–6 × 1–2.5 mm, basal ones longer than calyx then gradually smaller with apicalmost ones shorter than calyx, margin ciliate, apex acute; bracteoles elliptic to linear-lanceolate, ca. 3 × 1 mm, margin ciliate, apex acute. Calyx ca. 5 mm, 5-lobed; lobes linear-lanceolate, 3–4 × ca. 0.5 mm, subequal, apex acuminate. Corolla creamy white, 1.2–1.5 cm; tube basally cylindrical and ca. 2 mm wide for 8–9 mm; lower lip violet dotted basally, cuneate-obovate, 6–10 mm broad, 3-lobed, lobes oblanceolate and 3–5 × ca. 3.5 mm; upper lip violet blotched, triangular, ca. 7 × 3.5 mm, 2-cleft. Stamens exserted; filaments 3–6 mm, glabrous; anther thecae oblong, ca. 1.2 mm, superposed, lower one spurred at base, upper one mucous. Ovary glabrous; style ca. 1 cm, glabrous; stigma capitate, shortly 2-lobed. Capsule clavate, ca. 1.2 cm. Fl. Jan–Apr. $2n = 28, 30$.

Roadsides, thickets. Naturalized or cultivated in Guangdong, Guangxi, Hainan, Taiwan, and Yunnan [native to or naturalized in Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, and Vietnam; widely cultivated].

Justicia gendarussa is native to S and SE Asia but is widely cultivated and naturalized. Its actual native distribution is not certain because it is often not clear whether particular collections are native.

27. *Justicia pseudospicata* H. S. Lo & D. Fang, *Guihaia* 17: 52. 1997.

黄花爵床 huang hua jue chuang

Mananthes pseudospicata (H. S. Lo & D. Fang) C. Y. Wu & C. C. Hu.

Herbs to 30 cm tall, perennial. Stems 4-angled, basally usually rooting at nodes, sulcate, bifariously pubescent. Petiole 3–13 mm, pubescent; leaf blade ovate, (0.8–)1.5–6.5 × (0.4–)1–4 cm, thickly papery, abaxially glabrous, adaxially glabrous or pilose on veins, secondary veins 4 or 5 on each side of midvein, base cuspidate to rounded, margin subundulate, apex acute. Spikes often terminal or rarely axillary in apicalmost leaf axil, 1.5–3 cm, interrupted; peduncle 1–2.5 cm; rachis bifariously pubescent; bracts broadly obovate to sometimes circular or ovate, 3–5 × 2–4 mm, abaxially sparsely gland-tipped puberulent, apex cuspidate; bracteoles narrowly triangular, ca. 2 × 1 mm, abaxially pubescent, margin ciliate, apex acute. Calyx 2–3 mm, 5-lobed almost to base; lobes linear. Corolla yellow with purplish spots, 1.2–1.4 cm, outside pubescent; lower lip palate 3-lobed, lobes triangular and 1–2 mm; upper lip 4–5.5 mm, apex emarginate. Staminal filaments 2.5–3 mm, glabrous; anther thecae ca. 1.5 mm, lower one spurred at base. Ovary glabrous; style 5–8 mm, subglabrous. Capsule not seen. Fl. Sep–Dec.

- On rocks in forests; 1300–1700 m. Guangxi.

28. *Justicia latiflora* Hemsley, *J. Linn. Soc., Bot.* 26: 245. 1890.

紫苞爵床 zi bao jue chuang

Mananthes latiflora (Hemsley) C. Y. Wu & C. C. Hu.

Herbs or shrubs 50–100 cm tall, erect. Stems 4-angled, sulcate, sparsely pubescent. Petiole 1–3.5 cm, pubescent; leaf blade lanceolate, ovate, or subcircular, 6–10 × 2–3.5 cm, both surfaces hispid along veins, secondary veins 8–10 on each side of midvein, base cuneate to sometimes attenuate, margin entire, apex acuminate. Spikes terminal, 3.5–5.5 cm, densely flowered; bracts basally pale green and purplish red above middle, ovate to elliptic, 7–10 × 3–4 mm, abaxially puberulent, apex acuminate; bracteoles linear, 5–7 × ca. 1.5 mm, abaxially puberulent. Calyx 5–8 mm, outside puberulent, 5-lobed almost to base; lobes linear, apex acute. Corolla pale white with purplish red dots or stripes on lobes, ca. 1.5 cm, outside pubescent; tube ca. 1 cm; lower lip patent, broadly 3-lobed, lobes circular and ca. 1 mm in diam.; upper lip ca. 0.5 mm, broadly rounded and concave, apex emarginate. Staminal filaments glabrous; anther thecae superposed, lower one minutely spurred at base. Ovary glabrous; style glabrous. Capsule obovoid-clavate, 1–1.2 cm, glabrous. Seeds ovate in outline, ca. 4 × 3.5 mm, rugose. Fl. Feb–Apr, fr. May–Jun.

- Forests, streamsides; 600–1800 m. Chongqing, Guizhou, Hubei, Hunan.

29. *Justicia austrosinensis* H. S. Lo, *Guihaia* 17: 52. 1997.

华南爵床 hua nan jue chuang

Mananthes austrosinensis (H. S. Lo) C. Y. Wu & C. C. Hu.

Herbs 40–70 cm tall. Stems 4-angled, sulcate, glabrous. Petiole 0.5–3 cm, bifariously pubescent or glabrescent; leaf blade broadly ovate to ovate-elliptic, 7–15 × 2.5–7 cm, glabrous, abaxially pale green, adaxially green and with numerous cystoliths especially on veins, secondary veins 5–8 on each side of midvein, base cuneate and decurrent onto petiole, margin crenate or entire, apex shortly acuminate to acute. Spikes mostly terminal or rarely axillary, 5–7 cm; peduncle 1–3 cm, with numerous cystoliths, glabrous; bracts green, usually subtending 1 or 2 flowers, flabellate or broadly obovate, 5–8 × 7–9 mm, margin ciliate, apex acuminate to obtuse and mucronate, with 1–3 teeth; bracteoles subulate, ca. 3 mm, margin ciliate, apex acuminate. Calyx 5-lobed almost to base; lobes lanceolate, ca. 4 mm, margin ciliate, apex acuminate. Corolla yellowish green with purplish red dots on lobes, ca. 1.3 cm, outside pilose, inside glabrous except for trichomes retaining style; lip ca. 1/2 as long as corolla; lower lip 3-lobed, lobes ovate, ca. 2 × 2 mm, and apex rounded; upper lip ovate-triangular, ca. 6 × 3 mm, erect, apex emarginate. Stamens exserted; filaments ca. 4 mm, glabrous; anther thecae ca. 2 mm, unequal, superposed, lower one spurred at base, upper one mucous. Ovary glabrous; style ca. 1 mm, pilose. Capsule clavate, ca. 1.2 cm, pubescent, 4-seeded. Seeds ovate in outline, ca. 2 mm, rugose. Fl. Jul–Oct.

- Thickets in ravines. Guangdong, Guangxi, Guizhou, Jiangxi, Yunnan.

30. *Justicia ferruginea* H. S. Lo & D. Fang, *Guihaia* 17: 58.

1997.

锈背爵床 *xiu bei jue chuang*

Mananthes ferruginea (H. S. Lo & D. Fang) C. Y. Wu & C. C. Hu.

Herbs 20–60 cm tall, anisophyllous. Stems 4-angled, sulcate, glabrous. Leaves sessile; leaf blade oblanceolate to rarely lanceolate, 8–17 × 2.5–6.5 cm, papery, glabrous, abaxially rust-colored when dry, secondary veins 10–13 on each side of midvein, base auriculate and somewhat amplexicaul, margin entire, apex obtuse. Spikes terminal or axillary, 1.5–5 cm, interrupted, with 2–5 flowers per node; peduncle 1.5–3.5 cm, glabrous; rachis puberulent; bracts triangular, ca. 1 mm, subglabrous; bracteoles similar to bracts. Calyx ca. 2 mm, subglabrous, 5-lobed almost to base; lobes narrowly triangular. Corolla white, 6.5–7 mm, outside puberulent; lower lip 3-lobed, lobes ca. 1 mm and apex rounded; upper lip ovate-triangular, ca. 3 mm, erect, apex emarginate. Staminal filaments ca. 2 mm, glabrous; anther thecae ca. 1 mm, unequal, superposed, lower one spurred at base. Ovary glabrous; style subglabrous. Capsule not seen. Fl. May–Aug.

- Forests on limestone hills. Guangxi.

31. *Justicia panduriformis* Benoist, Notul. Syst. (Paris) 5: 116. 1936.

琴叶爵床 *qin ye jue chuang*

Mananthes panduriformis (Benoist) C. Y. Wu & C. C. Hu.

Shrubs to 2 m tall. Stems 4-angled, sulcate, glabrous. Leaves sessile; leaf blade obovate, 15–26 × 7.5–15 cm, glabrous, base attenuate to rounded, margin entire or slightly undulate, apex shortly acuminate. Spikes terminal, elongated; rachis densely pubescent, with 2 or 3 flowers clustered per node; bracts lanceolate-linear, 2–3 mm, apex acute; bracteoles similar to bracts. Calyx ca. 3 mm, outside puberulent, 5-lobed almost to base; lobes linear, apex acute. Corolla white, ca. 8 mm; tube as long as limb; lower lip 3-lobed; upper lip emarginate. Staminal filaments ca. 4 mm, glabrous; anther thecae unequal, superposed, lower one spurred at base. Ovary pubescent; style ca. 6 mm, basal portion slightly pubescent. Capsule not seen. Fl. May–Sep.

- Forests on limestone hills. Guangxi, Yunnan [Vietnam].

32. *Justicia lianshanica* (H. S. Lo) H. S. Lo, Guihaia 17: 50. 1997.

广东爵床 *guang dong jue chuang*

Mananthes lianshanica H. S. Lo, Bull. Bot. Res., Harbin 1(4): 105. 1981.

Herbs to 30 cm tall. Stems 4-angled, basally prostrate and rooting at nodes then erect, sulcate, bifariously pubescent to glabrescent. Petiole 1.5–3.5 cm, pubescent; leaf blade ovate, 3.5–14 × 2–6 cm, thinly papery, abaxially glabrous or sparsely puberulent along veins, adaxially glabrous, secondary veins 6–8 on each side of midvein and meeting near margin, base shallowly cordate to subtruncate, margin slightly undulate or sub-

entire, apex obtuse. Spikes terminal; rachis densely pubescent, usually 1-flowered per node; bracts ovate-lanceolate, 2–3 mm, abaxially pubescent; bracteoles similar to bracts. Calyx ca. 4 mm, outside gland-tipped pubescent, 5-lobed almost to base; lobes lanceolate, ca. 3.5 × 0.7 mm. Corolla yellow with purplish spots on lower lip, ca. 8 mm, outside gland-tipped pubescent; tube slightly widened apically; lower lip ca. 3.5 mm, broader than upper lip, patent, 3-lobed, lobes ovate and apex rounded; upper lip triangular, ca. 2.2 mm, erect, apex emarginate. Staminal filaments ca. 3 mm, glabrous; anther thecae ovoid, superposed, lower one spurred at base. Ovary hirsute; style ca. 9 mm, subglabrous. Capsule (immature) clavate, hirsute. Fl. May–Jul.

- Forests on rocks; 300–800 m. Guangdong, Guangxi.

33. *Justicia cardiophylla* D. Fang & H. S. Lo, Guihaia 17: 57. 1997.

心叶爵床 *xin ye jue chuang*

Mananthes cardiophylla (D. Fang & H. S. Lo) C. Y. Wu & C. C. Hu.

Herbs 20–50 cm tall. Stems terete, glabrous. Petiole 3.5–11 mm, glabrous or somewhat gland-tipped puberulent; leaf blade cordate to rarely broadly ovate, 3.5–12 × 2–9 cm, papery, glabrous, secondary veins 5–7 on each side of midvein, base cordate to ± truncate, margin subentire, apex acute to rarely shortly acuminate. Spikes terminal, 3.5–11 cm, unbranched or sometimes 1-branched; peduncle 7.5–20.5 cm, somewhat bifariously pubescent; rachis densely pubescent, (1 or) 2–5-flowered per node; bracts triangular, 1.5–2 × ca. 1 mm, abaxially puberulent, margin ciliate; bracteoles subtriangular, ca. 1.5 mm, abaxially puberulent. Calyx ca. 2 mm, outside puberulent, 5-lobed almost to base; lobes linear-triangular, ca. 1.5 × 0.6 mm. Corolla greenish yellow, ca. 7 mm, outside pubescent; lower lip patent, 3-lobed, lobes ca. 1 mm and apex rounded; upper lip triangular, ca. 3.5 mm, erect, apex emarginate. Staminal filaments ca. 2 mm, glabrous; anther thecae linear, ca. 1 mm, unequal, superposed, lower one spurred at base. Ovary pubescent; style ca. 3.5 mm, basal portion sparsely puberulent. Capsule clavate, ca. 1.5 cm, pubescent, 4-seeded. Seeds ovate in outline, ca. 1.3 × 1.3 mm, verrucose. Fl. Mar–Jun.

- Rocky limestone hills; 400–600 m. Guangxi [Vietnam].

34. *Justicia austroguangxiensis* H. S. Lo & D. Fang, Guihaia 17: 54. 1997.

桂南爵床 *gui nan jue chuang*

Justicia austroguangxiensis f. *albinervia* D. Fang & H. S. Lo; *Mananthes austroguangxiensis* (H. S. Lo & D. Fang) C. Y. Wu & C. C. Hu; *M. austroguangxiensis* f. *albinervia* (D. Fang & H. S. Lo) C. Y. Wu & C. C. Hu.

Herbs 15–30 cm tall. Stems 0.5–5 cm, sometimes woody. Leaves in a basal rosette; petiole 1–3 cm, glabrous; leaf blade obovate, obovate-elliptic, or rarely elliptic, (6–)10–15 × (2.5–) 4–7(–9) cm, papery, glabrous, secondary veins 7 or 8 on each side of midvein, base attenuate to narrowly cuneate and decurrent onto petiole, margin entire, apex acute to rarely obtuse. Spikes terminal or axillary in apical leaf axils, 5–35 cm, inter-

rupted, usually branched; rachis puberulent, usually (1 or)2–9-flowered per node; bracts triangular to rarely narrowly triangular, 1–2 mm, abaxially puberulent; bracteoles similar to bracts. Calyx 1.5–2 mm, outside puberulent, 5-lobed almost to base; lobes subulate. Corolla light yellowish green, 8–9 mm, outside puberulent; lower lip 3-lobed, lobes 4–4.5 mm; upper lip triangular, 3.5–4 mm, erect, apex emarginate. Staminal filaments ca. 3 mm, glabrous; anther thecae superposed, lower one spurred at base. Ovary puberulent; style 4.5–5 mm, basal portion puberulent. Capsule clavate, 1.3–1.5 cm. Seeds ovate in outline, ca. 0.8 × 0.8 mm, tuberculate. Fl. Mar–Jul, fr. Aug.

- Dense forests on rocks; 300–500 m. Guangxi.

35. *Justicia leptostachya* Hemsley, J. Linn. Soc., Bot. 26: 245. 1890.

南岭爵床 nan ling jue chuang

Mananthes leptostachya (Hemsley) H. S. Lo.

Herbs 40–60 cm tall. Stems 4-angled, sulcate, bifariously pubescent. Petiole 1–2 cm; leaf blade ovate-lanceolate, 10.5–12.5(–18) × 5–6.5(–8) cm, papery, abaxially strigose along veins, adaxially sparsely strigose, secondary veins 5–9 on each side of midvein, base broadly cuneate, margin entire or slightly undulate, apex acuminate. Spikes terminal, 3–6 cm, branched or rarely unbranched; rachis hispid, with several flowers per node; bracts linear, ca. 2 × 0.8 mm, abaxially puberulent; bracteoles similar to bracts. Calyx ca. 3 mm, outside puberulent, 5-lobed almost to base; lobes narrowly lanceolate to linear, apex acute. Corolla ca. 6 mm, outside pubescent; lower lip patent, 3-lobed, lobes ovate and apex rounded; upper lip oblong, apex emarginate. Staminal filaments ca. 3 mm, glabrous; anther thecae superposed, lower one spurred at base. Ovary glabrous; style filiform, glabrous. Capsule clavate, ca. 1.2 cm, puberulent, 4-seeded. Seeds dark brown, ovate in outline, ca. 1 × 1 mm, slightly muricate. Fl. Mar–Jun, fr. Jul–Aug.

- On rocks. Guangdong, Guangxi, Hunan.

Specimens misidentified as *Mananthes vasculosa* (Nees) Bremekamp by C. C. Hu (FRPS 70: 298. 2002) belong here.

36. *Justicia microdonta* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 183. 1918.

小齿爵床 xiao chi jue chuang

Mananthes microdonta (W. W. Smith) C. Y. Wu & C. C. Hu.

Shrubs to 2 m tall, much branched. Young branches reddish when dry, 4-angled, sparsely pilose. Petiole 1–2 cm; leaf blade ovate, (2–)3–5.5 × 1.5–2.5 cm, variable in size, papery, abaxially light green and pilose along midvein, adaxially green and pilose especially along veins, base broadly cuneate and decurrent onto petiole, margin entire, apex shortly acuminate to acute. Spikes terminal, 5–7(–10) cm, unbranched, nodes distant, with 2–4 flowers per node; peduncle short; rachis densely pilose; bracts linear-lanceolate, 3–5 cm; bracteoles similar to bracts. Calyx ca. 7 mm, 5-lobed almost to base; lobes linear-lanceolate, 5–6 mm, pilose along midvein. Corolla white, 1–1.3 cm, out-

side somewhat pubescent to glabrescent; tube short; limb longer than tube; lower lip 4–5 mm, 3-lobed, lobes pilose inside and ciliate on margin; upper lip 2-lobed. Staminal filaments pilose; anther thecae parallel, superposed, lower one with a white spur at base. Ovary glabrous; style densely pilose. Capsule ca. 2 cm, 4-seeded. Seeds reddish brown, circular in outline, 3–4 mm in diam., rugose-verruculose. Fl. Jun–Aug.

- Thickets; 800–1200 m. Sichuan, Yunnan.

37. *Justicia damingensis* (H. S. Lo) H. S. Lo, Guihaia 17: 51. 1997.

大明爵床 da ming jue chuang

Mananthes damingensis H. S. Lo, Bull. Bot. Res., Harbin 1(4): 106. 1981.

Herbs 15–30 cm tall. Stems subterete, basally prostrate and rooting at nodes then erect, sulcate, bifariously pubescent. Petiole 0.5–1.5 cm, pubescent; leaf blade ovate, 4–9 × 2.5–4.5 cm, thinly papery, abaxially pubescent along veins, adaxially glabrous, secondary veins ca. 5 on each side of midvein, base narrowly cuneate, margin shallowly undulate, apex acute. Racemes terminal, spiciform, 17–18 cm, branchless or trifurcate branched, with 3 flowers per node; peduncle 5.5–10 cm, pubescent; bracts subulate, 1.5–2 mm, abaxially pubescent; bracteoles similar to bracts. Pedicel ca. 1 mm, pubescent. Calyx ca. 6 mm, 5-lobed almost to base; lobes narrowly triangular, ca. 5 × 0.6 mm, margin ciliate, apex acuminate. Corolla yellow, ca. 1 cm, outside puberulent; lower lip ca. 3.2 mm, patent, 3-lobed, lobes ovate and apex rounded; upper lip subdeltooid, ca. 2.5 mm. Staminal filaments ca. 3 mm, glabrous; anther thecae ellipsoid, superposed, lower one spurred at base. Ovary glabrous; style ca. 6 mm, glabrous. Capsule not seen. Fl. May–Jun.

- Thickets; 300–600 m. Guangxi.

38. *Justicia amblyosepala* D. Fang & H. S. Lo, Guihaia 17: 55. 1997.

钝萼爵床 dun e jue chuang

Mananthes amblyosepala (D. Fang & H. S. Lo) C. Y. Wu & C. C. Hu.

Shrubs 30–50 cm tall. Stems terete, glabrous. Petiole 0.8–3 cm, glabrous; leaf blade ovate to elliptic, 9–17 × 4.5–8 cm, papery, glabrous, secondary veins 5–7 on each side of midvein, base attenuate to rounded, margin subentire, apex acute. Spikes terminal or axillary, 2–23 cm, interrupted, simple or branched; peduncle 1.5–5 cm; rachis 4-angled, sulcate, bifariously puberulent, with 1 flower per node; bracts triangular to rarely narrowly triangular, 1.5–3 mm, subglabrous; bracteoles narrowly triangular, ca. 2 mm, margin ciliate. Calyx ca. 5 mm, 5-lobed; lobes elliptic-lanceolate, both surfaces usually puberulent to subglabrous, apex obtuse to rounded. Corolla light yellow, ca. 1.3 cm, outside retrorsely puberulent; lower lip 3-lobed, lobes ca. 1.5 mm and apex rounded; upper lip ovate-triangular, ca. 5 mm, erect, apex emarginate. Staminal filaments ca. 3 mm, glabrous; anther thecae ellipsoid, ca. 1.5 mm, unequal, superposed, lower one spurred at base. Ovary pubescent at tip; style 8–11 mm, sparsely puberulent. Capsule clavate, ca. 1.5 cm, pubescent. Seeds ovate in outline, ca. 1 × 1 mm, verrucose. Fl. Mar–

May, fr. Aug.

- Forests on limestone slopes. Guangxi.

39. *Justicia acutangula* H. S. Lo & D. Fang, *Guihaia* 17: 56. 1997.

棱茎爵床 *leng jing jue chuang*

Mananthes acutangula (H. S. Lo & D. Fang) C. Y. Wu & C. C. Hu.

Herbs 50–100 cm tall. Stems sharply 4-angled and slightly winged, sulcate, glabrous. Petiole ca. 1.3 mm, pubescent; leaf blade elliptic to rarely broadly elliptic, 8.5–28 × 5–12.5 cm, glabrous, secondary veins 13–15 on each side of midvein, base rounded to attenuate and decurrent onto petiole, margin subentire, apex acute. Spikes terminal or axillary in upper leaf axils, 3.5–14 cm, interrupted, unbranched or branched, with 1 flower per node; bracts triangular, 2–3 mm, glabrous, margin ciliate; bracteoles ca. 2.5 mm, glabrous, margin ciliate. Calyx ca. 5 mm, outside densely puberulent, 5-lobed almost to base; lobes lanceolate, apex acute. Corolla light greenish yellow with purplish dots on lower lip, 2–2.2 cm, outside pubescent; limb as long as tube; lower lip as long as upper lip, 3-lobed, lobes ovate, ca. 2 mm, and apex rounded; upper lip ca. 9 mm, apex emarginate. Staminal filaments ca. 7.5 mm, glabrous; anther thecae ca. 2.5 mm, superposed, lower one minutely spurred at base. Ovary glabrous; style ca. 2 cm, basal portion pubescent. Capsule clavate, ca. 2 cm. Seeds ovate in outline, ca. 1.2 × 1.3 mm. Fl. Nov–Jan, fr. Apr–May.

- Forests on limestone hills; 500–700 m. Guangxi, Guizhou.

40. *Justicia patentiflora* Hemsley, Hooker's Icon. Pl. 28: t. 2792. 1905.

野靛棵 *ye dian ke*

Mananthes patentiflora (Hemsley) Bremekamp.

Herbs to 2 m tall, perennial. Stems subterete, glabrous. Petiole 2–6 cm; leaf blade ovate to oblong-lanceolate, 16–26 × 7.5–9.5 cm, membranous, glabrous, secondary veins 8 or 9 each side, blade basally attenuate to a narrowly cuneate base, apex acuminate. Spikes terminal or axillary in upper leaf axils, 5–12 cm, unbranched or bifurcately branched; rachis 4-angled, bifurcately yellowish pubescent, with 1 flower per node; bracts scale-like, triangular-lanceolate, ca. 3 mm, abaxially puberulent; bracteoles similar to bracts. Calyx ca. 1.2 cm, puberulent, 5-lobed almost to base; lobes linear, apex acute. Corolla purplish red with purplish spots, 1.5–2 cm; tube 1–1.5 cm, abruptly recurved above base, outside puberulent; lower lip 3-lobed, lobes circular; upper lip subcircular, shorter than lower lip, apex emarginate. Staminal filaments ca. 5 mm, glabrous; anther thecae superposed, lower one spurred at base. Ovary glabrous; style ca. 7 mm, basal portion sparsely puberulent. Capsule narrowly obovoid, ca. 1.5 cm. Seeds light yellow, circular in outline, ca. 1.2 × 1.2 mm, verrucose. Fl. Nov–Jan, fr. Apr–May.

Forests, streamsides, limestone hills; 500–1800(–2400) m. Yunnan [Vietnam].

“*Mananthes tubiflora*” (Y. M. Shui & W. H. Chen, Seed Pl. Karst Reg. China 1: 182. 2006) belongs here but was not validly published.

41. *Justicia poilanei* Benoist, Notul. Syst. (Paris) 5: 125. 1936.

毛萼爵床 *mao e jue chuang*

Shrubs to 2 m tall. Stems ± 4-angled, sulcate, glabrous. Petiole 1–6 cm, flat, sulcate, margin ciliate; leaf blade ovate to ovate-lanceolate, 10–20 × 4–8 cm, glabrous, secondary veins 6–10 on each side of midvein, base attenuate and decurrent onto petiole, margin entire or undulate, apex acute. Spikes terminal or rarely axillary, 7–15 cm, usually trifurcately branched or rarely unbranched; peduncle 1–3 cm; rachis 4-angled, glabrous, with 1 flower per node; bracts triangular, 2–2.5 × ca. 2 mm, both surfaces glabrous, margin ciliate; bracteoles similar to bracts. Calyx 3–4 mm, both surfaces puberulent especially distally on inner surface, 5-lobed almost to base; lobes lanceolate, margin ciliate, apex acute. Corolla ca. 1 cm, outside pubescent; tube as long as limb; lower lip 3-lobed, lobes subequal, ovate, and apex rounded; upper lip subtriangular, erect, apex emarginate. Staminal filaments ca. 4 mm, glabrous; anther thecae unequal, superposed, lower one spurred at base. Ovary glabrous; style ca. 8 mm, glabrous. Capsule not seen. Fl. Dec–Feb.

Limestone hills; 1000–2400 m. Yunnan [Vietnam].

42. *Justicia kampfiana* Benoist, Notul. Syst. (Paris) 5: 118. 1936.

那坡爵床 *na po jue chuang*

Mananthes kampfiana (Benoist) C. Y. Wu & C. C. Hu.

Shrubs to 1 m tall. Stems ± 4-angled, sulcate, glabrous. Petiole 3–6 mm, glabrous; leaf blade lanceolate, 9–16 × 4.3–5 cm, glabrous, secondary veins ca. 8 on each side of midvein, base cuneate, margin entire, apex shortly acuminate. Spikes axillary or terminal; rachis 4-angled, unbranched or 2-furcately branched, subglabrous, 1-flowered per node; bracts narrowly triangular, ca. 1.5 mm, abaxially pubescent; bracteoles similar to bracts. Calyx ca. 3 mm, outside pubescent, inside glabrous, 5-lobed almost to base; lobes linear, subequal, apex acute. Corolla ca. 1 cm, outside pubescent; tube slightly longer than limb; lower lip 3-lobed, lobes subequal, ovate, and apex rounded; upper lip subtriangular, erect, apex emarginate. Staminal filaments ca. 4 mm, glabrous; anther thecae unequal, superposed, lower one spurred at base. Ovary and style glabrous. Capsule glabrous. Fl. Apr–May.

On rocks in forests; 500–600 m. Guangxi [Cambodia].

43. *Justicia caudatifolia* (H. S. Lo & D. Fang) Z. P. Hao, Y. F. Deng & T. F. Daniel, *J. Trop. Subtrop. Bot.* 18: 486. 2010.

尾叶爵床 *wei ye jue chuang*

Leptostachya caudatifolia H. S. Lo & D. Fang, *Guihaia* 17: 45. 1997.

Herbs to 1 m tall. Stems 4-angled, basally prostrate and rooting at nodes, sulcate, glabrous. Petiole 2–15 mm, glabrous; leaf blade elliptic to obovate-elliptic, 3–10 × 1.2–4.2 cm, apical half broadest, papery, glabrous, secondary veins 5 or 6 on each side of midvein, base cuneate, margin subentire, apex caudate. Spikes axillary, 1–3 cm, interrupted; peduncle 0.5–1.5 cm; rachis sulcate, puberulent, 1-flowered per node; bracts linear-tri-

Fl. China 19: 449–461. 2011.

angular, 3–4 mm, abaxially puberulent, margin ciliate; bracteoles ovate, 2.5–3 mm, margin ciliate. Calyx ca. 4 mm, 5-lobed almost to base; lobes narrowly triangular, outside glabrescent, inside glabrous. Corolla white, ca. 1.1 cm, outside slightly retrorsely pubescent; tube as long as limb; lower lip 3-lobed, lobes ca. 2.5 mm and apex rounded; upper lip ca. 5 mm, apex emarginate. Staminal filaments ca. 3 mm, glabrous; anther thecae superposed, lower one minutely spurred at base. Ovary glabrous; style ca. 5 mm, glabrous. Capsule not seen. Fl. Oct.

- On rocks in forests on limestone hills. Guangxi.

