

8. **BENKARA** Adanson, Fam. Pl. 2: 85, 525. 1763.

鞞茜属 le qian shu

Chen Tao (陈涛); Charlotte M. Taylor

*Fagerlindia* Tirvengadam; *Griffithia* Wight & Arnott.

Shrubs or small trees, erect to clambering or perhaps scandent, usually armed with paired, ascending, straight to slightly curved, axillary thorns, often with short shoots. Raphides absent. Leaves opposite or sometimes congested to apparently fascicled on lateral short shoots, usually with domatia; stipules caducous, interpetiolar or shortly united around stem, generally triangular, acute to cuspidate. Inflorescences terminal on lateral branches and/or short shoots, 1-flowered or 2- to several flowered and fasciculate to cymose, sessile to pedunculate, bracteate or bracts reduced. Flowers pedicellate, bisexual, monomorphic. Calyx limb 5-lobed, usually with well-developed basal tubular portion. Corolla white to yellow, salverform, usually pubescent in throat; lobes 5, convolute in bud, usually spreading to reflexed. Stamens 5, inserted in corolla throat, partially to fully exerted; filaments short; anthers dorsifixed. Ovary 2-celled, ovules several to many in each cell on axile placentas; stigma clavate to fusiform or 2-lobed with lobes coherent, included to partially exerted. Fruiting pedicels sometimes elongating. Fruit purplish black, baccate, fleshy to leathery or infrequently woody, globose to ellipsoid, smooth, with calyx limb tardily deciduous; seeds several to numerous, medium-sized, angled or ellipsoid, embedded in pulp; testa weakly areolate.

About 19 species: China, India, Indonesia, Japan, Malaysia, Myanmar, Philippines, Thailand, Vietnam; seven species (four endemic) in China.

Ridsdale (Reinwardtia 12: 289–300. 2008) recently reviewed *Oxyceros* and *Fagerlindia* and concluded by re-circumscribing *Oxyceros* Loureiro (Fl. Cochinch. 1: 150. 1790) and synonymizing *Fagerlindia* with *Benkara*. In this new circumscription, *Oxyceros* comprises species distinguished by markedly recurved thorns (or spines), notably *O. horridus* Loureiro, and is not represented (as far as now known) in the Chinese flora. Ridsdale (loc. cit.) transferred all the Chinese species previously included in *Oxyceros* to *Benkara*, with straight or only slightly curved spines or thorns. One Chinese species included by Ridsdale in *Fagerlindia* and later *Benkara* is here instead treated as *Aidia canthioides*.

*Benkara griffithii* (J. D. Hooker) Ridsdale (Reinwardtia 12: 298. 2008; *Randia griffithii* J. D. Hooker, Fl. Brit. India 3: 112. 1880; *Oxyceros griffithii* (J. D. Hooker) W. C. Chen) is not treated here. See the discussion under *B. forrestii* below.

- 1a. Flowers subsessile to very shortly pedicellate, on pedicels 0.5–1.5 mm ..... 7. *B. sinensis*
- 1b. Flowers pedicellate or pedunculate, on pedicels or peduncles 1–15 mm with at least some of them more than 2 mm.
  - 2a. Branchlets and calyx glabrous; corolla white, with tube 14–22 mm and lobes 5–12 mm.
    - 3a. Secondary leaf veins 4–6 pairs; calyx lobes 0.5–1.2 mm; plants drying with characteristic yellowed color ..... 5. *B. rectispina*
    - 3b. Secondary leaf veins 2 or 3 pairs; calyx lobes 1.5–2 mm; plants drying greenish to grayish ..... 6. *B. scandens*
  - 2b. Branchlets and calyx glabrous to puberulent, pilosulous, strigillose, or hirtellous; corolla white or yellow, with tube 3–7 mm and lobes 5–8 mm.
    - 4a. Calyx limb with tubular portion 3.5–4 mm; corolla white ..... 1. *B. depauperata*
    - 4b. Calyx limb with tubular portion 1–3 mm; corolla white to yellow.
      - 5a. Flowers 1 or 2 in fascicles, these sometimes congested and appearing as a cyme; leaves obtuse to rounded and sometimes shortly mucronate at apex ..... 2. *B. evenosa*
      - 5b. Flowers 3 to several in cymes branched to 2 or more orders; leaves acute to acuminate at apex with tips sharp to slightly blunt.
        - 6a. Corolla with tube 5–6 mm and lobes ca. 5 mm; leaves 1.5–5 cm wide, usually at least some leaves wider than 3 cm ..... 3. *B. forrestii*
        - 6b. Corolla with tube ca. 7 mm and lobes ca. 8 mm; leaves 1.5–3 cm wide ..... 4. *B. hainanensis*

1. **Benkara depauperata** (Drake) Ridsdale, Reinwardtia 12: 298. 2008.

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*Randia depauperata* Drake, J. Bot. (Morot) 9: 217. 1895; *Canthium spinosissimum* Merrill; *Fagerlindia depauperata* (Drake) Tirvengadam.

Shrubs, 1–3 m tall; branches compressed to terete, puberulent to hirtellous or strigillose, with thorns 4–15 mm. Petiole 2–6 mm, puberulent to hirtellous or strigillose; leaf blade drying

thinly papery, ovate, ovate-orbicular, lanceolate, or ovate-lanceolate, 1–8.2 × 0.8–3 cm, adaxially glabrous, abaxially glabrous or strigillose to hirtellous at least on principal veins, base rounded to obtuse or broadly cuneate, apex acute to caudate-acuminate; secondary veins 2–4 pairs, in abaxial axils usually with pilosulous domatia; stipules triangular to narrowly triangular, 3–4 mm, strigillose to puberulent, acuminate to aristate. Inflorescences 1-flowered or cymose and 2- or 3-flowered, puberulent or strigillose to glabrescent; peduncles 3–10 mm, articulate when flowers solitary; bracts lanceolate, 2–3 mm; pedicels 6–10 mm. Calyx limb hirtellous to strigillose; ovary portion

obconic, 1–1.5 mm; limb with tube 3.5–4 mm; lobes triangular to linear, 1–2 mm, apex acute. Corolla white, glabrous outside; tube 3–4.5 mm; lobes elliptic-oblong to ligulate, 5–5.5 mm, ciliolate, acute. Fruiting pedicels 5–15 mm. Berry globose, 5–6 mm in diam., pilosulous or strigillose to glabrescent; seeds ellipsoid to angled, ca. 3 mm. Fl. Apr, fr. May–Jan.

Forests or thickets on hills; below 100–300 m. Fujian, Guangxi, Hainan [Vietnam].

**2. *Benkara evenosa*** (Hutchinson) Ridsdale, *Reinwardtia* 12: 298. 2008.

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*Randia evenosa* Hutchinson in Sargent, *Pl. Wilson*. 3: 400. 1916; *Oxyceros evenosus* (Hutchinson) T. Yamazaki.

Shrubs, ca. 3 m tall; branches compressed to terete, puberulent to glabrous, with thorns 2–14 mm. Petiole 3–5 mm, puberulent to glabrous; leaf blade drying thinly leathery to stiffly papery and dark brown, obovate or elliptic, 2–6 × 1.5–3 cm, both surfaces glabrous, base cuneate to obtuse, apex obtuse to rounded and sometimes shortly mucronate; secondary veins 3–5 pairs, in abaxial axils with foveolate and/or pilosulous domatia; stipules triangular to ovate, 2.5–3 mm, glabrous, acute. Inflorescences 1- or 2-flowered, fasciculate, sometimes clustered on shortened internodes and appearing cymose, puberulent to glabrous; peduncles 5–10 mm, sometimes articulate near base; bracts triangular, ca. 1 mm, ciliate, acute. Calyx glabrous; ovary portion ellipsoid to obconic, 1.5–2 mm; limb with tube 2–3 mm; lobes triangular to linear, 0.5–1 mm. Corolla yellow, glabrous outside; tube 3–5 mm; lobes oblong-elliptic, ca. 6 × 3–3.5 mm, obtuse. Fruiting pedicels 10–17 mm. Berry globose, 5–7 mm in diam., glabrous. Fr. Sep–Oct.

• Forests on mountains; 1300–1600 m. Yunnan.

**3. *Benkara forrestii*** (J. Anthony) Ridsdale, *Reinwardtia* 12: 299. 2008.

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*Randia forrestii* J. Anthony, *Notes Roy. Bot. Gard. Edinburgh* 18: 204. 1934.

Shrubs or trees, 2–5 m tall; branches hirtellous or pilosulous to glabrescent, compressed to angled or subterete, with thorns 3–10 mm. Petiole 2.5–10 mm, hirtellous or pilosulous to glabrous; leaf blade drying papery to stiffly papery, brownish green, oblong-ovate, elliptic-lanceolate, or ovate, 3.5–7 × 1.5–5 cm, adaxially glabrous and shiny, abaxially glabrous or sparsely strigillose on principal veins, base cuneate to obtuse or subrounded, apex acute to acuminate; secondary veins 4–6 pairs, in abaxial axils with foveolate and/or pilosulous domatia; stipules lanceolate to triangular, 2–5 mm, strigillose to glabrous, acuminate. Inflorescences cymose, 2.5–3 × 3–4 cm, 5- to several flowered, branched to several orders, pilosulous or hirtellous to glabrous; peduncle 4–10 mm; bracts and bracteoles lanceolate or triangular, 2–4 mm, acute; pedicels 1–3 mm. Calyx puberulent or strigillose to glabrous; ovary portion obconic, ca. 1 mm; limb 2–3 mm, partially lobed; lobes triangular, 1–1.5 mm, acute. Corolla white to greenish white or perhaps yellow, gla-

brous outside; tube 5–6 mm; lobes spatulate, ca. 5 mm, obtuse. Fruiting pedicels ca. 6 mm. Berry globose, 5–8 mm in diam., glabrous. Fl. Apr–Jun, fr. May–Dec.

• Forests or thickets at streamsides, on hills, or on mountain slopes; 1000–2400 m. Yunnan.

Ridsdale (loc. cit.: 298–299) treated *Benkara griffithii* and *B. forrestii* as two different species, without commentary or a key, and synonymized *Randia hainanensis* under *B. forrestii*. W. C. Chen (in *FRPS* 71(1): 346. 1999) treated these names as synonyms of *Oxyceros griffithii*. However, *B. forrestii* and *R. hainanensis* were recognized as separate species by Tirvengadam (in herb.), and these appear morphologically distinct as outlined in the key to species above and thus are separated here. These are provisionally treated as endemic pending further study of this genus and specimens from surrounding countries.

**4. *Benkara hainanensis*** (Merrill) C. M. Taylor, *comb. nov.*

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Basionym: *Randia hainanensis* Merrill, *Lingnan Sci. J.* 11: 58. 1932.

Shrubs, 0.5–2.5 m tall; branches slender, compressed to subterete, glabrous, with thorns 4–7 mm. Petiole 2.5–13 mm, pilosulous to glabrous; leaf blade drying papery, brownish green to dark brown, oblong-ovate, elliptic-lanceolate, or lanceolate, 3–8 × 1.5–3 cm, both surfaces glabrous, base cuneate or obtuse to sometimes subrounded, apex acute to acuminate; secondary veins 3–6 pairs, in abaxial axils with foveolate and/or pilosulous domatia; stipules lanceolate to triangular, 2–4 mm, glabrous, acuminate. Inflorescences cymose, 2.5–3 × 3–4 cm, 3- to several flowered, branched to several orders, glabrous; peduncle 4–7 mm; bracts and bracteoles lanceolate to triangular, 2–6 mm, acute; pedicels 2–3 mm. Calyx glabrous; ovary portion obconic, ca. 1 mm; limb 1–3 mm, partially lobed; lobes triangular, 1–1.5 mm, acute. Corolla white or yellow, glabrous outside; tube ca. 7 mm; lobes spatulate, ca. 8 mm, obtuse and often mucronulate. Fruiting pedicels to 9 mm. Berry globose, 5–8 mm in diam., glabrous. Fl. Apr–Jun, fr. May–Dec.

• Forests or thickets at streamsides, on hills, or on mountain slopes; 200–600 m. Hainan.

W. C. Chen (in *FRPS* 71(1): 346. 1999) treated this species as a synonym of *Benkara griffithii* (as *Oxyceros griffithii*), and Ridsdale (*Reinwardtia* 12: 299. 2008) treated it as a synonym of *B. forrestii*; see comments above under *B. forrestii* regarding its separation here.

**5. *Benkara rectispina*** (Merrill) Ridsdale, *Reinwardtia* 12: 299. 2008.

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*Randia rectispina* Merrill, *Lingnan Sci. J.* 14: 60. 1935; *Oxyceros rectispinus* (Merrill) T. Yamazaki.

Shrubs, 2–4 m tall, sometimes scandent; branches weakly compressed to subterete, glabrous, rather stout, often yellowish white, with thorns 6–14 mm. Petiole 3–6 mm, glabrous; leaf blade drying leathery and usually straw- to brownish yellow, ovate, elliptic-ovate, or elliptic, 1.5–6.5 × 1–3 cm, both surfaces glabrous and rather shiny, base cuneate, obtuse, or subrounded,

apex obtuse or slightly rounded or rarely acute; secondary veins 4–6 pairs, in abaxial axils usually with foveolate and/or pilosulous domatia; stipules lanceolate to triangular, ca. 2 mm, acute to caudate or aristate. Inflorescences 1- or less often 2-flowered, glabrescent; peduncles 2–8 mm; bracteoles absent or 2, broadly ovate-triangular, 1.5–2 mm, acute, after falling leaving a persistent pilose ring; pedicels 5–8 mm. Calyx limb glabrous; ovary portion subglobose, ca. 2 mm; limb campanulate, ca. 4.5 × 3 mm, shallowly lobed; lobes triangular, 0.5–1.2 mm, cuspidate. Corolla white, outside glabrous; tube 18–22 mm; lobes elliptic-ovate, 5–6 mm, obtuse. Fruiting pedicels 5–12 mm. Berry globose, 6–10 mm in diam., glabrous; seeds 3–4 mm. Fl. Apr–Jul, fr. Sep–Jan.

• Forests or thickets at seashores or on hills; near sea level to 300 m. Hainan.

**6. *Benkara scandens*** (Thunberg) Ridsdale, Reinwardtia 12: 300. 2008.

浓子茉莉 nong zi mo li

*Gardenia scandens* Thunberg, *Gardenia*, 17. 1780; *Fagerlindia scandens* (Thunberg) Tirvengadam; *Plectronia levinei* Merrill; *Randia accedens* Hance; *R. scandens* (Thunberg) Lamarck.

Shrubs, 1–3 m tall; branches terete to flattened, glabrous, with thorns 6–12 mm. Petiole 2–5 mm, glabrous; leaf blade drying papery or thinly leathery, ovate, lanceolate, broadly elliptic, or elliptic-oblong, 0.6–5.5 × 0.4–2.5 cm, both surfaces glabrous, base cuneate, margins sometimes thinly revolute, apex obtuse or acute; secondary veins 2 or 3 pairs, in abaxial axils usually with foveolate and/or pilosulous domatia; stipules triangular to ovate, 1.5–2 mm, glabrous, acuminate to cuspidate. Inflorescences 1-flowered or cymose and 2- or 3-flowered, glabrescent; peduncles 2–10 mm, articulate when flowers solitary; bracts lanceolate, 1.5–2.5 mm; pedicels 3–10 mm. Calyx glabrous; ovary portion obconic, 1.2–1.5 mm; limb with tube somewhat campanulate, 3.5–4 mm; lobes narrowly triangular, 1.5–2 mm, acute to acuminate. Corolla white, outside puberulent to usually glabrous; tube 14–20 mm; lobes lanceolate, 6–12 mm, acute. Fruiting pedicels 3–12 mm. Berry globose, 5–7 mm in diam., glabrous; seeds ellipsoid to angled, 2–3 mm. Fl. Mar–May, fr. May–Dec.

Thickets in fields or on hills at low elevations. Guangdong, Guangxi, Hainan, Yunnan [Vietnam].

**7. *Benkara sinensis*** (Loureiro) Ridsdale, Reinwardtia 12: 300. 2008.

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*Oxyceros sinensis* Loureiro, Fl. Cochinch. 1: 151. 1790; *Aidia sinensis* (Loureiro) Masamune; *Fagerlindia sinensis* (Loureiro) Tirvengadam; *Randia sinensis* (Loureiro) Schultes.

Shrubs or small trees, sometimes scandent, many branched, 1–7 m tall; branches compressed to terete, rather stout, yellowish brown hirtellous or -pilosulous, with thorns 4–15 mm. Petiole 5–15 mm, yellowish hirtellous to -pilosulous or

glabrescent; leaf blade drying papery to thickly papery, ovate-elliptic, elliptic-oblong, or ovate, 2–21 × 1.5–9.5 cm, adaxially glabrous, abaxially glabrescent to strigillose, hirtellous, or pilosulous at least on principal veins, base cuneate or slightly rounded, apex acute or shortly acuminate; secondary veins 5–8 pairs, in abaxial axils with pilosulous domatia; stipules triangular to narrowly triangular, 3–5 mm, strigillose to pilosulous, hirtellous, or glabrescent, long acuminate. Inflorescences congested-cymose, often umbelliform, several to many flowered, 2.5–4 × 3–4.5 cm, densely pilosulous to strigose or strigillose; peduncle 3–5 mm; bracts lanceolate to ovate, 1.5–2.5 mm, acute to acuminate; pedicels 0.5–1.5 mm. Calyx densely strigose to strigillose; ovary portion ellipsoid to cylindrical, 1–1.2 mm; limb 3–4 mm, shallowly to deeply lobed; lobes narrowly triangular or ovate-triangular, 1–4 mm, acute. Corolla white or yellow, outside puberulent to glabrous; tube (12–)15–24 × 1–4 mm; lobes elliptic-oblong to oblanceolate, 5–9 × 4–4.5 mm, acute. Fruiting pedicels to 5 mm. Berry globose, 8–12 mm in diam., pilosulous to strigillose or glabrous; seeds ca. 5 mm. Fl. Mar–Dec, fr. May–Feb.

Forests, forest margins, or thickets on hills, on mountains, or in fields; near sea level to 1200 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Japan, ?Thailand (*Larsen et al.* 43560, MO!), Vietnam].

The shorter measurements here are taken from W. C. Chen (in FRPS 71(1): 345–346. 1999); the specimens studied all have corolla tubes 15–24 mm.

Fl. China 19: 78–81. 2011.