

39. IXORA Linnaeus, Sp. Pl. 1: 110. 1753.

龙船花属 long chuan hua shu

Chen Tao (陈涛); Charlotte M. Taylor

*Schetti* Adanson; *Tsiangia* But, H. H. Hsue & P. T. Li.

Shrubs or small trees or occasionally perhaps climbing (*Ixora hekouensis*), unarmed. Raphides absent. Leaves opposite or rarely ternate, decussate, without domatia; petioles articulate at base; stipules persistent to caducous, interpetiolar or shortly united around stem, triangular, acute to usually aristate. Inflorescences terminal on principal stems [or sometimes terminal on reduced lateral stems and appearing axillary], cymose to corymbiform or paniculiform, few to many flowered, sessile to pedunculate, bracteate or bracts reduced; axes often articulate; bracteoles when present often fused in pairs. Flowers pedicellate or sessile, bisexual, monomorphic, often fragrant. Calyx limb truncate or 4-lobed. Corolla yellow, orange, red, or white, sometimes becoming reddened when dry, salverform with tube slender, inside glabrous or pubescent at throat; lobes 4 [rarely to 9], convolute in bud. Stamens 4, inserted at corolla throat, partially to fully exerted; filaments short or reduced; anthers dorsifixed near base. Ovary 2-celled, ovules 1 in each cell, pendulous from axile placentas attached in upper part of septum; style in upper portion fusiform or clavate; stigmas 2, linear, recurved, exerted. Fruit black or red, drupaceous, leathery or fleshy, subglobose to ellipsoid or ovoid, with calyx limb persistent; pyrenes 2, 1-celled, each with 1 seed, plano-convex or concavo-concave, smooth dorsally (i.e., abaxially), leathery, papery, or crustaceous; seeds medium-sized, ellipsoid to oblongate, grooved and concave ventrally (i.e., adaxially); testa membranous; endosperm cartilaginous; radicle terete, hypogeous.

About 300–400 species: widespread in tropical Africa, America, Asia, Madagascar, and Pacific islands; 18 species (nine endemic) in China.

*Ixora* has been studied in SE Asia only by Bremekamp; he published several articles treating the species of several regions there (cited by De Block, Opera Bot. Belg. 9: 213. 1998) but not specifically treating the Chinese species, although his circumscription of the region “Burma and the Andaman Islands” included some species from Xizang (Bremekamp, J. Bot. (London) 75: 108–111, 169–175, 260–266, 295–298, 318–326. 1937).

Several species of *Ixora* are widely cultivated in tropical regions as ornamentals, notably *I. casei* Hance, *I. coccinea* Linnaeus, *I. finlaysoniana*, and sometimes *I. chinensis*. In cultivation several of these have various forms with a wide range of flower color, flower and leaf size, and plant height, and sometimes they do not set fruit. *Ixora coccinea* and *I. casei* are not treated in this current flora but are included in the key to species below for identification. Reynolds and Forster (*Austrobaileya* 7(2): 253–278. 2006) reported that *I. coccinea* is locally adventive in some parts of Australia, which may be a possibility in China. The most commonly cultivated *Ixora* species were discussed in detail by Fosberg and Sacht (*Baileya* 23(2): 74–85. 1989).

*Ixora foonchewii* was described and illustrated as having consistently 5 corolla lobes and a stout, shortly bilobed stigma, so it does not seem to belong to *Ixora*; it is provisionally included here in *Tarenna*.

1a. Calyx lobes 3–6 mm.

- 2a. Leaves relatively narrow, 1–4 cm wide, acute to acuminate at both ends, with secondary veins 12–15 pairs; corolla tube 30–40 mm, lobes 6–7 mm ..... 18. *I. yunnanensis*
- 2b. Leaves not notably narrow, 3–9 cm wide, rounded to cuneate at base, obtuse, acute, or acuminate at apex, with secondary veins 9–12 pairs; corolla tube 20–30 mm, lobes 5–6 mm.
  - 3a. Corolla lobes obtuse to rounded ..... 2. *I. cephalophora*
  - 3b. Corolla lobes acute to subacute ..... 5. *I. finlaysoniana*

1b. Calyx lobes 0.1–1.5 mm.

- 4a. Leaves with secondary veins 5 or 6 pairs.
  - 5a. Petioles 0–2 mm; corolla lobes 8–15 mm; flowers variously yellow to red; plants cultivated ..... *I. coccinea* (see comment above)
  - 5b. Petioles 2–8 mm; corolla lobes 6–7 mm; flowers white; plants native ..... 7. *I. hainanensis*
- 4b. Leaves with secondary veins 7–16 pairs.
  - 6a. Petioles 10–20 mm, at least some of them more than 10 mm.
    - 7a. Leaves shallowly bullate with principal veins impressed on puffy upper surface; corolla white to pink.
      - 8a. Corolla tube 30–40 mm, lobes 5–7 mm ..... 12. *I. nienkui*
      - 8b. Corolla tube 15–18 mm, lobes ca. 5 mm ..... 17. *I. tsangii*
    - 7b. Leaves plane, with principal veins flat to prominent on flat upper surface; corolla red, purple, yellow-orange, pink, or white.
      - 9a. Corolla red, tube ca. 10 mm, lobes ca. 5 mm ..... 13. *I. paraopaca*
      - 9b. Corolla white, pink, yellow-orange, or red, tube 25–40 mm, lobes 5–15 mm.
        - 10a. Stems relatively stout, youngest sections 3–5 mm in diam.; plants cultivated ..... *I. casei* (see comment above)
        - 10b. Stems slender, youngest sections 1–3 mm in diam.; plants native.
          - 11a. Corollas yellow-orange to red, with lobes 10–12 mm; stipule body

- (i.e., triangular portion) 2–3 mm ..... 6. *I. fulgens*  
 11b. Corollas white to pink, with lobes 5–7 mm; stipule body 3–10 mm ..... 12. *I. nienkui*  
 6b. Petioles 0–10 mm, at least some of them shorter than 10 mm.  
 12a. Leaves sessile or subsessile with petioles up to 4 mm, base cordate, cordulate, truncate, cuneate, rounded, or obtuse.  
 13a. Corollas red-purple, tube 8–9 mm, lobes 4–5 mm ..... 11. *I. longshanensis*  
 13b. Corollas white, red, or purple, tube 13–45 mm, lobes 5–7.2 mm.  
 14a. Corolla lobes broadly obtuse to rounded ..... 3. *I. chinensis*  
 14b. Corolla lobes acute to obtuse.  
 15a. Leaves 10–23 × 5.5–9 cm ..... 1. *I. auricularis*  
 15b. Leaves 4.5–12 × 2–7 cm.  
 16a. Corolla lobes obtuse ..... 14. *I. philippinensis*  
 16b. Corolla lobes acute ..... 15. *I. subsessilis*  
 12b. Leaves with petioles 2–10 mm, base rounded, cordulate, cuneate, obtuse, truncate, or acute.  
 17a. Peduncle ca. 14 cm ..... 10. *I. insignis*  
 17b. Peduncle 0.4–5 cm.  
 18a. Inflorescences with tertiary and often also quaternary axes well developed and spreading at 45°–90° or more; corolla tube 7–11 mm ..... 4. *I. effusa*  
 18b. Inflorescences with tertiary and quaternary axes developed to reduced and ascending at less than 45°; corolla tube 18–40 mm.  
 19a. Corolla lobes ovate, elliptic, or broadly elliptic, at apex broadly obtuse to rounded ..... 3. *I. chinensis*  
 19b. Corolla lobes elliptic-oblong, narrowly elliptic-oblong, ovate-lanceolate, narrowly spatulate, narrowly lanceolate, or oblong-lanceolate, at apex obtuse to acute.  
 20a. Calyx puberulent or glabrescent; corolla tube 18–20 mm, lobes 5–7 mm.  
 21a. Leaves 10–18 cm, at base cuneate to obtuse, at apex acuminate to acute; bracts 3.5–5 mm ..... 8. *I. hekouensis*  
 21b. Leaves 4.5–10 cm, at base truncate, rounded, or cordulate, at apex obtuse or rounded and apiculate; bracts 1.5–2 mm ..... 14. *I. philippinensis*  
 20b. Calyx glabrous; corolla tube 20–40 mm, lobes 5–7 mm.  
 22a. Leaves 15–17 × 6.5–7.5 cm; stipules villous adaxially ..... 16. *I. tibetana*  
 22b. Leaves 4–15 × 1–5 cm; stipules glabrescent adaxially.  
 23a. Low to medium-sized plants, flowering at 0.2–3 m tall; leaves rounded, obtuse, or bluntly acute at apex; corollas with tube 30–40 mm, in bud acute to rather sharply acute ..... 7. *I. hainanensis*  
 23b. Medium-sized shrubs, flowering at 1–3 m tall; leaves sharply acute to acuminate at apex; corollas with tube 20–25 mm, in bud sharply acute to acuminate ..... 9. *I. henryi*

**1. *Ixora auricularis*** Chun & F. C. How ex W. C. Ko, Guihaia 19: 99. 1999.

耳叶龙船花 er ye long chuan hua

Shrubs or small trees, to 6 m tall; branches glabrous. Leaves opposite, sessile or subsessile; blade drying thinly papery, brown adaxially, pale abaxially, oblanceolate, oblong-elliptic, or obovate-elliptic, 10–23 × 5.5–9 cm, glabrous on both surfaces, base cordate-auriculate, apex shortly acuminate; secondary veins 10–13 pairs; stipules ovate to broadly triangular, 7–18 mm, abruptly narrowed and aristate. Inflorescences terminal, corymbose, 6–15 cm wide; peduncle 3–5 cm, articulate near base, at articulation with reduced leaves ca. 3 cm; bracteoles linear-lanceolate, ca. 1 mm; pedicels 2–3 mm. Flowers sessile or pedicellate. Calyx with hypanthium obconic; limb deeply lobed; lobes ligulate. Corolla purplish red; tube 20–30 mm, glabrous at throat; lobes oblanceolate-oblong, 7–7.2 × 3–3.5 mm, acute. Drupe globose, 6–8 mm in diam. Fl. May–Jun.

• Broad-leaved forests or thickets at middle elevations; ca. 1100 m. Yunnan.

The protologue text described the calyx “post anthesis” as 2–2.5 mm, but the protologue figure illustrated it as 4 mm at anthesis.

**2. *Ixora cephalophora*** Merrill, J. Arnold Arbor. 23: 194. 1942.

团花龙船花 tuan hua long chuan hua

Shrubs, 1–2 m tall; branches glabrous. Leaves opposite; petiole 1–2 cm, glabrous; blade drying olive-green adaxially, paler abaxially, elliptic-oblong, oblanceolate, or oblong-lanceolate, 10–25(–30) × 4–6(–8) cm, base cuneate, apex obtuse to broadly acuminate; secondary veins 9 or 10 pairs; stipule broadly ligulate to ovate, 3–5 mm, obtuse to rounded with arista ca. 3 mm. Inflorescences subsessile, congested-cymose to congested-corymbiform, ca. 17 × 9 cm; secondary axes 1–1.2 cm; bracts oblong-lanceolate to lanceolate, 2.5–5 mm, acuminate; pedicels 1–2 mm. Flowers sessile or pedicellate. Calyx with hypanthium subglobose, 1.5–2 mm; limb lobed deeply; lobes

oblong-lanceolate to lanceolate, 4–5 × 1.5–2 mm, obtuse to acute. Corolla white; tube 20–25 mm, glabrous at throat; lobes elliptic or elliptic-oblong, 5–6 × 2.5–4 mm, obtuse to rounded. Drupe reddish yellow to red, subellipsoid and weakly compressed, ca. 11 × 9 mm. Fl. May, fr. Sep.

Thickets or shady broad-leaved forests at low elevations, or sometimes on open sandy lands. Guangxi, Hainan, Yunnan [Indochina, Philippines].

**3. *Ixora chinensis*** Lamarck, Encycl. 3: 344. 1789.

龙船花 long chuan hua

*Gaertnera hongkongensis* Seemann; *Ixora crocata* Lindley; *I. stricta* Roxburgh; *I. stricta* var. *incarnata* Benthams; *Pavetta kroneana* Miquel; *Sykesia hongkongensis* (Seemann) Kuntze; *Tsiangia hongkongensis* (Seemann) But, H. H. Hsue & P. T. Li.

Shrubs, 0.8–2 m tall; branches glabrous. Leaves opposite, sometimes apparently in whorls of 4 due to reduced stem internodes, sessile or petiolate; petiole to 5 mm, glabrous; blade drying leathery, oblanceolate, oblong-oblanceolate, obovate, elliptic-oblong, or lanceolate, 6–18 × 3–6 cm, glabrous on both surfaces, base cuneate to shortly truncate or rounded, apex obtuse or rounded to acute; secondary veins 7–9 pairs; stipules persistent, united around stem to almost interpetiolar, triangular to broadly triangular, 3–7 mm, glabrous to glabrescent, costate, acute and with arista 2–10 mm. Inflorescence terminal, congested-cymose to congested-corymbiform, many flowered, puberulent to hirtellous, subsessile to pedunculate; peduncle to 1.5 cm, often subtended by 2 reduced leaves or leaflike bracts; branched portion 1–4 × 1–5 cm (not including corollas); bracts triangular, 0.2–1 mm; pedicels to 2 mm. Flowers subsessile to pedicellate. Calyx glabrous; hypanthium obconic to ovoid, 1–1.5 mm; limb deeply lobed; lobes triangular to ligulate, 0.5–1 mm, acute or obtuse. Corolla red or reddish yellow, outside glabrous; tube 20–30 mm, glabrous in throat; lobes ovate, elliptic, or broadly elliptic, 5–7 × 4–5 mm, broadly obtuse to rounded. Drupe reddish black, subglobose and shallowly didymous, 6–7 × 6–7 mm, glabrous. Fl. May–Jul and Dec, fr. Sep–Oct.

Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions].

This is a commonly collected species of *Ixora* in China, apparently growing naturally as well as in cultivation. The occasional short stem internodes, which sometimes produce congested groups of leaves, appear to possibly be due to a change in growth pattern at the top of a seasonal spurt that includes several internodes. The circumscription and characters of this species were considered in some detail by Fosberg and Sachet (Baileya 23(2): 77. 1989), who noted that it is sometimes cultivated. Bridson (Kew Bull. 55: 1011–1012. 2000) studied the identity of *Tsiangia*, and formally synonymized its only species, *T. hongkongensis*, with *I. chinensis*.

**4. *Ixora effusa*** Chun & F. C. How ex W. C. Ko, Fl. Hainan. 3: 580. 1974.

散花龙船花 san hua long chuan hua

Shrubs, ca. 1 m tall; branches glabrous. Leaves opposite; petiole 0.5–1 cm, glabrous; blade drying thinly papery to papery and olive-greenish brown, oblanceolate to oblong, 10–18 × 3–7 cm, both surfaces glabrous, base cuneate to obtuse, apex acute or obtuse; secondary veins 8 or 9 pairs; stipules persistent, shortly fused around stem to subinterpetiolar, triangular, 2–8 mm, glabrous, obtuse to acute with arista 2–9 mm. Inflorescence terminal, corymbiform, 7–11 cm wide, lax, with axes usually spreading at 45°–90°, glabrous; peduncle 0.5–4 cm, articulate and with reduced leaves near base; bracts linear, narrowly triangular, or ligulate, 0.5–5 mm; pedicels to 10 mm. Flowers sessile to pedicellate. Calyx glabrous; hypanthium turbinate, ca. 1 mm; limb deeply lobed; lobes lanceolate to ligulate, 1–1.4 mm, acute to rounded. Corolla white or pale purple; tube 7–11 mm, glabrous at throat; lobes narrowly lanceolate, 5–9 × ca. 2.3 mm, acute. Drupe subglobose, 8–9 mm in diam., glabrous. Fl. Apr–May.

Forests at middle elevations; ca. 500 m. Guangxi, Hainan [Vietnam].

**5. *Ixora finlaysoniana*** Wallich ex G. Don, Gen. Hist. 3: 572. 1834.

薄叶龙船花 bao ye long chuan hua

Shrubs or small trees, to 5–6 m tall; branches glabrous. Leaves opposite; petiole 4–10 mm, glabrous; blade drying rather leathery, elliptic-oblong, elliptic, oblanceolate, obovate, or oblong-lanceolate, 10–17(–20) × 3–6(–9) cm, glabrous on both surfaces, base cuneate to obtuse, apex obtuse to acute; secondary veins 8–12 pairs; stipules usually persistent, interpetiolar or usually united around stem, broadly ovate to triangular, 3–6 mm, glabrous, acute or with arista 0.3–3.5 mm. Inflorescences terminal, corymbiform to densely cymose, puberulent, subsessile to pedunculate; peduncle to 4.5 cm; branched portion 2.5–4 × 3–5 cm (not including corollas); bracts lanceolate, elliptic, or narrowly ligulate, 8–10 mm, obtuse to acute. Flowers sessile or subsessile. Calyx glabrous; hypanthium ellipsoid to subglobose, 1–1.5 mm; limb deeply lobed; lobes elliptic, narrowly elliptic, or oblanceolate, 4–6 mm, acute. Corolla white, outside glabrous; tube 20–30 mm, glabrous at throat; lobes narrowly elliptic to oblanceolate, 5–6 × 1.2–3 mm, acute to subacute. Drupe subglobose and often weakly didymous, 6–8 mm in diam., glabrous. Fl. Apr–Oct, fr. Sep.

Sparse forests at low elevations; 100–1100 m. Guangdong, Hainan, Yunnan [NE India (Assam), Indochina, Philippines, Thailand; widely cultivated in tropical zones worldwide].

The name of this species is sometimes spelled incorrectly as "*findlaysoniana*." This species is native in our region and also widely cultivated in warm tropical regions worldwide.

**6. *Ixora fulgens*** Roxburgh, Hort. Bengal. 10. 1814.

亮叶龙船花 liang ye long chuan hua

*Pavetta fulgens* (Roxburgh) Miquel.

Shrubs; branches glabrous. Leaves opposite; petiole 10–18 mm, glabrous; blade drying dark brown, shiny, oblong-lanceolate, lanceolate, elliptic, or narrowly elliptic, (9–)15–22 × (2–)3–4 cm, both surfaces glabrous, base cuneate to obtuse, apex acute to long acuminate; secondary veins 8–10 pairs; stipules

persistent, shortly united around stem, ovate, 2–3 mm, acute with arista 3–5 mm. Inflorescences terminal, corymbose, 12–17 cm wide, puberulent to hirtellous; peduncle ca. 1 cm; bracts narrowly triangular, 1–1.5 mm; pedicels 0.5–3 mm. Flowers pedicellate. Calyx glabrescent; hypanthium ellipsoid, ca. 1.5 mm; limb lobed for up to ca. 1/2; lobes subtriangular, 0.5–1 mm, obtuse. Corolla orange-yellow to dark red, outside glabrous; tube 25–30 mm, in throat glabrous; lobes ovate, lanceolate, or elliptic, 10–12 mm, acute. Drupe globose, 9–10 mm in diam., glabrescent. Fl. Jul–Sep.

On wet soil in sparse forests. Yunnan [India, Indonesia, Myanmar, Philippines, Vietnam].

The application of this name has apparently varied among authors. Bremekamp (J. Bot. (London) 75: 111. 1937) discussed the differing usage, noting that the original description was based on a plant cultivated in the Calcutta Botanical Garden and of incorrectly attributed (in his view) provenance. Plants from the Philippines have petioles as short as 5 mm and corolla lobes up to 40 mm.

W. C. Ko (in FRPS 71(2): 42. 1999) described the branches as sometimes with epidermis strips peeling off; this has not been reported by others nor seen on specimens. Ko also described the secondary leaf veins as 18–25 pairs (p. 43); that count seems to include the often rather well-developed intersecondary veins together with the secondary veins.

#### 7. *Ixora hainanensis* Merrill, Lingnan Sci. J. 6: 287. 1930.

海南龙船花 hai nan long chuan hua

*Ixora pygmaea* Merrill & F. P. Metcalf.

Shrubs, 0.2–3 m tall; branches glabrous. Leaves opposite; petiole 2–8 mm, glabrous; blade drying papery to subleathery, dry dark green, slightly shiny to matte, elliptic-oblong, elliptic, or oblanceolate, 4–10(–14) × 1–5 cm, glabrous on both surfaces, base cuneate, rounded, or subcordate, apex rounded, obtuse, or bluntly acute; secondary veins 5–10 pairs; stipules persistent, shortly united around stem or subinterpetiolar, triangular to ovate, 4–10 mm, glabrous, long acute with apical portion 3–10 mm, at least sometimes glandular at tip. Inflorescence terminal, corymbiform to cymose, many flowered, glabrous; peduncle 1–4 cm; branched portion 2–3 × 2–5 cm (not including corollas); bracts linear-oblong, 1–3.5 mm; pedicels 0.5–3 mm. Flowers pedicellate. Calyx glabrous; hypanthium ellipsoid to obconic, 1–1.5 mm; limb deeply lobed; lobes triangular to ovate or lanceolate, 1–1.5 mm, acute to acuminate. Corolla white, outside glabrous; tube 30–40 mm, villous in throat; lobes narrowly spatulate to oblanceolate, 6–7 × 1–2 mm, acute. Drupe red, subglobose to ellipsoid, weakly compressed and didymous, ca. 6 × 6–8 mm, glabrous. Fl. May–Dec, fr. Jan, Oct–Dec.

• On sandy soil at streamsides in dense forests; 100–1100 m. Guangdong, Hainan.

The name *Ixora pygmaea* was synonymized by W. C. Ko in FRPS (71(2): 43. 1999); Merrill and Metcalf in fact suggested in the protologue that it might only be a depauperate form of *I. hainanensis*. The leaves are rather variable in shape, usually on the same plant as noted in the protologue.

#### 8. *Ixora hekouensis* Tao Chen, nom. nov.

河口龙船花 he kou long chuan hua

Replaced synonym: *Ixora gracilis* W. C. Ko, Guihaia 19:

103. 1999, not *Ixora gracilis* R. Brown ex Fawcett in H. O. Forbes, Nat. Wand. E. Archip. 508. 1885, nor *Ixora gracilis* (A. Richard ex Candolle) Kuntze, Revis. Gen. Pl. 1: 286–287. 1891 [*Pavetta gracilis* A. Richard ex Candolle, Prodr. 4: 492. 1830].

Climbing shrubs. Stems glabrous. Leaves opposite; petiole 4–6 mm; blade drying papery and grayish brown, elliptic-oblong to obovate, 10–18 × 3–7 cm, base cuneate to obtuse, apex rather abruptly contracted and acute to acuminate; secondary veins 7–9 pairs; stipules persistent, ovate, 6–7 mm, with arista slightly longer than stipule. Inflorescences terminal, corymbose, 7–8 × 3.5–5 cm, several flowered, puberulent; peduncle 3–5 cm; bracts narrowly lanceolate, 3.5–5 mm; pedicels 2–3 mm. Flowers pedicellate. Calyx puberulent; hypanthium subglobose, ca. 2 mm; limb deeply lobed; lobes triangular, 1–1.2 mm. Corolla white; tube 18–20 mm, glabrous at throat; lobes narrowly elliptic-oblong, 5–6 mm, obtuse. Drupe unknown. Fl. Jun–Aug.

• Dense forests at riversides; ca. 200 m. Yunnan (Hekou).

The reported climbing habit of this species is highly unusual in *Ixora*; however, W. C. Ko did not use that character in the protologue to help distinguish this species.

#### 9. *Ixora henryi* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 178. 1914.

白花龙船花 bai hua long chuan hua

Shrubs, 1–3 m tall; branches glabrous. Leaves opposite; petiole 3–7 mm, glabrous; blade drying papery, elliptic-oblong, lanceolate, lanceolate-oblong, or elliptic, 5–15 × 1.5–4 cm, glabrous on both surfaces, base cuneate, obtuse, or rounded, apex sharply acute to usually acuminate; secondary veins 7 or 8 pairs; stipules persistent or sometimes fragmenting, triangular to ovate, 5–8 mm, glabrous, shortly obtuse to narrowed and prolonged into arista 3–11 mm. Inflorescence terminal, corymbiform to congested-cymose, many flowered, glabrous; peduncle 0.4–1.5 cm; branched portion 1.5–4 × 2–7 cm (not including corollas); bracts linear or linear-lanceolate, 0.8–3 mm; pedicels to 2.5 mm. Flowers subsessile to pedicellate. Calyx glabrous; hypanthium ellipsoid, 1–1.8 mm; limb deeply lobed; lobes triangular, 0.5–1 mm, acute. Corolla white sometimes becoming dark red when dry, outside glabrous; tube 20–25 mm, glabrous in throat; lobes narrowly oblong to narrowly lanceolate, 5–6 × 1.6–2 mm, acute. Drupe subglobose, 8–10 mm in diam. Fl. Apr–Dec, fr. May–Jul.

Broad-leaved forests, streamsides at forest margins; 200–2000 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Thailand, Vietnam].

#### 10. *Ixora insignis* Chun & F. C. How ex W. C. Ko, Guihaia 19: 97. 1999.

长序龙船花 chang xu long chuan hua

Small trees, height not noted; branches glabrous. Leaves opposite; petiole 7–10 mm; blade drying membranous, elliptic-oblong to oblong-oblanceolate, 10–14 × 4–5 cm, glabrous, base cuneate, obtuse, or rounded, apex abruptly shortly acuminate; secondary veins 10–12 pairs; stipules triangular, 5–8 mm, with arista almost as long as sheath. Inflorescence terminal, corymbiform, puberulent; peduncle ca. 14 cm, articulate below mid-

dle, at articulation with pair of reduced leaves (or leaflike bracts) ovate to oblong-ovate, ca.  $4 \times 2.5$  cm; branched portion 6–7 cm wide; secondary axes 1.5–1.8 cm; bracts linear-subulate, 0.5–3 mm; pedicels to 1.5 mm. Flowers sessile or pedicellate. Calyx puberulent; hypanthium obconic to ellipsoid, ca. 0.5 mm; limb deeply lobed; lobes narrowly elliptic-oblong, 1.3–1.5 mm, obtuse. Corolla in bud up to 2 cm with lobes up to 6 mm, obtuse. Drupe not seen. Fl. May.

- Mountains; ca. 1600 m. Yunnan (Hekou).

The “reduced leaves” borne on the peduncle that were mentioned in the protologue to characterize this species are called by some authors “foliaceous bracts.”

**11. *Ixora longshanensis*** Tao Chen, *nom. nov.*

龙山龙船花 long shan long chuan hua

Replaced synonym: *Ixora amplexicaulis* C. Y. Wu & W. C. Ko, *Guihaia* 19: 98. 1999, not *Ixora amplexicaulis* Gillespie, *Bull. Bernice P. Bishop Mus.* 74: 30. 1930.

Small trees, to 6 m tall; branches glabrous, drying brown. Leaves opposite, sessile; blade drying thinly leathery or thickly papery, brown, paler abaxially, elliptic to oblanceolate, (2–)13–15  $\times$  (1–)5–6 cm, glabrous on both surfaces, base cordulate and amplexicaul, apex acute to acuminate; secondary veins 10–15 pairs; stipules subulate to triangular, ca. 7 mm, glabrous, acute to acuminate. Inflorescence terminal, corymbiform, puberulent, red to purple-red; peduncle 1.5–3.5 cm, often articulate near base, at articulation bearing reduced leaves ca.  $2 \times 0.5$ –0.7 cm; secondary axes 2.5–3 cm; bracts subulate, 1.5–2 mm. Flowers subsessile to pedicellate. Calyx with hypanthium obconic, ca. 2 mm; limb deeply lobed; lobes triangular, obtuse. Corolla in bud red-purple; tube 8–9 mm or longer, glabrous at throat; lobes lanceolate, 4–5 mm or longer, cuneate. Drupe unknown.

- Dense forests in valleys or at streamsides. S Yunnan.

**12. *Ixora nienkui*** Merrill & Chun, *Sunyatsenia* 2: 324. 1935.

泡叶龙船花 pao ye long chuan hua

Shrubs, 1–3 m tall; branches glabrous. Leaves opposite; petiole 10–15 mm, glabrous; blade drying papery, oblong-lanceolate, elliptic-oblong, or oblong-ob lanceolate, 10–23  $\times$  3–7 cm, both surfaces glabrous, sometimes shallowly bullate, base rounded, obtuse, or cordulate, apex acuminate to rather long acuminate; secondary veins 10–15 pairs; stipules deciduous, united around stem, 3–10 mm, glabrous, acute with arista 2–5 mm. Inflorescences terminal, corymbiform, many flowered, puberulent, dark red, subsessile to shortly pedunculate; peduncle to 0.6 cm; secondary axes 1–2.5 cm; bracts linear-lanceolate to linear, 1–3 mm; pedicels 1–6 mm. Flowers pedicellate. Calyx glabrous; hypanthium ellipsoid, tube 1.5–1.8 mm; limb lobed nearly to base; lobes triangular, ca. 1 mm. Corolla white or pink, outside glabrous; tube 30–40 mm, glabrous at throat; lobes lanceolate, 5–7 mm, acute. Drupe bright red, globose, 7–8 mm in diam., glabrous. Fl. Jul–Oct, fr. Jun–Oct.

Woods, forested ravines, streamsides; 400–1000 m. Guangdong, Guangxi, Hainan [Vietnam].

**13. *Ixora paraopaca*** W. C. Ko, *Guihaia* 19: 101. 1999 [“*paraopara*”].

版纳龙船花 ban na long chuan hua

Shrubs, to 2 m tall; branches glabrous, lenticellate, striate. Leaves opposite; petiole 1–1.5 cm; blade drying thickly papery, opaque, dark green, oblong-lanceolate, 10–16  $\times$  3–4.5 cm, base obtuse, apex cuneate, acute, or acuminate; secondary veins 14–16 pairs; stipules triangular, ca. 10 mm, acute with arista ca. 3 mm. Inflorescence terminal, corymbiform-cymose, 8–9  $\times$  9–10 cm, puberulent; peduncle 0.1–0.5 cm; bracts linear-lanceolate to linear, 3–5 mm. Flowers sessile to subsessile. Calyx puberulent; hypanthium turbinate, ca. 2 mm; limb deeply lobed; lobes broadly triangular, ca. 1 mm, obtuse. Corolla red, outside glabrous; tube ca. 10 mm, glabrous inside; lobes narrowly oblong, 4–5 mm, obtuse to subrounded. Drupe unknown. Fl. Apr–Jun.

- Sparse forests on gentle hill slopes. Yunnan (Xishuangbanna).

This name was originally published with the spelling “*paraopara*,” a correctable typographical error as evidenced by the diagnosis, which states that this new species is related to *Ixora opaca* R. Brown ex G. Don. The protologue text described the corolla tube as 1 mm long, but this seems to be shown as 1 cm in the protologue figure.

**14. *Ixora philippinensis*** Merrill, *Philipp. J. Sci., C.* 5: 238. 1910.

小仙龙船花 xiao xian long chuan hua

Shrubs or small trees; branches glabrous [to densely puberulent in Philippine plants]. Leaves opposite, sessile to shortly petiolate; petiole to 0.4 cm, glabrous [to densely puberulent in Philippine plants]; blade drying thinly papery and dark brown, elliptic, elliptic-oblong, or elliptic-ovate, 4.5–10  $\times$  2–7 cm, glabrous [or puberulent along midrib abaxially in Philippine plants], base truncate, rounded, or cordulate, apex obtuse to rounded and usually apiculate; secondary veins 8–11 pairs; stipules deciduous, very shortly united around stem, lanceolate to broadly triangular, 2–5 mm, glabrous, acuminate. Inflorescences terminal, congested-cymose, 1–2 cm wide (not including corollas), few flowered, puberulent to glabrous; peduncle 1–1.5 cm, usually subtended by a pair of reduced, ovate or subovate, cordate leaves 0.5–3 cm; bracts ovate-lanceolate to narrowly triangular, 1.5–2 mm, acuminate. Flowers subsessile to sessile. Calyx puberulent to glabrescent; hypanthium ellipsoid, ca. 1 mm; limb 0.5–1 mm, shallowly lobed; lobes dentiform. Corolla white to pink, outside puberulent; tube 18–20 mm; lobes elliptic-oblong, ca. 7  $\times$  3.5 mm, obtuse. Drupe ovoid, didymous, weakly compressed, ca. 1 cm, red when dry. Fl. Jun–Aug.

Broad-leaved forests. Taiwan [Philippines].

**15. *Ixora subsessilis*** Wallich ex G. Don, *Gen. Hist.* 3: 572. 1834.

囊果龙船花 nang guo long chuan hua

Shrubs or small trees, 2–2.5 m tall; branches glabrous. Leaves opposite, subsessile; blade drying thinly leathery, lanceolate, elliptic, or oblanceolate, 10–12  $\times$  3–4 cm, glabrous on both surfaces, base obtuse, apex long acuminate; stipules glabrous, long acuminate with apex subulate or linear, longer than

sheath. Inflorescences subsessile, corymbiform and trichotomous, several flowered; axes slender; bracts subulate or linear. Calyx with hypanthium ca. 1 mm; lobes linear, 0.8–1.3 mm. Corolla tube 13–45 mm, glabrous in throat; lobes narrowly elliptic-oblong, acute. Drupe saccate, 8–8.4 mm in diam.

Sparse forests; 1200–1500 m. Xizang (Médog) [India, S Thailand].

W. C. Ko (in FRPS 71(2): 33. 1999) described this species as highly variable, in particular in leaf shape, in the corolla tubes ranging 13–45 mm, and in the stigma varying from bilobed to entire; this range of variation is indeed rather unusual.

**16. *Ixora tibetana*** Bremekamp, J. Bot. 75: 261. 1937.

西藏龙船花 xi zang long chuan hua

Shrubs or small trees; branches glabrous, 2–2.5 mm in diam. Leaves opposite; petiole 0.65–0.8 cm, glabrous; blade drying green or markedly discolorous, opaque, elliptic or obovate, 15–17 × 6.5–7.5 cm, glabrous on both surfaces, base cuneate to acute, apex acuminate; secondary veins ca. 11 pairs; stipules shortly fused around stem, triangular, glabrescent except adaxially villous, aristate. Inflorescence terminal, corymbiform, tripartite, sparsely puberulent, 75–100-flowered; peduncle 0.7–0.8 cm, with reduced leaves at base; secondary axes 4.5–5 cm; bracts filiform, reduced; pedicels to 1 mm. Flowers sessile to shortly pedicellate. Calyx glabrous; limb lobed to base; lobes lanceolate, ca. 1.5 mm, subacute. Corolla white, glabrous throughout; tube ca. 24 mm; lobes ovate-lanceolate, ca. 5.5 × 2.5 mm, acute. Drupe unknown.

• 1200–1500 m. SE Xizang.

**17. *Ixora tsangii*** Merrill ex H. L. Li, J. Arnold Arbor. 24: 456. 1943.

上思龙船花 shang si long chuan hua

Small shrubs, to 1 m tall; branches glabrous. Leaves opposite; petiole 1–1.8 cm, glabrous; blade olive-green when fresh, drying papery and dark brown, oblong-lanceolate to elliptic, 7–20 × 2.5–6 cm, glabrous on both surfaces, shallowly bullate, base cuneate to obtuse, apex acute to long acuminate; secondary veins 9–16 pairs; stipules deciduous through fragmentation, interpetiolar or shortly united around stem, ovate to ligulate-triangular, 2–8 mm, glabrous, rounded with arista 2–6 mm. Inflorescences terminal, corymbiform, trichotomous, lax, sessile to subsessile, sparsely to densely puberulent; branched portion 3–3.5 × 3–3.5 cm; bracts linear-lanceolate to narrowly triangular, 1–3 mm, acuminate; pedicels 3–5 mm. Flowers pedicellate. Calyx glabrous; hypanthium ellipsoid, ca. 1.5 mm; limb deeply lobed; lobes ovate to triangular, ca. 1 mm, acute to acuminate. Corolla white, outside glabrous; tube 15–18 mm, glabrous at throat; lobes elliptic, ca. 5 mm, obtuse to subrounded. Drupe unknown. Fl. Sep.

• Shady thickets. Guangxi (Shangsi).

**18. *Ixora yunnanensis*** Hutchinson in Sargent, Pl. Wilson. 3: 412. 1916.

云南龙船花 yun nan long chuan hua

Shrubs, to 1 m tall, little branched; branches glabrous. Leaves opposite or ternate; petiole 2–10 mm, glabrous; blade

drying papery, grayish green, narrowly oblanceolate or narrowly elliptic-oblong, 7–22 × 1–3(–4) cm, glabrous on both surfaces, base acute and decurrent, apex acute to long acuminate; secondary veins 12–15 pairs; stipules persistent, shortly united around stem, triangular to broadly ovate, 3–5 mm, glabrous, acute with arista 2–4.5 mm inserted below top of stipule, sometimes shortly bilobed. Inflorescences terminal, subsessile, corymbiform to congested-cymose, 2–4 × 2.5–4 cm (not including corollas), puberulent to glabrescent, subsessile to pedunculate; peduncle to 0.5 cm; bracts lanceolate to narrowly triangular, 2–6 mm, acute; pedicels to 2 mm. Flowers sessile to shortly pedicellate. Calyx puberulent; hypanthium turbinate, 1.5–2 mm; limb deeply lobed; lobes linear-lanceolate, 3–4 mm, subacute to acute. Corolla white; tube 30–40 mm; lobes narrowly elliptic-oblong, 6–7 × 2–2.5 mm, obtuse. Drupe red, ellipsoid-oblong, somewhat compressed and didymous, ca. 10 × 8 mm. Fl. May.

• Dense forests at humid riversides. Yunnan.

Fl. China 19: 177–182. 2011.