

## 12. MICHELIA Linnaeus, Sp. Pl. 1: 536. 1753.

含笑属 han xiao shu

*Champaca* Adanson; *Elmerrillia* Dandy; *Liriopsis* Spach (1839), not Reichenbach (1828–1829); *Paramichelia* Hu; *Sampacca* Kuntze; *Tsoongiodendron* Chun.

Trees or shrubs, evergreen. Stipules hooded, 2-valved, membranous, adnate to or free from petiole, annular scar persistent on petiole or twig. Leaves spirally arranged; leaf blade leathery, margin entire. Young leaves erect or folded in buds. Flowers pseudo-axillary on a brachyblast, solitary or rarely 1 flower bud surrounding 2 or 3 flower buds on different nodes and forming a 2- or 3-flowered thyse, bisexual, usually fragrant; bud surrounded by 2–4 deciduous spathaceous bracts. Peduncle with annular bract-scar but if bracts adnate to petiole then petiole with bract-scar. Tepals 6–21, 3 or 6 per whorl, subequal or rarely much smaller than outer whorl. Stamens numerous; filaments short or long; connective elongated, exerted and forming a long or short tip, rarely not exerted; anthers dehiscing laterally or nearly laterally. Gynoecium with or without a gynophore; carpels few or numerous, usually partly undeveloped, without abaxial longitudinal furrow, adaxial base inserted on rachis, apical part often distinct or rarely coherent; ovules 2 to several per carpel. Fruit usually terete when mature, often curved because of partly abortive carpels; mature carpels leathery or woody, completely persistent on fruiting axis, sessile or shortly stalked, dehiscing into 2 valves along dorsal sutures or along both dorsal and ventral sutures, sometimes fruit fleshy and tardily and irregularly dehiscent, or a woody syncarp, upper parts of carpels falling away while also dehiscing along dorsal suture, basal parts remaining attached to torus with their suspended seeds. Seeds 2 to several per carpel, red or brown.

About 70 species: tropical and subtropical Asia; 39 or 37 species including one or two hybrid species (20 or 18 endemic, one introduced) in China.

“*Michelia fadouensis* D. X. Li & Y. W. Law,” “*M. fugongensis* D. X. Li & Y. W. Law,” “*M. gigantea* D. X. Li & R. Z. Zhou,” “*M. gushanensis* D. X. Li & Y. W. Law,” “*M. pingbianica* R. Z. Zhou & Q. W. Zeng,” and “*M. virensipetala* Y. W. Law & R. Z. Zhou” (in Y. H. Liu, *Magnolias China*, 248, 259, 266, 272, 304, 322. 2004) are of uncertain identity and are probably the same as already published *Michelia* species but were not validly published because no Latin descriptions or diagnoses were provided and no types were indicated (*Vienna Code*, Art. 36.1 and 37.1).

- 1a. Tepals unequal, outermost whorl membranous but others fleshy; stipules free from petiole ..... 37. *M. gioi*
- 1b. Tepals subequal, ± fleshy; stipules free from or connate to petiole.
  - 2a. Tepals 6, in 2 whorls; stipules free from petiole.
    - 3a. Leaf blades glabrous on both surfaces.
      - 4a. Gynoecium glabrous.
        - 5a. Fruit 8–15 cm ..... 30. *M. martini*
        - 5b. Fruit 3.5–10 cm ..... 31. *M. chapensis*
      - 4b. Gynoecium with trichomes.
        - 6a. Brachyblasts with trichomes; tepals obovate-elliptic ..... 31. *M. chapensis*
        - 6b. Brachyblasts glabrous; tepals narrowly oblong to broadly lanceolate ..... 32. *M. xanthantha*
    - 3b. Leaf blades at least abaxially with some trichomes.
      - 7a. Leaf blade 1.5–2.5 cm wide, secondary veins inconspicuous; tepals narrower and smaller, oblanceolate ..... 33. *M. angustiolonga*
      - 7b. Leaf blade 2.8–10 cm wide, secondary veins conspicuous; tepals broader and larger, obovate-elliptic, obovate, oblong, or narrowly elliptic (but unknown for *M. leveilleana*).
        - 8a. Leaf blades thinly leathery, both surfaces pubescent when young ..... 36. *M. leveilleana*
        - 8b. Leaf blades thickly leathery or leathery, abaxially brown tomentose and adaxially glabrous.
          - 9a. Petiole 1.5–4 cm; mature carpels 2–6 cm ..... 34. *M. balansae*
          - 9b. Petiole ca. 1 cm; mature carpels 1–2 cm ..... 35. *M. guangxiensis*
- 2b. Tepals 9 or more, in 3 or more whorls; stipules free from or connate to petiole.
  - 10a. Stipules adnate to petiole, leaving stipular scar on petiole.
    - 11a. Petiole shorter, usually not exceeding 5 mm; outer tepals smaller.
      - 12a. Gynoecium glabrous ..... 27. *M. figo*
      - 12b. Gynoecium with trichomes.
        - 13a. Tepals pale yellow, outer ones outside with brownish trichomes ..... 29. *M. skinneriana*
        - 13b. Tepals white, purplish red, or dark purple, outer ones outside glabrous.
          - 14a. Tepals white; gynoecium exceeding androecium; fruit usually with 5–9 mature carpels ..... 26. *M. yunnanensis*
          - 14b. Tepals dark purple; gynoecium not exceeding androecium; fruit with more than 10 mature carpels ..... 28. *M. crassipes*
    - 11b. Petiole longer, often exceeding 5 mm; outer tepals larger.
      - 15a. Stipular scar shorter than 1/3 of petiole.
        - 16a. Tepals yellow.
          - 17a. Leaf blade thinly leathery, obovate, 20–27 × 7–11 cm, abaxially glaucous; tepals 8 ..... 10. *M. opipara*

- 17b. Leaf blade leathery, obovate to narrowly obovate, 9–15 × 3–7 cm, abaxially grayish white; tepals 9–12 ..... 11. *M. wilsonii*
- 16b. Tepals white.
- 18a. Twigs and petioles grayish white appressed pubescent ..... 7. *M. doltsopa*
- 18b. Twigs and petioles with brownish trichomes.
- 19a. Young twigs densely yellowish brown tomentose; petiole adaxially furrowed ..... 8. *M. fulva*
- 19b. Young twigs brown pubescent; petiole not adaxially furrowed ..... 9. *M. sphaerantha*
- 15b. Stipular scar longer than 1/3 of petiole.
- 20a. Tepals obovate to spatulate.
- 21a. Tepals white ..... 6. *M. floribunda*
- 21b. Tepals yellow or ivory-yellow, red-dotted.
- 22a. Stipular scar reaching middle of petiole; tepals yellow or ivory-yellow, red-dotted; fruit subellipsoid, ca. 13 × 9 cm; mature carpels connate ..... 4. *M. odora*
- 22b. Stipular scar reaching apex of petiole; tepals yellow; fruit terete; mature carpels distinct ..... 5. *M. kiswa*
- 20b. Tepals narrowly oblanceolate or narrowly lanceolate.
- 23a. Young twigs densely gray tomentose; old twigs, fruiting brachyblasts, gynophores, and carpels pilose ..... 1. *M. velutina*
- 23b. Young parts pubescent, later pubescent or glabrous.
- 24a. Tepals white ..... 38. *M. ×alba*
- 24b. Tepals yellow or white but if white at least cream-colored in bud.
- 25a. Leaf blade adaxially glabrous, midvein flat; fruit terete, 7–15 cm, mature carpels distinct ..... 2. *M. champaca*
- 25b. Leaf blade adaxially brownish appressed villous at first, midvein impressed; fruit ellipsoid to ellipsoid-cylindric, 6–10 cm, mature carpels connate ..... 3. *M. baillonii*
- 10b. Stipules free from petiole, no stipular scar on petiole.
- 26a. Tepals obovate, broadly obovate, or obovate-oblong.
- 27a. Leaf blade glabrous on both surfaces.
- 28a. Buds narrowly ellipsoid; twigs glabrous ..... 22. *M. shiluensis*
- 28b. Buds cylindric; twigs puberulous ..... 23. *M. coriacea*
- 27b. Leaf blade with trichomes.
- 29a. Tepals white ..... 24. *M. guangdongensis*
- 29b. Tepals pale yellow.
- 30a. Leaf blade oblong-elliptic, elliptic-ovate, or ovate, 17–23 × 6–11 cm, reddish brown or silvery gray tomentose abaxially ..... 25. *M. foveolata*
- 30b. Leaf blade obovate-oblong or narrowly elliptic, 9–18 × 4.5–5.5 cm, densely brown pubescent or golden yellow villous ..... 39. *M. elegans*
- 26b. Tepals spatulate-obovate, narrowly obovate, or spatulate.
- 31a. Leaf blade glabrous on both surfaces.
- 32a. Leaf blade abaxially glaucous ..... 12. *M. maudiae*
- 32b. Leaf blade not abaxially glaucous.
- 33a. Leaf blade oblong-elliptic to elliptic, 14–17 × 6–8 cm ..... 13. *M. lacei*
- 33b. Leaf blade elliptic to narrowly elliptic, 7–10 × 1.7–2.3 cm ..... 14. *M. iteophylla*
- 31b. Leaf blade with some trichomes.
- 34a. Androecium exceeding gynoecium ..... 15. *M. fujianensis*
- 34b. Androecium not exceeding gynoecium.
- 35a. Tepals yellow.
- 36a. Leaf blade narrowly obovate, abaxially scattered with reddish brown erect trichomes ..... 11. *M. wilsonii*
- 36b. Leaf blade narrowly ovate to narrowly elliptic, abaxially with brown silky trichomes ..... 16. *M. flaviflora*
- 35b. Tepals white or red.
- 37a. Bark fissured ..... 17. *M. masticata*
- 37b. Bark smooth.
- 38a. Buds, young twigs, and young leaves with dense reddish brown silky trichomes or tomentose.
- 39a. Leaf blade abaxially grayish white or mixed with reddish brown appressed trichomes; tepals 9 ..... 18. *M. cavaleriei*
- 39b. Leaf blade abaxially glabrescent; tepals 9–12 ..... 20. *M. macchurei*
- 38b. Buds, young twigs, and young leaves with brownish appressed trichomes or puberulous.
- 40a. Gynoecium with fine golden trichomes ..... 19. *M. compressa*
- 40b. Gynoecium brown tomentose or silvery appressed puberulous.
- 41a. Leaf blade leathery, obovate, elliptic-obovate, rhomboid-obovate, rhomboid, or

- oblong-elliptic, 7–18 × 5–7 cm ..... 20. *M. macclurei*  
 41b. Leaf blade thinly leathery, rhomboid-elliptic, 6–13 × 3–5 cm ..... 21. *M. mediocris*

**1. *Michelia velutina*** Candolle, Prodr. 1: 79. 1824.

绒毛含笑 rong mao han xiao

*Magnolia lanuginosa* (Wallich) Figlar & Nooteboom; *M. velutina* (Candolle) Figlar (2000), not P. Parmentier (1896); *Michelia lanceolata* E. H. Wilson; *M. lanuginosa* Wallich; *Sampacca lanuginosa* (Wallich) Kuntze.

Trees, to 15–20 m tall, to 90 cm d.b.h. Bark dark brown. Young part densely gray long tomentose. Twigs, leaf blade adaxial midvein, brachyblasts, gynoeceum stalks in fruiting, and mature carpels residually sparsely long tomentose. Twigs with spongy pith, diaphragmed sclerenchyma. Stipular scar ca. 1/2 as long as petiole. Petiole 1–2 cm, densely gray long tomentose; leaf blade narrowly elliptic to elliptic, 11.5–18.5 × 4–6 cm, thinly leathery, secondary veins 18–20 on each side of midvein, dense and slender, divergent, and reticulated 4–6 mm from margin, base broadly cuneate to obtuse, apex acute to slightly obtuse and with a short acumen. Flowers axillary near twig apex, 8–10 cm in diam. Tepals 10–12, pale yellow, narrowly oblanceolate, 4–6.5 × 1–1.8 cm; tepals of outer whorl sericeous; tepals of inner whorl smaller. Staminal connective exerted and forming a mucro. Gynoeceum and carpels densely long tomentose. Fruiting brachyblasts 1–1.5 cm. Fruiting gynophore ca. 5 mm, with lenticels and sparse long trichomes. Fruit 10–13 cm; mature carpels sparse or crowded at apical part of gynoeceum, obovate, basally shrinking into gynophore, apex obtuse and mucronate. Seeds orangish yellow. Fl. May–Jun, fr. Aug–Sep. *2n* = 38.

Forests, slopes; 1500–2400 m. S Xizang, Yunnan [Bhutan, NE India, Nepal].

**2. *Michelia champaca*** Linnaeus, Sp. Pl. 1: 536. 1753.

黄兰 huang lan

Trees, to 50 m or taller, to 1.9 m d.b.h. Buds, young twigs, young petioles, and young leaf blades pale yellow appressed pubescent. Twigs ascending and forming a narrow umbelliform crown. Stipular scar 0.3–1 × as long as petiole. Petiole 2–4 cm; leaf blade elliptic or ovate, 10–20(–30) × 4.5–10 cm, abaxially slightly puberulous, base broadly cuneate, cuneate, or rounded, apex long acuminate to subcaudate. Flowers fragrant. Tepals 15–20, yellow, oblanceolate, 2–4 × 0.4–0.5 cm. Staminal connective exerted and forming a long tip. Gynophore ca. 3 mm; gynoeceum with trichomes. Fruit 7–15 cm; mature carpels obovoid-ellipsoid, 1–1.5 cm, tuberculate. Seeds 2–4 per carpel, rugose. Fl. Jun–Jul, fr. Sep–Oct.

Evergreen broad-leaved forests; 200–1600 m. S Xizang, S and SW Yunnan; cultivated in Fujian, Guangdong, Guangxi, Hainan, Taiwan [India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

- 1a. Leaf blade ovate, base cuneate to narrowly cuneate, apical acumen often quite long; stipular scar almost 0.5 × to as long as petiole ..... 2a. var. *champaca*  
 1b. Leaf blade ± elliptic, base cuneate to

rounded, apical acumen often rather short; stipular scar 0.3–0.7 × as long as petiole ..... 2b. var. *pubinervia*

**2a. *Michelia champaca*** var. ***champaca***

黄兰(原变种) huang lan (yuan bian zhong)

*Magnolia champaca* (Linnaeus) Baillon ex Pierre; *M. membranacea* P. Parmentier; *Michelia blumei* Steudel; *M. euonymoides* N. L. Burman; *M. pilifera* Bakhuizen f.; *M. rheedii* Wight; *M. suaveolens* Persoon; *M. tsiampacca* Blume; *M. tsiampacca* var. *blumei* Moritz; *M. velutina* Blume (1829), not Candolle (1824); *Sampacca suaveolens* (Persoon) Kuntze.

Trees, to 30 m tall, to 50 cm d.b.h. Stipular scar almost 0.5 × to as long as petiole. Leaf blade ovate, base cuneate to narrowly cuneate, apical acumen often quite long. *2n* = 38.

Cultivated. Fujian, Guangdong, Guangxi, Hainan, Taiwan [probably originally from India].

This species is grown as an ornamental and used medicinally.

**2b. *Michelia champaca*** Linnaeus var. ***pubinervia*** (Blume)

Miquel, Ann. Mus. Bot. Lugduno-Batavi 4. 72. 1868.

毛叶脉黄兰 mao ye mai huang lan

*Michelia pubinervia* Blume, Fl. Javae 19–20(Magnoliaceae): 14. 1829; *Magnolia champaca* var. *pubinervia* (Blume) Figlar & Nooteboom.

Trees, to 50 m tall or taller, to 1.9 m d.b.h. Stipular scar 0.3–0.7 × as long as petiole. Leaf blade ± elliptic, base cuneate to rounded, apical acumen often rather short.

Evergreen broad-leaved forests; 200–1500 m. S Xizang, S and SW Yunnan [India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

**3. *Michelia baillonii*** (Pierre) Finet & Gagnepain, Bull. Soc. Bot. France 52(Mém. 4): 46. 1906.

合果木 he guo mu

*Magnolia baillonii* Pierre, Fl. Forest. Cochinch. 1: t. 2. 1880; *Aromadendron baillonii* (Pierre) Craib; *A. spongiocarpum* (King) Craib; *M. baillonii* var. *bailingia* Sima & H. Jiang; *M. phellocarpa* (King) H. J. Chowdhery & P. Daniel; *Michelia phellocarpa* (King) Finet & Gagnepain; *Paramichelia baillonii* (Pierre) Hu; *Talauma phellocarpa* King; *T. spongiocarpa* King.

Trees, to 35 m tall, to 1 m d.b.h. Young twigs, petioles, and leaf blade abaxial surfaces pale brown appressed villous. Stipular scar 1/3–1/2 as long as petiole. Petiole 1.5–3 cm; leaf blade elliptic, ovate-elliptic, or narrowly ovate, 6–22(–25) × 4–7 cm, adaxially at first brown appressed villous, midvein impressed and remaining with long trichomes, secondary veins 9–15 on each side of midvein, reticulate veins dense, slender, and prominent on both surfaces when dry, base cuneate to broadly cuneate, apex acuminate. Brachyblasts 1–1.5 cm. Flowers fragrant. Tepals 18–21, 6 in a whorl, white but cream-colored in bud;

tepals of outer 2 whorls oblanceolate, 2.5–2.7 × ca. 0.5 cm, gradually smaller and narrower inward; inner tepals lanceolate, ca. 2 cm × 2 mm. Stamens 6–7 mm; filaments 1–1.2 mm; connective exerted and forming a short sharp tip; anthers ca. 5 mm. Gynophore ca. 3 mm, densely pale yellow pubescent; gynoecium narrowly ovoid, ca. 5 mm; carpels completely connate, densely pale yellow pubescent; styles red, ca. 1 mm. Fruit obovoid to ellipsoid-cylindric, 6–10 × ca. 4 cm, fleshy; mature carpels completely connate, flat, hooked, with dotted prominent lenticels; midribs of carpels persistent on fruiting axis after carpels dehisce. Fl. Mar–May, fr. Aug–Oct.  $2n = 38$ .

Forests; 500–1500 m. S Yunnan [Cambodia, India (Assam), Myanmar, Thailand, Vietnam].

This species is used for timber.

**4. *Michelia odora*** (Chun) Nooteboom & B. L. Chen, Ann. Missouri Bot. Gard. 80: 1086. 1993.

观光木 *guan guang mu*

*Tsoongiodendron odorum* Chun, Acta Phytotax. Sin. 8: 283. 1963; *Magnolia odora* (Chun) Figlar & Nooteboom.

Trees, to 25 m tall. Bark pale grayish brown, deeply wrinkled. Twigs, buds, petioles, leaf blade abaxial surfaces and adaxial midvein, and brachyblasts yellowish brown strigose. Stipular scar nearly reaching middle of petiole. Petiole 1.2–2.5 cm, flattened at base; leaf blade obovate-elliptic, 8–17 × 3.5–7 cm, middle and apical part wider, adaxially green and glossy, midvein, secondary veins, and reticulate veins adaxially impressed, secondary veins 10–12 on each side, base cuneate, apex acute to obtuse. Brachyblasts ca. 6 mm, with 1 bract scar; spatheaceous bract dehiscing along one side, pubescent. Flowers fragrant. Tepals ivory-yellow and red-dotted, narrowly obovate-elliptic; outer tepals largest, 1.7–2 × 0.7–0.8 cm; innermost tepals 1.5–1.6 × ca. 0.5 cm. Stamens 35–45, 7.5–8.5 mm; filaments white or reddish, 2–3 mm. Gynophore stout, ca. 2 mm, sulcate, densely strigose; carpels 9–13, narrowly ovoid, densely appressed pubescent, ventral sutures conspicuous; styles red, subulate, ca. 2 mm. Fruiting brachyblasts 1–2 × 1–2 cm. Fruit dark brown when dry, markedly yellow-dotted, long ellipsoid, sometimes globose because of upper carpels aborted, ca. 13 × 9 cm, hanging on old twigs; pericarp olive green, glaucous, lenticellate; valves thick, 1–2 cm. Seeds 4–6 per carpel, ellipsoid to triangular-obovoid, ca. 1.5 × 0.8 cm. Fl. Mar, fr. Oct–Dec.  $2n = 38$ .

Evergreen broad-leaved forests; 300–1100 m. Fujian, Guangdong, Guangxi, Hainan, S Hunan, S Jiangxi, SE Yunnan [N Vietnam].

This species is grown as an ornamental and used for timber.

**5. *Michelia kisopa*** Buchanan-Hamilton ex Candolle, Syst. Nat. 1: 448. 1817.

西藏含笑 *xi zang han xiao*

*Magnolia kisopa* (Buchanan-Hamilton ex Candolle) Figlar; *Michelia doltsopa* Buchanan-Hamilton ex Candolle subsp. *kisopa* (Buchanan-Hamilton ex Candolle) J. Li; *Sampacca kisopa* (Buchanan-Hamilton ex Candolle) Kuntze.

Trees, 20–40 m tall, to 45 cm d.b.h., with appressed tri-

chomes. Twigs pale brown pubescent when young and blackish brown when old, glabrous, with scattered lenticels; buds narrowly ovoid, 8–10 mm, densely brown pubescent. Stipular scar reaching petiole apex. Petiole 1.5–3 cm; leaf blade elliptic, oblong, or narrowly ovate, 9–15 × 3–5 cm, leathery, abaxially brown pubescent when young but glabrous when old, adaxially glabrous, secondary veins 7–11 on each side of midvein, reticulate veins dense and prominent on both surfaces when dry, base cuneate to rounded, apex acute to shortly acuminate. Brachyblasts ca. 4 mm, pubescent. Tepals 9, yellow; 6 tepals of outer whorl obovate, 2–2.2 × 0.9–1 cm; 3 tepals of inner whorl nearly spoon-shaped, 1.8–1.9 × 0.6–0.8 cm. Stamens 1–1.4 cm; filaments 4–6 mm; connective exerted and forming a 3–4 mm tip; anthers 6–8 mm. Gynophore ca. 5 mm, pubescent; gynoecium cylindric, 8–10 mm, pubescent; carpels ca. 2 mm; ovaries ovoid, ca. 1.5 mm, densely pubescent; styles ca. 0.5 mm. Fruit 5–10 cm; mature carpels blackish brown, subglobose, ca. 1.3 cm in diam., scattered with white lenticels. Seeds red, broadly cordate, ca. 10 × 3–5 mm. Fl. Apr–May, fr. Sep–Oct.  $2n = 38$ .

Forests, slopes; 1600–2400 m. S Xizang (Mêdog, Nyalam) [Bhutan, NE India, Nepal].

**6. *Michelia floribunda*** Finet & Gagnepain, Bull. Soc. Bot. France 52(Mém. 4): 46. 1906.

多花含笑 *duo hua han xiao*

*Magnolia floribunda* (Finet & Gagnepain) Figlar; *M. microtricha* (Handel-Mazzetti) Figlar; *Michelia kerrii* Craib; *M. microtricha* Handel-Mazzetti.

Trees, to 20 m tall. Bark gray, smooth. Young twigs 2–3 mm in diam., with white appressed trichomes. Stipular scar 1/2 or more as long as petiole. Petiole 1–1.5(–2.5) cm, with white appressed trichomes; leaf blade narrowly ovate-elliptic, narrowly ovate, or narrowly obovate-elliptic, 7–12(–14) × 2–4 cm, leathery, abaxially glaucous or not and with white long appressed trichomes, adaxially deep green and glossy, midvein impressed and usually with residual white trichomes, secondary veins 8–12 on each side of midvein and slender, reticulate veins dense, slender, and slightly prominent on both surfaces, base broadly cuneate to rounded, apex acuminate to caudate-acuminate. Brachyblasts 3–7 × ca. 3 mm, with dense silvery appressed fine trichomes, with 1 or 2 bract scars. Flowers narrowly ellipsoid, slightly curved, golden yellow appressed villous. Tepals 11–13, white, spoon-shaped to oblanceolate, 2.5–3.5 × 0.4–0.7 cm, apex usually with a small tip. Stamens 10–14; connective exerted and forming a long tip. Gynophore ca. 5 mm; gynoecium ca. 1 cm; carpels ca. 4 mm; ovaries ovoid, ca. 2 mm, densely silvery puberulous; styles as long as ovaries. Fruit 2–6 cm, wrinkled; mature carpels compressed globose to long spherical, 0.6–1.5 cm, white lenticellate, apex slightly tipped. Fl. Feb–Apr, fr. Aug–Sep.  $2n = 38$ .

Forests; 1300–2700 m. Chongqing, SW Hubei, Hunan, C Sichuan, SE Xizang, Yunnan [Laos, Myanmar, Thailand, Vietnam].

**7. *Michelia doltsopa*** Buchanan-Hamilton ex Candolle, Syst. Nat. 1: 448. 1817.

南亚含笑 *nan ya han xiao*

*Magnolia doltsopa* (Buchanan-Hamilton ex Candolle) Figlar; *M. excelsa* Wallich; *Michelia calcuttensis* P. Parmentier; *M. excelsa* (Wallich) Blume ex Wight; *M. manipurensis* G. Watt ex Brandis; *M. wardii* Dandy; *Sampacca excelsa* (Wallich) Kuntze.

Trees, to 30 m tall. Young twigs, buds, petioles, and leaf blade abaxial surfaces grayish white appressed pubescent. Stipular scar ca. 1/5 as long as petiole. Petiole 1–2 cm; leaf blade elliptic, oblong-elliptic, or narrowly elliptic, 10–22 × 5–7 cm, secondary veins 10–14 on each side of midvein, reticulate veins dense, slender, abaxially grayish, adaxially prominent when dry, and densely firmly finely pubescent, base broadly cuneate or obtuse, margin slightly involute, apex acute to long acute. Brachyblasts densely appressed villous. Tepals white, narrowly obovate-spoon-shaped, 5–7 × ca. 2.5 cm, base clawed, apex rounded. Stamens 1.2–1.7 cm; connective exerted and forming a 1.5–2 mm sharp tip; anthers 0.8–1.2 cm. Gynophore 6–8 mm, densely grayish firmly puberulous; gynoecium narrowly ovoid, 1.5–2 cm; carpels 9–12 mm, densely grayish firmly pubescent; ovaries 4–5 mm; styles 5–7 mm. Fruit 4–7 cm; mature carpels nearly obovoid, ca. 1.5 cm, with residual appressed fine pubescence, apex acutely beaked. Fl. Apr–May, fr. Sep–Oct.

Evergreen broad-leaved forests; 1500–2400 m. S and SE Xizang, NW Yunnan [Bhutan, NE India, N Myanmar, Nepal].

**8. *Michelia fulva*** Hung T. Chang & B. L. Chen, Acta Sci. Nat. Univ. Sunyatseni 3: 87. 1987.

棕毛含笑 zong mao han xiao

*Magnolia fulva* (Hung T. Chang & B. L. Chen) Figlar; *M. fulva* var. *calcicola* (C. Y. Wu ex Y. H. Law & Y. F. Wu) Sima & Hong Yu; *M. glaucophylla* Sima & Hong Yu; *M. ingrata* (B. L. Chen & S. C. Yang) Figlar; *Michelia calcicola* C. Y. Wu ex Y. H. Law & Y. F. Wu; *M. ingrata* B. L. Chen & S. C. Yang.

Trees, 3–15 m tall, to 40 cm d.b.h. Bark grayish brown. Old twigs dark brown, 5–7 mm in diam., glabrous, lenticellate; young twigs yellowish brown tomentose; buds cylindrical to narrowly ovoid, 2.5–3.5 cm, yellowish brown to golden yellow tomentose. Stipular scar ca. 1/4 as long as petiole. Petiole robust, 1.5–4.5 cm, adaxially furrowed, yellowish brown tomentose; leaf blade elliptic to ovate-elliptic, 13–24 × 4.5–12 cm, thickly leathery, abaxially glaucous, adaxially glabrous or appressed villous at first, and with trichomes but glabrescent, midvein abaxially evidently prominent and adaxially appressed, secondary veins 7–13 on each side of midvein, reticulate veins dense and prominent on both surfaces, base obtuse, apex acuminate to acute. Brachyblasts and bracts densely yellowish brown tomentose; brachyblasts robust, 1–2 cm; spatheaceous bracts 3. Flowers 4–5 cm in diam. Tepals 9–12(–14), white or yellow, obovate to elliptic, subequal, fleshy; inner tepals smaller, 4.4–5.3 × 1–3 cm. Stamens numerous; filaments 4–8 mm; connective exerted and forming a mucro; anthers 1.5–2.9 cm. Gynophore 0.6–2.4 cm, pubescent; gynoecium terete, 2.4–4.8 cm; carpels ca. 152, narrowly ovoid, densely golden yellow pubescent; styles 1–2.5 mm. Mature carpels ovoid, sessile, ca. 1.5 × 1 cm, apex shortly beaked. Fl. Mar, fr. Nov.

• Limestone forests; 600–1700 m. S Guangxi, SE Yunnan.

“*Michelia rufivillosa* D. X. Li & S. C. Yang” and “*M. xanthostemina* D. X. Li & Y. W. Law” (in Y. H. Liu, Magnolias China, 312, 326. 2004) belong here but were not validly published because no Latin descriptions or diagnoses were provided and no types were indicated (Vienna Code, Art. 36.1 and 37.1).

**9. *Michelia sphaerantha*** C. Y. Wu ex Z. S. Yue, Acta Bot. Yunnan. 9: 413. 1987.

球花含笑 qiu hua han xiao

*Magnolia elliptilimba* (B. L. Chen & Nootboom) Figlar; *M. sphaerantha* (C. Y. Wu ex Z. S. Yue) Sima; *Michelia elliptilimba* B. L. Chen & Nootboom.

Trees, 5–16 m tall. Bark grayish green, smooth. Young twigs, stipule abaxial surfaces, petioles, leaf blade on both surfaces, brachyblasts, bracts, gynophores, and carpels brown pubescent. Stipular scar 3–4 mm. Petiole 2–2.5 cm, pubescent; leaf blade elliptic to obovate-elliptic, 16–22 × 7.5–10 cm, thinly leathery, abaxially glaucous, adaxially green, midvein abaxially evidently prominent and adaxially impressed, secondary veins 9–14 on each side of midvein, reticulate veins dense and prominent on both surfaces when dry, base rounded, apex acute to acuminate. Brachyblasts 3–3.5 cm, with 3 or 4 bract scars. Tepals 11 or 12, white, subequal; outer 3 tepals obovate, 5.5–7.5 × 2.5–3 cm, base attenuate; inner tepals obovate to spatulate, narrower and smaller. Stamens numerous, 2–2.4 cm; connective exerted and forming a ca. 0.5 mm triangular mucro; anthers ca. 1.5 mm. Gynophore ca. 1 cm; gynoecium terete, ca. 3 cm; carpels numerous, ovoid, 4–5 mm; styles glabrous. Fruit 19–24 cm; mature carpels dark brown, ovoid, whitish lenticellate, dehiscing into 2 valves, valve ca. 2 mm thick. Fl. Mar, fr. Jul.

• Evergreen broad-leaved forests; 1800–2000 m. C Yunnan (Jingdong).

**10. *Michelia opipara*** Hung T. Chang & B. L. Chen, Acta Sci. Nat. Univ. Sunyatseni 3: 90. 1987.

马关含笑 ma guan han xiao

*Magnolia opipara* (Hung T. Chang & B. L. Chen) Sima.

Trees, deciduous or semideciduous, to 16 m tall, to 50 cm d.b.h. Old twigs grayish yellow, rough; juvenile twigs brown, terete, glabrous or with trichomes when young, with elliptic grayish yellow prominent lenticels; buds long ovoid, with white silky trichomes. Stipular scar 1/4–1/3 as long as petiole. Petiole 2.5–3 cm; leaf blade obovate to broadly obovate, 20–27 × 7–11 cm, thinly leathery, abaxially glaucous and at first grayish white pubescent but glabrescent, adaxially green and glabrous or at first grayish white pubescent, midvein adaxially slightly impressed and abaxially conspicuously prominent, pubescent, but glabrescent, secondary veins 13–18 on each side of midvein, reticulate veins dense and prominent on both surfaces when dry, base cuneate to rounded, apex abruptly acute. Brachyblasts 4–6 mm, robust, gray pubescent; bracts 3, spatheaceous, outermost bract appressed yellow pubescent, innermost ones spreadingly pubescent. Flower buds ellipsoid, ca. 4.2 × 1.6 cm. Tepals 8, yellow; outer 3 tepals obovate, ca. 3.8 × 1.5 cm; innermost 2 tepals oblanceolate, ca. 3.4 × 1 cm, thinly fleshy. Androecium narrowly ellipsoid, ca. 2.3 cm; stamens ca. 93, 1.3–2 cm; fila-

ments 2–4 mm; connective exerted and forming a mucro; anthers 0.9–1.4 cm. Gynophore ca. 8 mm; carpels ca. 140, ovoid, grayish white to pale yellow tomentose; styles 1.5–2 mm, glabrous. Fruiting brachyblasts ca. 1.5 cm, pale yellow pubescent. Fruit 11.5–14.3 cm; mature carpels ovoid, 1.5–2 × 0.9–1.1 cm, with lenticels, apex shortly beaked. Seeds 1 or 2 per carpel. Fl. Apr, fr. Sep–Oct.

• Evergreen broad-leaved forests; 1600–1900 m. SE Yunnan (Maguan).

This could well be a variety of *Michelia doltsopa*.

**11. *Michelia wilsonii*** Finet & Gagnepain, Bull. Soc. Bot. France 52(Mém 4): 45. 1906.

峨眉含笑 e mei han xiao

Trees, to 25 m tall. Old twigs densely noded and lenticellate; young twigs green, pale brown or reddish brown sparsely appressed pubescent; terminal buds cylindric. Stipular scar 2–4 mm or absent. Petiole 1.5–4 cm; leaf blade obovate to narrowly obovate, 9–15 × 3–7 cm, leathery, abaxially glaucous and sparsely white glossy appressed pubescent or with scattered reddish brown erect trichomes, adaxially glabrous and glossy, secondary veins 8–13 on each side of midvein and slender, reticulate veins slender, dense, and prominent on both surfaces when dry, base cuneate to broadly cuneate, apex acute, shortly acuminate, or caudate. Brachyblasts with 2–4 bract scars. Flowers 5–6 cm in diam., fragrant. Tepals 9–12, yellow, obovate, narrowly obovate, or oblanceolate, 2–5 × 1–2.5 cm, slightly fleshy; tepals of inner whorl smaller. Stamens 1–2 cm; filaments green, ca. 2 mm; connective exerted and forming a ca. 1 mm mucro; anthers 0.8–1.2 cm, dehiscing introrsely. Gynoecium cylindric, 3.5–4 cm; carpels 3–6 mm; ovaries ovoid to ovoid-ellipsoid, with dense silvery or yellow appressed fine trichomes; ovules ca. 14 per carpel; styles nearly as long to as long as ovaries. Fruit 6–15 cm; fruiting torus wrinkled; mature carpels purplish brown, ellipsoid to obovoid, 1–2.5 cm, with grayish yellow lenticels, 2-valved, apex with a curved short beak. Fl. Mar–May, fr. Aug–Sep.

• Forests; 600–2000 m. Chongqing, Guizhou, SW and W Hubei, Hunan, Jiangxi, C, S, and W Sichuan, NE and SE Yunnan.

1a. Petiole with a 2–4 mm

stipular scar ..... 11a. subsp. *wilsonii*

1b. Petiole without a stipular scar ..... 11b. subsp. *szechuanica*

**11a. *Michelia wilsonii* subsp. *wilsonii***

峨眉含笑(原亚种) e mei han xiao (yuan ya zhong)

*Magnolia ernestii* Figlar; *Michelia sinensis* Hemsley & E. H. Wilson.

Trees, to 20 m tall. Petiole with a 2–4 mm stipular scar. Fl. Mar–May, fr. Aug–Sep.  $2n = 38^*$ .

• Forests; 600–2000 m. Guizhou, SW Hubei, Jiangxi, C and W Sichuan, SE Yunnan.

**11b. *Michelia wilsonii* subsp. *szechuanica*** (Dandy) J. Li, Acta Bot. Yunnan. 19: 137. 1997.

川含笑 chuan han xiao

*Michelia szechuanica* Dandy, Notes Roy. Bot. Gard. Edinburgh 16: 131. 1928; *Magnolia ernestii* subsp. *szechuanica* (Dandy) Sima & Figlar; *M. szechuanica* (Dandy) Figlar.

Trees, to 25 m tall. Petiole without a stipular scar.

• Forests; 800–1600 m. Chongqing, N Guizhou, W Hubei, Hunan, S Sichuan, NE Yunnan.

**12. *Michelia maudiae*** Dunn, J. Linn. Soc., Bot. 38: 353. 1908.

深山含笑 shen shan han xiao

*Magnolia maudiae* (Dunn) Figlar; *Michelia chingii* W. C. Cheng.

Trees, to 20 m tall, glabrous. Bark pale gray or grayish brown, thin. Young twigs, buds, leaf blade abaxial surfaces, and bracts white powdery. Petiole 1–3 cm, without a stipular scar; leaf blade oblong-elliptic to rarely ovate-elliptic, 7–18 × 3.5–8.5 cm, leathery, abaxially grayish green and glaucous, adaxially deep green and glossy, secondary veins 7–12 on each side of midvein, straight or slightly curved, and divaricate and netted, reticulate veins dense, base cuneate, broadly cuneate, or obtuse, apex abruptly shortly acuminate to shortly acuminate and with an obtuse tip. Brachyblasts green, with 3 annular bract scars; spatheaceous bracts pale brown, ca. 3 cm, thinly leathery. Flowers fragrant. Tepals 9, white but base slightly pale red; outer tepals obovate, 5–7 × 3.5–4 cm, base ca. 1 cm clawed, apex shortly acute; tepals of inner 2 whorls gradually narrowing, nearly spoon-shaped, apex acute. Stamens 1.5–2.2 cm; filaments pale purple, flat, ca. 4 mm; connective exerted and forming a 1–2 mm tip. Gynophore 5–8 mm; gynoecium 1.5–1.8 cm; carpels green, narrowly ovoid, 5–6 mm including style. Fruit 7–15 cm; mature carpels ellipsoid, obovoid, or ovoid, apex obtuse or abruptly mucronate. Seeds red, obliquely ovoid, ca. 10 × 5 mm, slightly compressed. Fl. Feb–Mar, fr. Sep–Oct.  $2n = 38^*$ .

• Evergreen broad-leaved forests; 600–1500 m. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Hunan, S Zhejiang.

This species is grown as an ornamental. It is used medicinally and for timber.

**13. *Michelia lacei*** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 12: 216. 1920.

壮丽含笑 zhuang li han xiao

*Magnolia lacei* (W. W. Smith) Figlar; *Michelia magnifica* Hu; *M. pachycarpa* Y. W. Law & R. Z. Zhou; *M. tignifera* Dandy; *M. uniflora* Dandy.

Trees, to 15 m tall, to 18 cm d.b.h. Twigs 0.7–1 cm in diam., sparsely pale brown villous when young, later glabrescent, with elliptic coarse lenticels. Petiole 2.5–3 cm, without a stipular scar; leaf blade oblong-elliptic to elliptic, 14–17 × 6–8 cm, leathery, both surfaces glabrous, adaxially green and glossy, midvein impressed and abaxially dark green, secondary veins 15–20 on each side of midvein, reticulate veins prominent on both surfaces when dry, base broadly cuneate and slightly decurrent on petiole, margin slightly reflexed, apex acuminate to acute. Brachyblasts 3–4 cm, stout, with brown long trichomes on nodes, with 3 or 4 bract scars; spatheaceous bracts several,

thin, with white appressed trichomes. Tepals 9, in 3 whorls; outer 3 tepals obovate-spoon-shaped, ca.  $6 \times 2.5$  cm, base clawed; innermost tepals  $3\text{--}5.5 \times$  ca. 1 cm. Stamens ca. 2.3 cm; filaments ca. 3 mm; connective exerted and forming a 1–2 mm mucro; anthers ca. 2 cm, dehiscing laterally. Gynophore ca. 2.5 cm, puberulous; gynoecium ca. 1.7 cm; carpels ca. 12, narrowly ovoid, ca. 4 mm, glabrous; ovules 10 per carpel; styles 3–4 mm. Fruit not seen. Fl. Feb.  $2n = 38$ .

Forests; ca. 1500 m. SE Yunnan (Luxi, Maguan) [Myanmar, N Thailand, Vietnam].

**14. *Michelia iteophylla*** C. Y. Wu ex Y. W. Law & Y. F. Wu, Acta Bot. Yunnan. 10: 337. 1988.

鼠刺含笑 shu ci han xiao

Trees, to 8 m tall. Twigs brown to yellowish brown, glabrous, scattered with lenticels; buds cylindrical, ca. 1.4 cm, brownish tomentulose. Stipules free from petiole. Petiole 0.8–1.2 cm, without a stipular scar; leaf blade elliptic to narrowly elliptic,  $7\text{--}10 \times 1.7\text{--}2.3$  cm, leathery, both surfaces glabrous, midvein adaxially slightly impressed, secondary veins 11–15 on each side of midvein, reticulate veins dense and prominent on both surfaces when dry, base cuneate, apex acuminate. Brachyblasts 6–7 mm, glabrous or strigose when young. Flowers fragrant. Tepals 9, white, narrowly obovate, ca.  $2.8 \times 0.8\text{--}1$  cm, subequal. Stamens many, ca. 7 mm; filaments ca. 1 mm; connective exerted and forming a ca. 1 mm mucro; anthers ca. 5 mm. Gynophore ca. 6 mm, very finely strigose; gynoecium ovoid, ca. 6 mm, very finely strigose; carpels many, ca. 2 mm; ovaries ovoid, ca. 1.8 mm, very finely strigose; styles ca. 0.2 mm. Fruit dark brown, 5–7 cm, ovoid, whitish lenticellate, completely dehiscing into 2 valves when matured. Fl. Dec–Jan, fr. Oct.

• Forests; 1600–1700 m. SE Yunnan (Jinping).

**15. *Michelia fujianensis*** Q. F. Zheng, Bull. Bot. Res., Harbin 1(3): 92. 1981.

福建含笑 fu jian han xiao

*Magnolia fujianensis* (Q. F. Zheng) Figlar; *Michelia caloptila* Y. W. Law & Y. F. Wu; *M. septipetala* Z. L. Nong.

Trees, to 16 m tall, to 1 m d.b.h. Bark grayish white, smooth. Young twigs, buds, petioles, leaf blade abaxial surfaces, leaf blade adaxial surfaces when young, and brachyblasts densely appressed grayish white to brown villous. Twigs black, ca. 3 mm in diam., remaining with pubescence. Petiole 0.6–1.5 cm, without a stipular scar; leaf blade narrowly elliptic to narrowly obovate-elliptic,  $8\text{--}15 \times 3\text{--}5$  cm, midvein adaxially impressed, secondary veins 9–15 on each side of midvein, reticulate veins slender, dense, and prominent on both surfaces when dry, base rounded to broadly cuneate, apex acuminate to acute. Brachyblasts stout, ca. 7 mm; bract scar 1, ca. 2 mm below tepals; spathaceous bract 1, just next to tepals. Flower buds ovoid, ca. 1.5 cm. Tepals ca. 12, in 4 whorls; outer tepals 3, narrowly obovate, 1–1.2 cm; tepals of next inward whorl obovate, 1.3–1.5 cm; tepals of innermost 2 whorls narrowly ovate, narrower and smaller, ca. 1 cm. Androecium exceeding

gynoecium; stamens 4–5.5 mm; filaments broad and flat, 1–1.5 mm; connective exerted and forming a 1–1.5 mm obtuse tip; anthers 3.5–4 mm, thecae divaricate 0.5–0.8 mm away from each other, dehiscing introrsely and laterally. Gynophore ca. 1 mm, pubescent; gynoecium cylindrical, ca. 5 mm; ovaries globose, densely tomentulose. Fruit usually curved because of carpels partly undeveloped, 2–3 cm; mature carpels black, obovoid, 1.5–2 cm, conspicuously white lenticellate, apex rounded. Seeds broad and flat, transversely ellipsoid, ca.  $1.5 \times 1$  cm, adaxially broadly furrowed, base mucronate, apex impressed; endotesta black. Fl. Apr–May, fr. Aug–Sep.

• Evergreen broad-leaved forests; 300–700 m. Fujian (Yong'an), Jiangxi.

**16. *Michelia flaviflora*** Y. W. Law & Y. F. Wu, Acta Bot. Yunnan. 10: 340. 1988.

素黄含笑 su huang han xiao

*Magnolia flaviflora* (Y. W. Law & Y. F. Wu) Figlar.

Trees, ca. 15 m tall. Old twigs scattered with lenticels; young twigs brown tomentulose; buds pale yellow tomentose. Stipules free from petiole. Petiole 0.5–1.2 cm, tomentulose, without a stipular scar, base slightly flattened; leaf blade narrowly ovate to narrowly elliptic,  $15\text{--}24 \times 3.6\text{--}5.5$  cm, papery, abaxially glaucous and brown sericeous, adaxially green and glabrous, midvein adaxially slightly prominent to flat, secondary veins 16–24 on each side of midvein, base cuneate, apex acuminate. Brachyblasts ca. 1 cm, yellow tomentose. Flowers fragrant. Tepals 15, pale yellow, oblanceolate. Stamens ca. 90, 1.1–1.5 cm; connective exerted and forming a 1–2 mm sharp tip; anthers 7–10 mm. Gynophore ca. 1 cm, tomentose; gynoecium narrowly ovoid, ca. 1.2 cm; carpels many, ovoid, ca. 4 mm, distinct, densely villous; styles ca. 2 mm. Fruit not seen. Fl. Feb.

Evergreen broad-leaved forests; 1400–1500 m. SE Yunnan (Dawei Shan, Pingbian) [Vietnam].

**17. *Michelia masticata*** Dandy, J. Bot. 67: 222. 1929.

屏边含笑 ping bian han xiao

*Magnolia masticata* (Dandy) Figlar.

Trees, 18–25 m tall, to 80 cm d.b.h. Bark grayish brown, irregularly fissured, conspicuously lenticellate. Twigs yellowish green when young and dark green when old, pubescent or glabrous when young, shiny, white lenticellate. Petiole 2–3(–4) cm, without a stipular scar; leaf blade broadly elliptic, elliptic-oblong, ovate, or obovate,  $12\text{--}22(\text{--}28) \times 5\text{--}8(\text{--}10)$  cm, leathery, abaxially pubescent, adaxially glabrous and slightly shiny green, midvein and secondary veins abaxially prominent and adaxially impressed, secondary veins 8–13 on each side of midvein, reticulate veins dense and prominent on both surfaces when dry, base cuneate to rounded, apex shortly acuminate. Brachyblasts ca. 1 cm, with yellow silky trichomes; bracts 3. Tepals 9–12, white to yellowish white, subequal; outer 3 tepals obovate, narrowly obovate, or spatulate,  $5\text{--}9(\text{--}11) \times 1\text{--}2.5$  cm; inner tepals narrower. Stamens numerous, ca. 2 cm; anthers ca. 1.5 mm. Gynophore ca. 1 cm, pubescent; gynoecium terete, 3–

6(–8) cm, pubescent; carpels numerous, ca. 6 mm; styles ca. 2.2 mm. Fruit 10–40(–53) cm; mature carpels dark brown, ovoid, densely white lenticellate, dehiscing completely into 2 valves, valves ca. 2 mm thick. Fl. Apr–May, fr. Oct.

Forests; 1100–1300 m. SE Yunnan (Pingbian) [Laos, Vietnam].

This species is used for timber.

**18. *Michelia cavalieriei*** Finet & Gagnepain, Bull. Soc. Bot. France 53: 573. 1906.

平伐含笑 ping fa han xiao

Trees, 10–20 m tall, to 50 cm d.b.h., many branched. Bark grayish white. Young twigs, buds, petioles, leaf blade abaxial surfaces when young, brachyblasts, and fruiting brachyblasts silvery to reddish brown appressed pubescent. Twigs black. Petiole 1.5–3 cm, becoming black with age, without a stipular scar; leaf blade narrowly oblong to narrowly obovate-oblong, 10–20(–24) × 3.5–7 cm, thinly leathery, abaxially glaucous and silvery to reddish brown pubescent, adaxially with remaining trichomes, midvein impressed, secondary veins slender, 11–15 on each side of midvein, reticulate veins dense and prominent on both surfaces, base cuneate to broadly cuneate, apex acuminate to shortly acute. Brachyblasts 1.5–2.5 cm, with 1 or 2 bract scars; spatheaceous bracts densely reddish brown appressed villous. Flower buds narrowly ovoid, ca. 3 cm. Tepals 9 or ca. 12, white, papery, with pellucid glands; outer 3 tepals obovate-elliptic, 2.5–7 cm, gradually narrower and smaller inward. Stamens 1.2–1.4 cm, grayish yellow pubescent; connective exerted and forming a ca. 1 mm tip; anthers ca. 8 mm, dehiscing introrsely. Gynophore ca. 4 mm; gynoecium narrowly ovoid, ca. 1 cm; carpels ca. 4 mm; ovaries ovoid, densely puberulous; styles grayish yellow pubescent, nearly as long as ovaries. Fruit 5–15 cm; mature carpels obovoid to ellipsoid, 1.5–2 cm, white lenticellate, 2-valved, apex rounded to rarely mucronate. Fl. Mar–Apr, fr. Sep–Oct.  $2n = 38^*$ .

• Forests; 800–2400 m. Fujian, E and N Guangdong, Guangxi, Guizhou, W Hubei, SW Hunan, SE Sichuan, Yunnan.

- 1a. Twigs ca. 4 mm in diam.; tepals ca. 12, outer ones 2.5–4 cm ..... 18a. var. *cavalieriei*
- 1b. Twigs ca. 2 mm in diam.; tepals 9, outer ones 5–7 cm ..... 18b. var. *platypetala*

**18a. *Michelia cavalieriei* var. *cavalieriei***

平伐含笑(原变种) ping fa han xiao (yuan bian zhong)

*Magnolia cavalieriei* (Finet & Gagnepain) Figlar; *M. maudiae* (Dunn) Figlar var. *hunanensis* (C. L. Peng & L. H. Yan) Sima; *Michelia fallax* Dandy; *M. hunanensis* C. L. Peng & L. H. Yan; *M. xinningia* Y. W. Law & R. Z. Zhou.

Trees, to 10 m tall. Twigs ca. 4 mm in diam. Tepals ca. 12, outer ones 2.5–4 cm.  $2n = 38^*$ .

• Forests; 800–2400 m. Fujian, N Guangdong, Guangxi, Guizhou, W Hubei, SW Hunan, SE Sichuan, Yunnan.

**18b. *Michelia cavalieriei* var. *platypetala*** (Handel-Mazzetti) N. H. Xia, **comb. nov.**

阔瓣含笑 kuo ban han xiao

Basionym: *Michelia platypetala* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 89. 1921; *Magnolia maudiae* var. *platypetala* (Handel-Mazzetti) Sima.

Trees, to 20 m tall. Twigs ca. 2 mm in diam. Tepals 9, outer ones 5–7 cm.

• Forests; 1200–1500 m. E Guangdong, NE Guangxi, E Guizhou, W Hubei, SW Hunan.

“*Michelia yunshanensis* Y. W. Law & R. Z. Zhou” and “*M. xiangnanensis* Q. W. Zeng & Y. W. Law” (in Y. H. Liu, Magnolias China, 334. 2004) belong here but were not validly published because no Latin descriptions or diagnoses were provided and no types were indicated (*Vienna Code*, Art. 36.1 and 37.1).

**19. *Michelia compressa*** (Maximowicz) Sargent, Gard. & Forest 5: 75. 1893.

台湾含笑 tai wan han xiao

*Magnolia compressa* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg, Sér. 3, 17: 417. 1872; *Michelia compressa* var. *formosana* Kanehira; *M. compressa* var. *lanyuensis* S. Y. Lu; *M. formosana* (Kanehira) Masamune & Suzuki.

Trees, to 17 m tall, to 1 m d.b.h. Bark grayish brown, smooth. Axillary buds, young twigs, petioles, and leaf blade midvein with brown appressed short trichomes. Petiole 0.8–1.2 cm, without a stipular scar; leaf blade obovate-elliptic to narrowly elliptic, 5–7 × 2–3 cm, thinly leathery, secondary veins 8–12 on each side of midvein, reticulate veins sparse, slightly prominent on both surfaces when dry, base cuneate, apex acute, acumen obtuse to sharp. Brachyblasts 6–7 mm, appressed pubescent, with 1 or 2 bract scars. Flower buds golden yellow appressed sericeous. Tepals 12, pale yellowish white to pale reddish near base, narrowly obovate, 12–15 × 3–5 mm. Stamens ca. 4.5, 5–6 mm; connective exerted and forming a 1–1.8 mm long tip; anthers 3.5–4 mm, dehiscing laterally. Gynophore ca. 3 mm; gynoecium ca. 4 mm, with golden yellow fine trichomes. Fruit 3–5 cm; mature carpels ellipsoid to ovoid, 1.5–2 × 1.1–1.4 cm, dehiscing dorsally, apex mucronate. Seeds 2–4 per carpel, pink. Fl. Jan, fr. Oct–Nov.  $2n = 38$ .

Evergreen broad-leaved forests; 200–2600 m. Taiwan [S Japan, Philippines].

This species is used for timber.

**20. *Michelia macclurei*** Dandy, J. Bot. 66: 360. 1928.

醉香含笑 zui xiang han xiao

*Magnolia macclurei* (Dandy) Figlar; *Michelia macclurei* var. *sublanaea* Dandy; *M. multitepala* R. Z. Zhou & S. G. Jian.

Trees, to 30 m tall, to 1 m d.b.h. Bark grayish white, smooth and not fissured. Young twigs, buds, petioles, stipules, and brachyblasts densely firmly and glossy reddish brown shortly tomentose to spreading villous. Petiole 1.5–4 cm, adaxially narrowly furrowed, without a stipular scar; leaf blade obovate, elliptic-obovate, rhomboid, or oblong-elliptic, 7–18 × 5–7 cm, leathery, abaxially with grayish trichomes mixed with



brown appressed short tomentum, adaxially at first pubescent but later glabrescent, secondary veins 10–15 on each side of midvein, slender, and adaxially inconspicuous, reticulate veins slender, forming a honeycomb pattern, base cuneate to broadly cuneate, apex shortly acute to acuminate. Brachyblasts 1–1.8 cm, 3–4 mm in diam., with 2–3 bract scars. Flower buds sometimes enclosing 2 or 3 small flower buds on different nodes and forming a 2- or 3-flowered thyrses. Tepals usually 9–12, white, rarely red, spoon-shaped to oblanceolate, 3–5 cm; inner tepals narrower and smaller. Stamens 1–2 cm; filaments red, ca. 1 mm; connective exerted and forming a ca. 1 mm mucro; anthers 0.8–1.4 cm. Gynophore 1–2.5 cm, densely brown tomentose; gynoecium 1.4–2 cm; carpels ovoid to narrowly ovoid, 1–3 × ca. 1.5 cm, sparsely white lenticellate, dehiscing into 2 valves along both ventral and dorsal sutures, base broad, apex rounded. Seeds 1–3 per carpel, compressed ovoid, 0.8–1 × 0.6–0.8 mm. Fl. Feb–Apr, fr. Sep–Nov.

Evergreen broad-leaved forests; 200–1500 m. Guangdong, N Guangxi, Hainan, SE Yunnan (Xichou) [N Vietnam].

“*Michelia ovatifolia* Y. W. Law & R. Z. Zhou” (in Y. H. Liu, *Magnolias China*, 300. 2004) belongs here but was not validly published because no Latin description or diagnosis was provided and no type was indicated (*Vienna Code*, Art. 36.1 and 37.1).

This species is grown as an ornamental and used for timber.

**21. *Michelia mediocris*** Dandy, *J. Bot.* 66: 47. 1928.

白花含笑 bai hua han xiao

*Magnolia mediocris* (Dandy) Figlar; *Michelia mediocris* var. *angustifolia* G. A. Fu; *M. rubriflora* Y. W. Law & R. Z. Zhou; *M. subulifera* Dandy.

Trees, to 25 m tall, to 90 cm d.b.h. Bark grayish brown. Young twigs and young leaf blades grayish white appressed pubescent. Buds reddish brown, pendulous, apex acute. Petiole 1.5–3 cm, without a stipular scar; leaf blade rhomboid-elliptic, 6–13 × 3–5 cm, thinly leathery, abaxially grayish white appressed puberulous, adaxially glabrous, secondary veins 10–15 on each side of midvein, slender, and inconspicuous, reticulate veins dense, base cuneate to broadly cuneate, apex shortly acuminate. Spathaceous bracts 3. Flower buds ellipsoid, 10–15 × 5–9 mm, densely brownish yellow to grayish white appressed puberulous. Tepals 9, white, spoon-shaped, 1.8–2.2 × 0.5–0.8 cm. Stamens 1–1.5 cm; connective exerted and forming a 3–4 mm long tip; anthers 0.8–1.4 cm. Gynophore 3–5 mm, densely silvery appressed puberulous; gynoecium cylindrical, ca. 1 cm; carpels 7–14; ovules 4 or 5 per carpel. Fruit blackish brown when matured, 2–3.5 cm; mature carpels obovoid, ellipsoid, or globose, 1–2 cm, slightly compressed, white lenticellate, apex with an obtuse beak. Seeds 5–8 × ca. 5 mm; testa bright red. Fl. Oct–Feb, fr. Jun–Nov.

Evergreen broad-leaved forests; 400–1000 m. Guangdong, Guangxi, Hainan, S Hunan [Cambodia, Vietnam].

“*Michelia biacuminata* Y. W. Law & R. Z. Zhou” and “*M. elliptifolia* Y. W. Law & R. Z. Zhou” (in Y. H. Liu, *Magnolias China*, 224, 246. 2004) belong here but were not validly published because no Latin descriptions or diagnoses were provided and no types were

indicated (*Vienna Code*, Art. 36.1 and 37.1).

**22. *Michelia shiluensis*** Chun & Y. F. Wu, *Acta Phytotax. Sin.* 8: 286. 1963.

石碌含笑 shi lu han xiao

*Magnolia shiluensis* (Chun & Y. F. Wu) Figlar.

Trees, to 18 m tall, to 30 cm d.b.h. Bark gray. Twigs, leaf blades, and petioles glabrous. Terminal buds narrowly ellipsoid, orangish yellow to gray, glossy pubescent. Petiole 1–3 cm, broadly furrowed, without a stipular scar; leaf blade obovate-oblong, 8–14(–20) × 4–7(–8) cm, leathery and rigid, abaxially glaucous, adaxially deep green, secondary veins 8–12 on each side of midvein, reticulate veins prominent on both surfaces when dry, base cuneate to broadly cuneate, apex obtuse and mucronate. Tepals 9, in 3 whorls, white, obovate, 3–4.5 × 1.5–2.5 cm. Stamens 2–2.5 cm; filaments red. Gynoecium 1.4–2.1 cm, puberulous; carpels ovoid, 2.5–4 mm. Fruiting brachyblasts 2–3 cm. Fruit 4–5 cm; mature carpels sometimes only a few developed, obovoid to obovoid-ellipsoid, 0.8–1.2 cm, apex shortly beaked. Seeds broadly ellipsoid, ca. 8 mm. Fl. Mar–May, fr. Jun–Aug.  $2n = 38^*$ .

• Evergreen broad-leaved forests, ravines, beside trails; 200–1800 m. Hainan.

This species is grown as an ornamental.

**23. *Michelia coriacea*** Hung T. Chang & B. L. Chen, *Acta Sci. Nat. Univ. Sunyatseni* 3: 89. 1988.

西畴含笑 xi chou han xiao

*Magnolia coriacea* (Hung T. Chang & B. L. Chen) Figlar; *Michelia nitida* B. L. Chen; *M. polyneura* C. Y. Wu ex Y. W. Law & Y. F. Wu.

Trees, 10–20 m tall. Twigs thick and strong, 5–7 mm in diam., sparsely puberulous, with grayish yellow lenticels; buds cylindrical, densely gray pubescent. Stipules free from petiole. Petiole 1–1.5 cm, without a stipular scar, adaxially furrowed; leaf blade oblong to elliptic-oblong, 11–15 × 4–6 cm, thinly leathery, both surfaces glabrous, midvein abaxially prominent and adaxially slightly impressed, secondary veins 17–20 on each side of midvein, reticulate veins dense and prominent on both surfaces, base cuneate to obtuse, apex acuminate. Brachyblasts ca. 2.5 mm, densely yellow tomentose. Tepals 9, in 3 whorls, white, oblong to obovate-oblong, 2.3–3 × 0.8–1 cm, subequal. Stamens ca. 80, 0.8–1 cm; connective exerted and forming a 1.5–2 mm sharp tip; anthers 4–5 mm. Gynophore 2–7 mm but 1.2–1.5 cm in fruit; gynoecium cylindrical, 1–1.2 cm, glabrous; carpels many. Fruit 3–4 cm; mature carpels yellowish green, with dense lenticels. Fl. Feb–Apr, fr. Sep–Oct.

• Evergreen broad-leaved forests; 1200–1700 m. SE Yunnan.

**24. *Michelia guangdongensis*** Y. H. Yan et al., *Ann. Bot. Fenn.* 41: 491. 2004.

广东含笑 guang dong han xiao

Shrubs or small trees, 1–4 m tall, to 10 cm d.b.h. Bark grayish brown. Young twigs and buds densely reddish brown appressed pubescent. Petiole 0.5–1.5 cm, densely reddish

brown villous, without a stipular scar; leaf blade obovate-elliptic to obovate, 4.5–9 × 2.5–4.5 cm, leathery, abaxially reddish brown appressed villous, adaxially dark green and glabrous, secondary veins 4–9 on each side of midvein, reticulate veins dense, base rounded to broadly cuneate, margin slightly revolute, apex rounded to shortly acute. Brachyblasts 1.5–2.8 × 0.3–0.5 cm; spatheaceous bract 1. Flower buds long ovoid, densely reddish brown appressed villous. Flowers fragrant. Tepals 9–12, white, base slightly greenish; outer 3–5 tepals ovate-elliptic, 5.6–6.2 × 2.5–3 cm; middle 3 or 4 tepals elliptic to obovate-elliptic, 5.6–7 × 2.7–3 cm; inner 3 tepals elliptic, 5.4–7 × 1.9–2.5 cm. Stamens 50–70, pale green, 1.1–1.5 cm; filaments purplish red, ca. 3 mm; connective exerted and forming a ca. 1 mm triangular mucro; anthers 6–8 mm. Gynophore green, 6–8 mm, puberulous; gynoecium green, terete, 0.9–1.4 cm, reddish brown pubescent; carpels 13–20; ovules 4–6 per carpel; styles purplish red, 1–3 mm, curved outward. Fruit not seen. Fl. Mar.

- Thickets, forests; 1200–1400 m. Guangdong (Yingde).

This species is grown as an ornamental.

**25. *Michelia foveolata*** Merrill ex Dandy, J. Bot. 66: 360. 1928.

金叶含笑 jin ye han xiao

*Magnolia foveolata* (Merrill ex Dandy) Figlar; *Michelia aenea* Dandy; *M. foveolata* var. *cinerascens* Y. W. Law & Y. F. Wu; *M. foveolata* var. *xiangnanensis* C. L. Peng & L. H. Yan; *M. fulgens* Dandy; *M. longistyla* Y. W. Law & Y. F. Wu; *M. oblongifolia* Hung T. Chang & B. L. Chen.

Trees, to 30 m tall, to 80 cm d.b.h. Bark pale gray to dark gray. Young twigs, buds, petioles, leaf blade abaxial surfaces, and brachyblasts densely reddish brown, brown, or white tomentulose. Petiole 1.5–3 cm, without a stipular scar; leaf blade oblong-elliptic, elliptic-ovate, or narrowly ovate, 17–23 × 6–11 cm, thickly leathery, abaxially coppery to gray tomentulose, adaxially deep green and glossy, secondary veins 16–26, ends slender, divaricate, and netted near margin, reticulate veins dense, base broadly cuneate, obtuse, or subcaudate and usually asymmetrical, apex acuminate to shortly acuminate. Brachyblasts ca. 5 mm in diam., with 3 or 4 bract scars. Tepals 9–12, pale yellowish green, base purplish; outer 3 tepals broadly obovate, 6–7 cm; tepals of middle and inner whorls obovate, narrower and smaller. Stamens ca. 50, 2.5–3 cm; filaments dark purple, 7–10 mm; anthers 1.5–2 cm. Gynophore 1.7–2 cm, silvery tomentulose; gynoecium 2–3 cm; carpels ca. 5 mm; ovaries narrowly ovoid, ca. 3 mm, adnate to torus at base; ovules ca. 8 per carpel. Fruit 7–20 cm; mature carpels long ellipsoid, 1–2.4 cm. Fl. Mar–May, fr. Sep–Oct.  $2n = 38$ .

Evergreen broad-leaved forests, wet places; 500–1800 m. Fujian, Guangdong, S Guangxi, SE Guizhou, Hainan, W Hubei, Hunan, Jiangxi, SE Yunnan [N Vietnam].

**26. *Michelia yunnanensis*** Franchet ex Finet & Gagnepain, Bull. Soc. Bot. France 52(Mém 4): 43. 1906.

云南含笑 yun nan han xiao

*Magnolia amabilis* Sima & Y. H. Wang; *M. dianica* Sima & Figlar; *M. laevifolia* (Y. W. Law & Y. F. Wu) Nooteboom;

*Michelia dandyi* Hu; *M. laevifolia* Y. W. Law & Y. F. Wu; *M. yunnanensis* var. *angustifolia* Finet & Gagnepain; *M. yunnanensis* subsp. *glabrifolia* Y. K. Li & J. F. Zuo.

Shrubs, to 4 m tall. Twigs and leaves dense. Young twigs, buds, young leaf blade adaxial surfaces, petioles, and brachyblasts with dark red appressed trichomes. Stipular scar ca. 2/3 as long as petiole or reaching petiole apex. Petiole 4–5 mm; leaf blade obovate, narrowly obovate, or narrowly obovate-elliptic, 4–10 × 1.5–3.5 cm, leathery, abaxially with appressed trichomes, adaxially deep green and glossy, secondary veins 7–9 on each side of midvein, reticulate veins prominent on both surfaces when dry, base cuneate, apex obtuse to shortly acute. Brachyblasts thick and strong, 3–7 mm, with 1 bract scar. Flowers very fragrant. Tepals 6–12(–17), white, obovate to obovate-elliptic, 3–3.5 × 1–1.5 cm; inner tepals smaller. Stamens 5–10 mm; filaments white, ca. 3 mm; connective exerted and forming a 1–3 mm mucro; anthers 5–7 mm. Gynophore and gynoecium with reddish brown appressed fine trichomes; gynoecium ovoid to long ellipsoid, 1–1.3 cm; carpels 8–20, compressed globose, 3–4 mm; ovules 5 or 6 per carpel; styles ca. 1 mm, longitudinally furrowed. Fruit usually with 5–9 mature carpels; mature carpels compressed globose, 5–8 mm wide, with trichomes, apex mucronate. Seeds 1 or 2 per carpel. Fl. Mar–Apr, fr. Aug–Sep.  $2n = 38^*$ .

- Thickets; 1100–2300 m. Guizhou, Sichuan, SE Xizang, C and S Yunnan.

This species is grown as an ornamental and used for making perfume.

**27. *Michelia figo*** (Loureiro) Sprengel, Syst. Veg. 2: 643. 1825.

含笑花 han xiao hua

*Liriodendron figo* Loureiro, Fl. Cochinch. 1: 347. 1790; *Liriopsis fuscata* (Andrews) Spach; *Magnolia annonifolia* Salisbury; *M. figo* (Loureiro) Candolle; *M. fuscata* Andrews; *M. fuscata* var. *annonifolia* (Salisbury) Candolle; *M. fuscata* var. *hebeclada* Candolle; *M. fuscata* var. *parviflora* (Blume) Steudel; *M. parviflora* Blume; *M. parvifolia* Candolle; *Michelia fuscata* (Andrews) Blume; *M. parviflora* Delessert (1821), not Rumphius ex Candolle (1817); *Sampacca parviflora* Kuntze.

Shrubs, 2–3 m tall. Bark grayish brown. Twigs and leaves dense. Young twigs, buds, petioles, and brachyblasts densely yellowish brown tomentose. Stipular scar reaching petiole apex. Petiole 2–4 mm; leaf blade narrowly elliptic to obovate-elliptic, 4–10 × 1.8–4.5 cm, abaxially midvein with brown appressed trichomes but other parts glabrescent, adaxially glossy and glabrous, base cuneate to broadly cuneate, apex obtusely acute. Flowers 1.2–2 × 0.6–1.1 cm, erect, sweetly fragrant. Tepals 6, pale yellow but margin sometimes red to purple, long elliptic, 1.2–2 × 0.6–1.1 cm, fleshy and thick. Stamens 7–8 mm; connective exerted and forming a sharp tip. Gynophore ca. 6 mm, pale yellow tomentose; gynoecium ca. 7 mm, exceeding androecium, glabrous. Fruit 2–3.5 cm; mature carpels ovoid to globose, apex with a mucronate beak. Fl. Mar–May, fr. Jul–Aug.  $2n = 38^*$ .

- Cultivated throughout most of S China and probably originated in cultivation.

This species is grown as an ornamental and used medicinally. It is cultivated in most other tropical, subtropical, and warm temperate regions of the world.

Loureiro published *Liriodendron figo* based on a plant cultivated in Macao. Although the type was probably destroyed, the plant today identified as *Michelia figo* is identical with Loureiro's description.

**28. *Michelia crassipes*** Y. W. Law, Bull. Bot. Res., Harbin 5(3): 121. 1985.

紫花含笑 zi hua han xiao

*Magnolia figo* (Loureiro) Candolle var. *crassipes* (Y. W. Law) Figlar & Nootboom; *Michelia brevipes* Y. K. Li & Wang; *M. figo* (Loureiro) Sprengel var. *crassipes* (Y. W. Law) B. L. Chen & Nootboom.

Trees or shrubs, 2–5 m tall. Young twigs, buds, petioles, and peduncles densely reddish brown to yellow long tomentose. Bark grayish brown. Stipular scars as long as petiole. Petiole 2–4 mm; leaf blade narrowly oblong, obovate, narrowly obovate, or rarely narrowly elliptic, 7–13 × 2.5–4 cm, leathery, abaxially green and villous along veins, adaxially dark green, glabrous, and glossy, base cuneate to broadly cuneate, apex long caudate-cuspidate to acute. Flowers very fragrant. Tepals 6, purplish red to dark purple, long elliptic, 1.8–2 × 0.6–0.8 cm. Stamens ca. 1 cm; connective exerted into a short tip; anthers ca. 6 mm. Gynophore ca. 2 mm; gynoecium ca. 8 mm, not exceeding androecium, densely pilose; carpels ovoid, 3.5–4 mm, densely pilose; style 2 mm. Fruit 2.5–5 cm; brachyblast 1–2 × 0.3–0.5 cm; mature carpels more than 10, compressed ovoid to compressed globose, papillate and with trichomes. Fl. Apr–May, fr. Aug–Sep.

- Evergreen broad-leaved forests, ravines; 300–1000 m. N Guangdong, NE Guangxi, S Hunan.

One of the co-authors (Nootboom) considers that *Michelia crassipes* and *M. skinneriana* probably represent the wild forms of *M. (Magnolia) figo* and would be better treated as varieties of that species.

This species is grown as an ornamental.

**29. *Michelia skinneriana*** Dunn, J. Linn. Soc., Bot. 38: 354. 1908.

野含笑 ye han xiao

*Michelia amoena* Q. F. Zheng & M. M. Lin; *M. linyaoensis* D. C. Zhang & S. B. Zhou.

Trees, to 15 m tall. Young twigs, buds, petioles, leaf blade midrib abaxially, and peduncles densely brown villous. Bark grayish white, smooth. Stipular scars as long as petiole. Petiole 2–4 mm; leaf blade narrowly obovate-elliptic, oblanceolate, or narrowly elliptic, 5–11(–14) × 1.5–3.5(–4) cm, leathery, abaxially sparsely brown villous, adaxially dark green and glossy, secondary veins 10–13 on each side of midvein, reticulate veins sparse and prominent on both surfaces when dry, base cuneate, apex long caudate-acuminate. Flowers fragrant. Peduncle slender. Tepals 6, pale yellow, obovate, 1.6–2 cm; outer tepals with

brown trichomes at base. Stamens 6–10 mm; connective exerted into a ca. 0.5 mm mucro; anthers 4–5 mm, latrorse. Gynophore 4–7 mm, with dense brown trichomes; gynoecium ca. 6 mm; carpels with dense brown trichomes. Fruit 4–7 cm, usually curved or shortened due to carpels partly undeveloped; peduncle slender; mature carpels black, globose to ellipsoid, 1–1.5 cm, beak mucronate. Fl. May–Jun, fr. Aug–Sep.  $2n = 38^*$ .

- Forests, ravines, slopes; below 1200 m. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

One of the co-authors (Nootboom) considers that *Michelia skinneriana* and *M. crassipes* probably represent the wild forms of *M. (Magnolia) figo* and would be better treated as varieties of that species.

"*Michelia microphylla* Y. W. Law & R. Z. Zhou" (in Y. H. Liu, Magnolias China, 296. 2004) belongs here but was not validly published because no Latin description or diagnosis was provided and no type was indicated (*Vienna Code*, Art. 36.1 and 37.1).

This species is grown as an ornamental.

**30. *Michelia martini*** (H. Léveillé) Finet & Gagnepain ex H. Léveillé, Fl. Kouy-Tchéou, 270. 1914–1915.

黄心含笑 huang xin han xiao

*Magnolia martini* H. Léveillé, Bull. Soc. Agric. Sarthe 39: 321. 1904; *Michelia bodinieri* Finet & Gagnepain; *M. longistamina* Y. W. Law.

Trees, to 20 m tall. Bark gray, smooth. Old twigs brown, scattered with lenticels; young twigs olive green, glabrous; buds ovoid to ellipsoid-ovoid, with dense grayish yellow to reddish brown erect long trichomes. Petiole 1.5–2 cm, without a stipular scar; leaf blade narrowly obovate-elliptic, 12–18 × 3–5 cm, leathery, both surfaces glabrous, adaxially deep green and glossy, midvein abaxially prominent, secondary veins 11–17 on each side of midvein and nearly parallel, base cuneate to broadly cuneate, apex acute to shortly caudate. Brachyblasts thick and strong, ca. 7 mm, densely yellowish brown tomentose. Flowers fragrant. Tepals 6–8, pale yellow; outer tepals obovate-oblong, 4–4.5 × 2–2.4 cm; inner tepals oblanceolate, ca. 4 × 1.1–1.3 cm. Stamens 1.3–1.8 cm; filaments purple; connective exerted and forming a ca. 0.5 mm tip; anthers 1–1.2 cm, dehiscing laterally. Gynoecium pale green, ca. 3 cm; carpels ellipsoid-ovoid, ca. 1 cm; ovules 8–12 per carpel; styles nearly as long as carpels. Fruit 8–15 cm, wrinkled; mature carpels obovoid to ellipsoid-ovoid, 1–2 cm, dehiscing along both ventral and dorsal sutures at same time, white lenticellate, apex shortly beaked. Fl. Feb–Mar, fr. Aug–Oct.  $2n = 38$ .

- Forests; 1000–2000 m. Guangdong, Guangxi, Guizhou, S Henan, W Hubei, Hunan, C and S Sichuan, E Yunnan [Vietnam].

"*Michelia funingensis* D. X. Li & Y. W. Law" (in Y. H. Liu, Magnolias China, 265. 2004) belongs here but was not validly published because no Latin description or diagnosis was provided and no type was indicated (*Vienna Code*, Art. 36.1 and 37.1).

This species is grown as an ornamental. It is used for making perfume and for timber.

**31. *Michelia chapensis*** Dandy, J. Bot. 67: 222. 1929.

乐昌含笑 le chang han xiao

*Magnolia chapensis* (Dandy) Sima; *M. jiangxiensis* (Hung T. Chang & B. L. Chen) Figlar; *M. microcarpa* (B. L. Chen & S. C. Yang) Sima; *Michelia brachyandra* B. L. Chen & S. C. Yang; *M. chartacea* B. L. Chen & S. C. Yang; *M. constricta* Dandy; *M. glaberrima* Hung T. Chang; *M. jiangxiensis* Hung T. Chang & B. L. Chen; *M. microcarpa* B. L. Chen & S. C. Yang; *M. tsoi* Dandy.

Trees, 15–30 m tall, to 1 m d.b.h. Bark gray to dark brown. Twigs glabrous or nodes grayish puberulous when young. Petiole 1–2.5 cm, adaxially furrowed, glabrous or puberulous when young but later glabrescent, without a stipular scar; leaf blade obovate, narrowly obovate, or oblong-obovate, 6.5–15(–16) × 3–6.5(–7) cm, thinly leathery, adaxially deep green and glossy, secondary veins 9–12(–15) on each side of midvein, reticulate veins sparse, base cuneate, broadly cuneate, or obtuse, apex acute to shortly acuminate, acumen obtuse. Brachyblasts 4–10 mm, appressed gray puberulous, with 2–5 bract scars. Flowers fragrant. Tepals 6, in 2 whorls, pale yellow; outer tepals obovate-elliptic, ca. 3 × 1.5 cm; inner tepals narrower. Stamens 1.7–2 cm; connective exerted and forming a ca. 1 mm mucro; anthers 1.1–1.5 cm. Gynophore ca. 7–10 mm, densely silvery appressed puberulous; gynoecium narrowly cylindrical, ca. 1.5 cm; carpels ovoid, ca. 2 mm; ovules 6 per carpel; styles ca. 1.5 mm. Fruiting brachyblasts ca. 2 mm. Fruit 3.5–10 cm; mature carpels ellipsoid to ovoid, 1–1.5 × ca. 1 cm, base broad, apex with short and curved tip. Seeds red, ovoid to ellipsoid-ovoid, ca. 10 × 6 mm. Fl. Mar–Apr, fr. Aug–Nov.

Evergreen broad-leaved forests; 500–1700 m. N and W Guangdong, NE and SE Guangxi, Guizhou, S and W Hunan, S Jiangxi, SE Yunnan [N Vietnam].

This species is grown as an ornamental and used for timber.

**32. *Michelia xanthantha*** C. Y. Wu ex Y. W. Law & Y. F. Wu, *Acta Bot. Yunnan.* 10: 338. 1988.

黄花含笑 huang hua han xiao

*Magnolia xanthantha* (C. Y. Wu ex Y. W. Law & Y. F. Wu) Figlar.

Trees, to 30 m tall, to 1 m d.b.h. Twigs blackish brown to grayish yellow, ca. 4.5 mm in diam., scattered with lenticels; buds cylindrical, ca. 1.5 cm, glabrous. Stipules free from petiole. Petiole 2–2.5 cm, without a stipular scar; leaf blade elliptic to obovate-elliptic, 15–17 × 6.2–7.5 cm, thinly leathery, both surfaces glabrous, midvein abaxially slightly prominent and adaxially prominent, secondary veins 11 or 12 on each side of midvein, reticulate veins prominent on both surfaces, base cuneate to obtuse, apex shortly cuspidate. Brachyblasts ca. 1.5 cm, glabrous. Flowers fragrant. Tepals 6, in 2 whorls, yellow, narrowly oblong to broadly oblanceolate, 4–5.5 × 1–1.5 cm. Stamens 2.3–2.5 cm; connective exerted and forming a 1–2 mm sharp tip; anthers 1.8–2 cm. Gynophore 2–3 mm; gynoecium cylindrical, 1.8–2 cm, densely gray pubescent; carpels many, ovoid, 3–4 mm, densely gray pubescent; styles brown, ca. 1 mm. Fruit ca. 21 cm, pendulous; mature carpels dark brown, scattered with lenticels. Fl. Mar, fr. Sep–Oct.

• Forests; 1300–1400 m. S Yunnan (Xishuangbanna).

**33. *Michelia angustiblonda*** Y. W. Law & Y. F. Wu, *Bull. Bot. Res., Harbin* 6(2): 97. 1986.

狭叶含笑 xia ye han xiao

*Magnolia angustiblonda* (Y. W. Law & Y. F. Wu) Figlar.

Trees, to 4 m, glossy, with appressed indument. Twigs black; buds densely brown villous. Stipules free from petiole. Petiole 1–1.5 cm, without a stipular scar; leaf blade narrowly oblong, 6.5–10 × 1.5–2.5 cm, leathery, abaxially grayish green and villous, adaxially deep green, midvein abaxially prominent, secondary veins inconspicuous, reticulate veins dense and conspicuous when dry, base cuneate to broadly cuneate, apex obtuse. Brachyblasts pilose. Tepals 6, in 2 whorls, white, oblanceolate; outer 3 tepals 1.8–2 × 0.4–0.5 cm; inner 3 tepals 1.4–1.6 cm. Stamens 1.1–1.5 cm; connective exerted and forming a mucro; anthers 6–10 mm. Gynophore ca. 3 mm; gynoecium embedded in androecium, narrowly ellipsoid, ca. 1 cm; carpels brown puberulous. Fruit not seen. Fl. Apr.

• Forests; ca. 1000 m. Guizhou (Libo).

**34. *Michelia balansae*** (Aug. Candolle) Dandy, *Bull. Misc. Inform. Kew* 1927: 263. 1927.

苦梓含笑 ku zi han xiao

*Magnolia balansae* Aug. Candolle, *Bull. Herb. Boissier*, sér. 2, 4: 294. 1904; *Michelia balansae* var. *appressipubescentis* Y. W. Law; *M. balansae* var. *brevipes* B. L. Chen; *M. baviensis* Finet & Gagnepain; *M. tonkinensis* A. Chevalier.

Trees, 7–10 m tall, to 60 cm d.b.h. Bark gray to grayish brown, smooth. Young twigs, buds, petioles, leaf blade abaxial surfaces, flower buds, and brachyblasts densely brown tomentose or with appressed fine trichomes. Petiole 1.5–4 cm, without a stipular scar, base flattened; leaf blade oblong-elliptic to obovate-elliptic, 10–20(–28) × 5–10(–12) cm, abaxially veins evidently prominent and brown tomentose, adaxially subglabrous, secondary veins 12–15 on each side of midvein with ends arching upward and becoming reticulate, base broadly cuneate, apex abruptly acute. Flowers fragrant. Tepals 6, white and pale greenish, obovate-elliptic, 3.5–3.7 × 1.3–1.5 cm; innermost tepals oblanceolate, smaller. Stamens 1–1.5 cm; connective exerted and forming a mucro; anthers 8–10 mm. Gynophore 4–6 mm, yellowish brown tomentose; gynoecium ovoid. Fruiting gynophore 4.5–7 cm. Fruit 7–12 cm; mature carpels ellipsoid-ovoid, obovoid, or cylindrical, 2–6 × 1.2–1.5 cm, apex with a reflexed 3–5 mm beak. Seeds nearly ellipsoid, 1–1.5 cm, one end or both ends truncate; testa bright red; endostea brown. Fl. Mar–Jul, fr. Aug–Oct.  $2n = 38$ .

Evergreen broad-leaved forests, along rivers; 300–1000 m. S Fujian, S and SW Guangdong, S Guangxi, Guizhou, Hainan, S Yunnan [Vietnam].

*Magnolia balansae* and *Michelia baviensis* were published based on the same gathering (*Balansa 3886*, but Finet and Gagnepain wrongly cited the number as “3386”) from Mt. Bavi, Vietnam.

“*Michelia bailina* Y. W. Law & R. Z. Zhou” (in Y. H. Liu, *Magnolias China*, 218. 2004) belongs here but was not validly published because no Latin description or diagnosis was provided and no type was indicated (*Vienna Code*, Art. 36.1 and 37.1).

This species is used for timber.

**35. *Michelia guangxiensis*** Y. W. Law & R. Z. Zhou, J. Trop. Subtrop. Bot. 7: 191. 1999.

广西含笑 *guang xi han xiao*

*Magnolia guangxiensis* (Y. W. Law & R. Z. Zhou) Sima.

Trees, 5–10 m tall, 10–20 cm d.b.h. Bark brown. Young twigs, buds, petioles, and brachyblasts densely brown tomentose. Twigs of current year green; older twigs grayish brown, glabrous. Petiole ca. 1 cm, without a stipular scar or stipular scar 1–3 mm; leaf blade oblong to ovate-oblong, 6–15 × 3–5 cm, leathery, abaxially grayish green and with sparse brown trichomes, adaxially shiny dark green and glabrous, midvein abaxially prominent, secondary veins 9–11 on each side, reticulate veins dense and prominent on both surfaces when dry, base cuneate to broadly cuneate, apex acute to shortly acuminate. Flowers fragrant. Tepals 6, in 2 whorls, white, subequal, fleshy; outer 3 tepals obovate, 3–4 × 1.3–1.5 cm; inner 3 tepals narrowly obovate, 3–4 × 1–1.3 cm. Stamens many, 1.2–1.5 cm; connective exserted and forming a ca. 0.5 mm mucro; anthers ca. 1 cm. Gynophore 4–5 mm, densely brown firmly appressed pubescent; gynoecium ellipsoid-ovoid, ca. 1 cm; ovaries ovoid, ca. 3 mm; ovules (2–)4(or 5) per carpel; styles ca. 1 mm. Fruit 5–10 cm; mature carpels 10–15, ovoid, obovoid, or ellipsoid-ovoid, 1–2 cm, completely dehiscent into 2 valves, apex shortly beaked. Fl. Apr–May, fr. Sep–Oct.

• Forests; 2100–2200 m. Guangxi (Longsheng).

**36. *Michelia leveilleana*** Dandy, Bull. Misc. Inform. Kew 1927: 263. 1927.

长柄含笑 *chang bing han xiao*

*Magnolia leveilleana* (Dandy) Figlar; *Michelia cavaleriei* H. Léveillé (1911), not Finet & Gagnepain (1906); *M. chongjiangensis* Y. K. Li & X. M. Wang; *M. longipetiolata* C. Y. Wu ex Y. W. Law & Y. F. Wu.

Trees, to 15 m tall, to 30 cm d.b.h. Young twigs appressed pubescent; buds ovoid, ca. 1 cm, densely red villous. Stipules free from petiole. Petiole 2.5–3 cm, appressed pubescent, without a stipular scar; leaf blade broadly to narrowly obovate, 7.5–10.5 × 2.8–3.8 cm, thinly leathery, both surfaces pubescent when young, midvein flat to adaxially slightly prominent, secondary veins 6–10 on each side of midvein and adaxially prominent, reticulate veins inconspicuous, base cuneate to broadly cuneate, apex acute. Flowers not seen. Stamen scar band in fruit ca. 8 mm. Fruiting brachyblasts ca. 3 mm. Fruiting gynophore 1–1.5 cm. Fruit 7–9 cm; undeveloped carpels ca. 20; mature carpels 7–12, blackish brown, ovoid, ca. 1.2 × 0.9 cm, lenticellate and villous, completely 2-valved. Fr. Sep–Oct.

• Forests; 1000–1500 m. Guizhou, Hubei, Hunan, Yunnan.

**37. *Michelia gioi*** (A. Chevalier) Sima & Hong Yu, Seed Pl. Honghe Reg. S. E. Yunnan China, 55. 2003 [“*gioii*”].

香子含笑 *xiang zi han xiao*

*Talauma gioi* A. Chevalier, Bull. Écon. Indochine, n.s., 21: 790. 1918; *Magnolia hypolampra* (Dandy) Figlar; *Michelia hedyosperma* Y. W. Law; *M. hypolampra* Dandy.

Trees, to 21 m tall, to 60 cm d.b.h. Buds, young petioles, brachyblasts, flower buds, and carpels appressed short sericeous but other parts glabrous. Twigs black turning pale brown when old, sparsely scattered with lenticels. Leaf blade obovate to elliptic-obovate, 6–13 × 5–5.5 cm, thinly leathery, with *Illicium* odor when crushed, both surfaces freshly green, glossy, and glabrous, secondary veins 8–10 on each side of midvein and prominent on both surfaces, reticulate veins slender, dense, and prominent on both surfaces, base broadly cuneate, apex with an obtuse tip. Flower buds long ellipsoid, ca. 2 cm. Brachyblasts ca. 1 cm. Flowers fragrant. Tepals 9, in 3 whorls; outer tepals membranous, linear, ca. 15 × 2 mm; tepals of inner 2 whorls

narrowly elliptic, 1.5–2 × ca. 0.6 cm. Stamens ca. 25, 8–9 mm; connective exerted and forming a 1–1.5 mm sharp tip. Gynophore 4–5 mm and 2–3 cm in fruit; gynoecium ovoid; carpels ca. 10, narrowly ellipsoid, 6–7 mm, 5-ridged abaxially; ovules 6–8 per carpel; styles ca. 2 mm, reflexed. Fruiting brachyblasts thick, 1.5–2 cm. Mature carpels grayish black, ellipsoid, 2–4.5

× 1–2.5 cm, densely lenticellate, base shrunken into 2–8 mm stalks, apex mucronate, valves thick, reflexed when matured, exposing white endocarp. Seeds 1–4. Fl. Mar–Apr, fr. Sep–Oct.

Forests, slopes, ravines; 300–800 m. SW Guangxi, Hainan, S Yunnan [Vietnam].

### Hybrids or putative hybrids

**38. *Michelia* × *alba*** Candolle, Syst. Nat. 1: 449. 1817.

白兰 bai lan

*Magnolia* × *alba* (Candolle) Figlar; *Michelia* × *longifolia* Blume; *M. longifolia* var. *racemosa* Blume; *Sampacca* × *longifolia* (Blume) Kuntze.

Trees, to 17 m tall, to 30 cm d.b.h. Bark gray. Branches and leaves fragrant after being crushed. Twigs patent, forming a broadly umbelliform crown; young twigs and buds densely pale yellowish white puberulous, trichomes gradually deciduous with age. Stipular scar nearly reaching middle of petiole. Petiole 1.5–2 cm, sparsely puberulous; leaf blade long elliptic to narrowly ovate, 10–27 × 4–9.5 cm, thinly leathery, abaxially sparsely puberulous, adaxially glabrous, reticulate veins very conspicuous on both surfaces when dry, base cuneate, apex long acuminate to caudate-acuminate. Flowers very fragrant. Tepals 10, white, lanceolate, 3–4 cm × 3–5 mm. Staminal connective exerted and forming a long tip. Gynophore ca. 4 mm; gynoecium puberulous; carpels numerous, usually partly undeveloped, forming a sparsely follicular fruit as torus elongates when mature. Fl. Apr–Sep. Usually not fruiting.  $2n = 38$ .

Cultivated. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [native to Indonesia (Java)].

This hybrid is grown as an ornamental and used medicinally. The plant is usually not fruiting and is propagated by grafting.

**39. *Michelia* *elegans*** Y. W. Law & Y. F. Wu, Bull. Bot. Res., Harbin 8(3): 71. 1988.

雅致含笑 ya zhi han xiao

Trees, to 5 m tall, with appressed indument. Old twigs dark brown, glabrous, scattered with lenticels; young twigs grayish brown, densely pubescent; buds ovoid, 1.5–2 × 0.7–1.2 cm, brown tomentose. Stipules free from petiole. Petiole 0.5–1 cm, pubescent, without a stipular scar, base slightly flattened; leaf blade obovate-oblong to rarely oblong, 9–18 × 4.5–5.5 cm, leathery, abaxially densely brown pubescent, adaxially glabrous, midvein abaxially prominent, secondary veins 11–13 on each side of midvein, reticulate veins dense and prominent when dry, base broadly cuneate to suborbicular, apex cuspidate. Brachyblasts ca. 1 cm, brown tomentose. Tepals 9, white, obovate to obovate-oblong, ca. 3 × 1.5–2 cm. Stamens many, ca. 1.5 cm; connective exerted and forming a ca. 1.5 mm mucro; anthers ca. 1 cm. Gynophore ca. 8 mm, densely pubescent; gynoecium cylindrical, 1.2–1.8 cm, densely pubescent; carpels ovoid, ca. 2.5 mm, densely pubescent. Fruiting gynophore 1.3–1.5 cm. Fruit cylindrical, 6–7 cm; mature carpels broadly obovoid to subglobose, 1.1–1.2 × ca. 1 cm, slightly white lenticellate. Seeds 1 per carpel. Fl. Apr, fr. Oct.

- Open fields. Zhejiang (Qingyuan).

This plant may be a hybrid with *Michelia cavaleriei* as one of the parents. It is cultivated at the South China Botanical Garden, from where the holotype was collected.

