

15. GLYCOSMIS Corrêa, Ann. Mus. Natl. Hist. Nat. 6: 384. 1805, nom. cons.

山小橘属 shan xiao ju shu

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Shrubs or trees, unarmed, with rust-colored villosulous indumentum (sometimes becoming bleached) on terminal and axillary buds and usually on young inflorescences. Leaves alternate [rarely opposite], odd-pinnate, 1-foliolate, or simple. Inflorescences terminal and/or axillary, paniculate, compoundly racemose, or reduced to 1 or a few flowers. Flowers bisexual, globose to ellipsoid in bud. Sepals 4 or 5, basally connate. Petals 4 or 5, imbricate in bud. Stamens 8 or 10, distinct, alternately ± unequal in length; filaments ± straight. Disk annular, pulvinate, columnar, conic, or bell-shaped. Gynoecium 2–5-loculed, syncarpous; radial walls of locules straight; ovules 1(or 2) per locule; style to nearly as long as ovary, persistent in fruit. Fruit a berry, with mucilaginous pulp or dry, without pulp vesicles; endocarp membranous. Seeds with membranous seed coat; endosperm lacking; embryo straight; cotyledons elliptic, plano-convex, neither convolute nor folded; hypocotyl partly included between cotyledons.

About 50 species: E, S, and SE Asia, Australia; 11 species (two endemic) in China.

- 1a. Leaves, or most of them, simple or 1-foliolate.
 - 2a. Leaves, or most of them, simple 1. *G. cochinchinensis*
 - 2b. Leaves, or most of them, 1-foliolate.
 - 3a. Leaflet blades lustrous when dry; petiole (0.6–)1.5–3 cm 2. *G. montana*
 - 3b. Leaflet blades not lustrous when dry; petiole 0.2–0.5(–1.6) cm.
 - 4a. Inflorescences less than 1 cm; anther connective with an apical oil gland and 2 or 3 abaxial oil glands 3. *G. pseudoracemosa*
 - 4b. Inflorescences 2–5 cm; anther connective with only an apical oil gland 4. *G. longifolia*
- 1b. Leaves, or most of them, 2–7-foliolate.
 - 5a. Margin of leaflet blades serrate or dentate; inflorescences often longer than 10 cm.
 - 6a. Staminal filaments widest in ± their apical half; ovary glabrous 5. *G. pentaphylla*
 - 6b. Staminal filaments widest in ± their basal half; ovary rust-colored villosulous 6. *G. esquirolii*
 - 5b. Margin of leaflet blades entire or repand; inflorescences rarely longer than 10 cm.
 - 7a. Ovary terete; petals ca. 5 mm, not caducous 7. *G. lucida*
 - 7b. Ovary globose or ovoid; petals less than 5 mm, caducous.
 - 8a. Leaves (3–)5–7-foliolate 8. *G. oligantha*
 - 8b. Leaves (1 or)2–5-foliolate.
 - 9a. Leaflet blades concolorous; petals ca. 4 mm 10. *G. parviflora*
 - 9b. Leaflet blades discolorous; petals ca. 1.5 or ca. 3 mm.
 - 10a. Petals ca. 1.5 mm; leaflet blades 5–9 cm wide 11. *G. xizangensis*
 - 10b. Petals ca. 3 mm; leaflet blades 2–3 cm wide 9. *G. craibii*

1. *Glycosmis cochinchinensis* (Loureiro) Pierre in Engler & Prantl, Nat. Pflanzenfam. 3(4): 185. 1896.

山橘树 shan ju shu

Tolujfera cochinchinensis Loureiro, Fl. Cochinch. 1: 262. 1790; *Glycosmis cochinchinensis* var. *contracta* Craib; *G. parkeri* Narayanaswamy; *G. touranensis* Guillaumin.

Shrubs or trees, 1–4 m tall. Leaves, or most of them, simple; petiole 3–10 mm; leaf blade suborbicular, broadly elliptic, ovate, oblong, or lanceolate, 4–26 × 2–8 cm, papery to leathery, glabrous, base rounded, obtuse, cuneate, or attenuate, margin entire, apex rounded, obtuse, mucronate, or acuminate. Inflorescences axillary or terminal, with flowers conglomerate, rarely solitary, or in panicle ca. 5 cm. Sepals ovate, less than 1 mm. Petals white, ca. 3 mm. Stamens 10; filaments widest in ± their basal half. Disk obvious. Ovary globose; style short, narrow; stigma slightly expanded. Fruit reddish, 0.8–1.4 cm in diam. Fl. and fr. year-round.

Below 1000 m. Guangdong, S Guangxi, Hainan, S Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

2. *Glycosmis montana* Pierre, Fl. Forest. Cochinch. 3: t. 285b. 1893.

海南山小橘 hai nan shan xiao ju

Glycosmis hainanensis C. C. Huang; *G. tonkinensis* Tanaka ex Guillaumin; *Tetracronia cymosa* Pierre.

Shrubs or trees, 1–3 m tall. Leaves, or most of them, 1-foliolate; petiole (0.6–)1.5–3 cm; petiolule 2–10 mm; leaflet blades obovate-oblong to oblanceolate, 5–15 × 1.5–6.5 cm, papery to leathery, glabrous, base often obtuse, margin entire, apex abruptly acuminate to elongately caudate. Inflorescences paniculate, 1–3 cm. Flowers small, globose in bud. Sepals broadly ovate, less than 1 mm. Petals white, ca. 3 mm, caducous. Stamens 10; filaments widest in ± their basal half. Disk obviously uplifted. Ovary broadly ovoid to subglobose; style stout; stigma slightly expanded. Fruit pink, globose, ca. 8 mm in diam. Fl. Oct–Mar, fr. Jul–Sep.

Woods on hillsides, near rivers; 200–500 m. Guangdong, Hainan, SE Yunnan (Funing) [Vietnam].

Stone (Proc. Acad. Nat. Sci. Philadelphia 137: 10. 1985) placed *Glycosmis montana* in synonymy of *G. lanceolata* (Blume) Sprengel ex Teijsmann & Binnendijk.

3. *Glycosmis pseudoracemosa* (Guillaumin) Swingle, Notul. Syst. (Paris) 2: 162. 1912.

华山小橘 hua shan xiao ju

Atalantia pseudoracemosa Guillaumin, Notul. Syst. (Paris) 1: 181. 1911; *Glycosmis sinensis* C. C. Huang.

Shrubs or trees, 1.5–3 m tall. Leaves, or most of them, 1-foliolate; petiole 2–5(–16) mm; petiolule 1–5 mm; leaflet blades oblong to lanceolate, 4–18 × 1.5–7 cm, papery, margin entire, apex acuminate. Inflorescences terminal or axillary, with flowers conglomerate or forming a short cyme, less than 1 cm. Sepals broadly ovate, less than 1 mm. Petals 5, white, ca. 4 mm. Stamens 10; filaments widest in ± their basal half. Ovary ovoid, becoming clavate; style extremely short. Fruit orange, broadly ellipsoid to subglobose, 1–1.2 × 0.8–1 cm. Fl. nearly year-round, fr. May–Dec.

Hilly areas in woods and thickets; 400–1200 m. SW and W Guangxi, SE Yunnan (Malipo) [N Vietnam].

4. *Glycosmis longifolia* (Oliver) Tanaka, Bull. Soc. Bot. France 75: 709. 1928.

长叶山小橘 chang ye shan xiao ju

Glycosmis pentaphylla (Retzius) Candolle subvar. *longifolia* Oliver, J. Linn. Soc., Bot. 5(Suppl. 2): 37. 1861; *G. cyanocarpa* (Blume) Sprengel var. *simplicifolia* Kurz; *G. cymosa* (Kurz) J. Narayanaswami ex Tanaka var. *simplicifolia* (Kurz) J. Narayanaswami.

Trees to 5 m tall. Bark brownish gray. Leaves, or most of them, 1-foliolate; petiole less than 5 mm; leaflet blade oblong, 10–18 × 4–5 cm, papery, base cuneate, margin entire, apex acuminate. Inflorescences axillary or terminal, paniculate, 2–5 cm. Sepals broadly ovate, less than 1 mm. Petals 3–4 mm, caducous. Stamens 10; filaments widest in ± their basal half. Ovary globose; style short; stigma slightly expanded. Fruit oblong to obovoid, 10–15 × 8–10 mm, 1-seeded. Fl. Apr–Aug.

Valley woods; ca. 1300 m. SW and W Yunnan (Lushui, Zhenkang) [India, NE Myanmar, Sri Lanka].

Stone (Proc. Acad. Nat. Sci. Philadelphia 137: 5. 1985) placed *Glycosmis longifolia* in synonymy of *G. cyanocarpa* (Blume) Sprengel.

5. *Glycosmis pentaphylla* (Retzius) Candolle, Prodr. 1: 538. 1924.

山小橘 shan xiao ju

Limonia pentaphylla Retzius, Observ. Bot. 5: 24. 1789; *Glycosmis arborea* (Roxburgh) Candolle; *G. chylocarpa* Wight & Arnott; *G. quinquefolia* Griffith; *Limonia arborea* Roxburgh; *Myxospermum chylocarpum* (Wight & Arnott) M. Roemer.

Trees to 5 m tall. Leaves (3 or)5-foliolate; petiolules 2–10 mm; leaflet blades oblong, 10–25 × 3–7 cm, papery, base cuneate, margin serrate, apex mucronate. Inflorescences axillary or terminal, paniculate. Flowers globose in bud. Sepals broadly ovate, less than 1 mm. Petals white or pale yellow, 3–4 mm, caducous. Stamens 10. Ovary globose to broadly ovoid; style extremely short; stigma slightly expanded. Fruit reddish, subglobose, 8–10 mm in diam. Fl. Jul–Oct, fr. Jan–Mar. $2n = 36, 54$.

Hillside and valley woods; 600–1200 m. S and SW Yunnan [Bhutan, Cambodia, NE India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, NW Vietnam].

6. *Glycosmis esquirolii* (H. Léveillé) Tanaka, Bull. Soc. Bot. France 75: 709. 1928.

锈毛山小橘 xiu mao shan xiao ju

Clausera esquirolii H. Léveillé, Repert. Spec. Nov. Regni Veg. 9: 324. 1911; *C. ferruginea* C. C. Huang; *Glycosmis ferruginea* (C. C. Huang) C. C. Huang; *G. winitii* Craib.

Trees 6–10 m tall. Leaves 4–7-foliolate; leaflet blades ovate to oblong, 10–16 × 4–7 cm, base cuneate, margin dentate, apex acuminate to obtuse. Inflorescences axillary or terminal, paniculate. Sepals broadly ovate, ca. 1 mm. Petals pale yellowish white, 3–4 mm. Stamens 10; filaments widest in ± their basal half; anthers elliptic, ca. 1 mm. Ovary subglobose, rust-colored villosulous; style extremely short. Fl. Oct–Mar, fr. Apr.

Mountain woods and thickets; 400–1300 m. W Guangxi, S Guizhou, S and SE Yunnan [Myanmar, Thailand].

7. *Glycosmis lucida* Wallich ex C. C. Huang, Guihaia 7: 119. 1987.

亮叶山小橘 liang ye shan xiao ju

Glycosmis cyanocarpa (Blume) Sprengel var. *cymosa* Kurz; *G. cymosa* (Kurz) J. Narayanaswami ex Tanaka (1941), not Zippelius ex Spanoghe (1841).

Trees 3–5 m tall. Leaves (1 or)3- or 5(or 6)-foliolate; petiolules 2–8 mm; leaflet blades oblong to lanceolate, 7–18 × 3–6 cm, margin entire or repand, apex acuminate. Inflorescences axillary or terminal, paniculate, 1–4 cm, many flowered. Sepals broadly ovate, ca. 1 mm, margin ciliate. Petals ca. 5 × 2–3 mm. Stamens 10; filaments linear. Ovary terete. Fruit orange, broadly ellipsoid to ovoid, 1–1.4 × 0.8–1.2 cm, 1-seeded. Fl. and fr. year-round but flowering peak Jan–Mar.

Mountain woods; 900–1400 m. Yunnan [Bhutan, India, NE Myanmar].

Stone (Proc. Acad. Nat. Sci. Philadelphia 137: 5. 1985) placed *Glycosmis lucida* in synonymy of *G. cyanocarpa* (Blume) Sprengel.

8. *Glycosmis oligantha* C. C. Huang, Guihaia 7: 122. 1987.

少花山小橘 shao hua shan xiao ju

Shrubs or trees, to 3 m tall. Leaves (3 or)5- or 7-foliolate; petiolules 3–5 mm; leaflet blades narrowly lanceolate, 5–9 ×

1.5–2.5 cm, base attenuate, margin entire or repand, apex acuminate. Inflorescences axillary, 1–5-flowered. Sepals broadly ovate, ca. 1 mm wide. Petals ovate, ca. 3 mm, glabrous, apex obtuse. Stamens 10, longer ones ca. 2.5 mm, shorter ones ca. 1.5 mm. Ovary globose; style extremely short. Fruit not seen.

- Hillside woods; 200–500 m. SW Guangxi.

9. *Glycosmis craibii* Tanaka, Bull. Mus. Natl. Hist. Nat., sér. 2, 2: 159. 1930.

毛山小橘 mao shan xiao ju

Glycosmis puberula Lindley var. *craibii* (Tanaka) B. C. Stone.

Trees to 5 m tall. Leaves (1–)3- or 5-foliolate; leaflet blades oblong, lanceolate, or ovate, 5–10 × 2–3 cm, papery or rigidly so, base attenuate to cuneate, margin entire, apex acuminate to mucronate. Inflorescences axillary or terminal, less than 3 cm or rarely ca. 4 cm. Sepals broadly ovate to ovate, less than 1 mm or ca. 1 mm. Petals ca. 3 mm. Filaments linear or widest in ± their basal half. Ovary terete in bud, becoming broadly conic, gourd-shaped, or ovoid at anthesis, slightly pubescent or glabrous. Fruit reddish to orange, subglobose, 0.8–1.4 cm in diam., 1- or 2-seeded. Fl. and fr. year-round.

Hillside forests, woods, and thickets. Hainan, S Yunnan [N and NE Thailand, Vietnam].

Stone (Proc. Acad. Nat. Sci. Philadelphia 137: 18. 1985) reduced *Glycosmis craibii* to a variety of *G. puberula* Lindley.

- 1a. Filaments linear; ovary slightly pubescent 9a. var. *craibii*
1b. Filaments widest in ± their basal half; ovary glabrous 9b. var. *glabra*

9a. *Glycosmis craibii* var. *craibii*

毛山小橘(原变种) mao shan xiao ju (yuan bian zhong)

Trees to 3 m tall. Leaflet blades oblong to lanceolate, 7–9 × 2.5–3 cm, papery, base attenuate, apex acuminate. Inflorescences axillary, less than 3 cm, few flowered. Sepals broadly ovate, ca. 1 mm wide. Petals subelliptic. Stamens slightly longer than petals; filaments linear. Ovary conic to gourd-shaped at anthesis, slightly pubescent. Fruit reddish to orange, 0.8–1 cm in diam., 1-seeded. Fl. Apr–May, fr. Aug–Oct.

Hillside forests. S Yunnan [NE Thailand].

9b. *Glycosmis craibii* var. *glabra* (Craib) Tanaka, Bull. Mus. Natl. Hist. Nat., sér. 2, 2: 159. 1930.

光叶山小橘 guang ye shan xiao ju

Glycosmis singuliflora Craib var. *glabra* Craib, Fl. Siam. 1: 226. 1926.

Trees to 5 m tall. Petiolules 2–6 mm; leaflet blades oblong, lanceolate, or ovate, 5–10 × 2–3 cm, rigidly papery, base attenuate to cuneate, apex acuminate to mucronate. Inflorescences axillary or terminal, rarely to 4 cm. Sepals ovate, less than 1 mm. Petals caducous. Stamens 10; filaments widest in ± their

basal half. Ovary broadly ovoid at anthesis, glabrous. Fruit orange, 1–1.4 cm in diam., 1- or 2-seeded. Fl. and fr. year-round.

Hillside woods and thickets; 300–500 m. Hainan [N Thailand, Vietnam].

Stone (Proc. Acad. Nat. Sci. Philadelphia 137: 14. 1985) placed *Glycosmis craibii* var. *glabra* in synonymy of *G. ovoidea* Pierre.

10. *Glycosmis parviflora* (Sims) Little, Phytologia 2: 463. 1948.

小花山小橘 xiao hua shan xiao ju

Limonia parviflora Sims, Bot. Mag. 50: t. 2416. 1823; *Citrus erythrocarpa* Hayata; *Glycosmis citrifolia* Lindley; *G. erythrocarpa* (Hayata) Hayata; *L. citrifolia* Willdenow (1809), not Salisbury (1796).

Shrubs or trees, 1–3 m tall. Leaves (1 or)2–4(or 5)-foliolate; petiolules 1–5 mm; leaflet blades elliptic, oblong, or lanceolate, 5–19 × 2.5–8 cm, glabrous, base cuneate, margin entire, apex mucronate, acuminate, or obtuse. Inflorescences axillary or terminal, paniculate, 3–5 cm when axillary, to 14 cm when terminal. Sepals ovate, ca. 1 mm wide, apex obtuse. Petals white, ca. 4 mm, oblong. Stamens (8 or)10. Ovary broadly ovoid to globose; style extremely short; stigma slightly expanded. Fruit pale yellowish white but turning reddish to dark vermilion, globose to ellipsoid, 1–1.5 cm in diam., (1 or)2- or 3-seeded. Fl. Mar–May, fr. Jul–Sep. $2n = 54$.

Mountain woods; 200–1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, S and W Yunnan [Japan (including Ryukyu Islands), Myanmar, NE Vietnam].

11. *Glycosmis xizangensis* (C. Y. Wu & H. Li) D. D. Tao, Acta Phytotax. Sin. 32: 369. 1994.

西藏山小橘 xi zang shan xiao ju

Walsura xizangensis C. Y. Wu & H. Li, Acta Phytotax. Sin. 18: 110. 1980; *Glycosmis medogensis* D. D. Tao ex C. C. Huang, nom. illeg. superfl.; *G. motuoensis* D. D. Tao, nom. illeg. superfl.

Shrubs or trees, to 3 m tall. Leaves 3- or 4-foliolate; petiolules 4–10 mm; leaflet blades alternate to subopposite, broadly ovate to obovate-elliptic, 12–20 × 5–9 cm, subleathery, abaxially pale green, adaxially dark green, base cuneate, margin entire or repand, apex mucronate. Inflorescences axillary, 2.5–4 cm. Sepals broadly ovate, less than 2 mm, margin ciliate. Petals oblong, ca. 1.5 mm, glabrous, apex obtuse. Stamens 10; filaments flattened; anthers elliptic. Ovary subglobose; style terete. Fruit not seen.

Fl. China 11: 80–83. 2008.

- Hillside woods; ca. 800 m. SE Xizang (Médog).

The later names *Glycosmis medogensis* and *G. motuoensis* are based on the same type (*Qinghai-Xizang Exped. 74–4540*) as *Walsura xizangensis*.

Fl. China 11: 80–83. 2008.