

3. LIRIANTHE Spach, Hist. Nat. Vég. Phan. 7: 485. 1839.

长喙木兰属 *chang hui mu lan shu*

Trees or shrubs, evergreen. Bark usually gray, smooth or sometimes rough and furrowed. Stipules membranous, adnate to petiole and leaving a stipular scar on petiole. Leaves spirally arranged, folded in bud, erect when young; leaf blade thickly papery or leathery, margin entire. Flowers terminal on terminal brachyblasts, solitary, bisexual, large, usually fragrant. Spathaceous bracts 1 to several. Tepals 9–12, 3 per whorl, usually white, subequal. Stamens caducous; filaments flat; connective exerted and forming a mucro; anthers dehiscing introrsely. Gynoecium without a gynophore; carpels few or many, distinct; ovules 2(–4) per carpel. Fruit usually ellipsoid, both ends acute; mature carpels distinct, leathery or subwoody, all persistent on torus, dehiscing along dorsal sutures, apex beaked.

About 12 species: SE Asia; eight species (five endemic) in China.

“*Magnolia menlunica* Q. W. Zeng & Y. W. Law” (in Y. H. Liu, *Magnolias China*, 76. 2004) is of uncertain identity. It belongs to *Lirianthe* and is probably the same as an already published species 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).

- 1a. Stipular scar 1/3–1/2 as long as petiole 1. *L. fistulosa*
- 1b. Stipular scar reaching apex of petiole.
 - 2a. Leaf blade large-sized, 20–70 × 7–22 cm 2. *L. henryi*
 - 2b. Leaf blade medium-sized or small-sized, length not exceeding 30 cm, width usually not exceeding 10 cm.
 - 3a. Plants glabrous throughout.
 - 4a. Leaf blade slightly wavy adaxially, margin slightly revolute, secondary veins 8–10 on each side of midvein, reticulate veins sparse 7. *L. coco*
 - 4b. Leaf blade flat, margin not revolute, secondary veins 14–16 on each side of midvein, reticulate veins dense 8. *L. fujianensis*
 - 3b. Plants ± with trichomes.
 - 5a. Flowers smaller; outer tepals shorter than 4 cm 6. *L. championii*
 - 5b. Flowers larger; outer tepals longer than 5 cm.
 - 6a. Petiole 5–7 cm; leaf blade rounded or slightly cordate at base 3. *L. delavayi*
 - 6b. Petiole 1.5–3 cm; leaf blade cuneate or broadly cuneate at base.
 - 7a. Leaf blade pale green, abaxially with white curved trichomes 4. *L. odoratissima*
 - 7b. Leaf blade glaucous, abaxially with dense white silky trichomes 5. *L. albosericea*

1. *Lirianthe fistulosa* (Finet & Gagnepain) N. H. Xia & C. Y. Wu, **comb. nov.**

显脉木兰 *xian mai mu lan*

Basionym: *Talauma fistulosa* Finet & Gagnepain, Bull. Soc. Bot. France 52(Mém. 4): 31. 1906; *Magnolia championii* Benth. subsp. *fistulosa* (Finet & Gagnepain) J. Li; *M. fistulosa* (Finet & Gagnepain) Dandy; *M. phanerophlebia* B. L. Chen; *M. talaumoides* Dandy.

Shrubs or small trees, to 3 m tall, to 6 cm d.b.h., glabrous. Young twigs gray to yellowish gray when dry, 5–7 mm in diam., terete, smooth. Stipular scar 0.7–1.9(–2.5) cm. Petiole (1–)3–6(–7) cm, obviously thickened toward its base; leaf blade obovate to elliptic, 31–34.5(–36) × 9.5–14(–17) cm, leathery, abaxially greenish, adaxially dark green and shiny, midvein conspicuously elevated abaxially, secondary veins (11–)13–17(–19) on each side of midvein, adaxially much impressed, anastomosing with an intramarginal vein, and more prominent on both surfaces than coarsely netted reticulate veins, base cuneate and decurrent with 2 ridges into petiole, apex acuminate, acumen 1–2 cm. Peduncle ca. 2.5 × 0.4 cm, recurved; spathaceous bracts 3, 1 toward base of peduncle, 1 at middle or slightly apically on peduncle, and 1 at base of perianth. Tepals 8 or 9, subequal; outer 3 tepals greenish, thinly leathery; inner 5

or 6 tepals white, fleshy. Stamens numerous. Gynoecium narrowly ovoid; carpels ca. 11. Fruit not seen. Fl. May.

- Evergreen broad-leaved forests; 500–700 m. S Yunnan.

2. *Lirianthe henryi* (Dunn) N. H. Xia & C. Y. Wu, **comb. nov.**

大叶木兰 *da ye mu lan*

Basionym: *Magnolia henryi* Dunn, J. Linn. Soc., Bot. 35: 484. 1903; *Manglietia wangii* Hu & Chun; *Talauma kerrii* Craib.

Trees, to 20 m tall. Young twigs with appressed trichomes but later glabrescent. Stipular scar nearly reaching apex of petiole. Petiole 4–11 cm, with appressed trichomes when young; leaf blade obovate-oblong, 20–70 × 7–22 cm, leathery, abaxially sparsely appressed pubescent, adaxially glabrous, midvein adaxially prominent, secondary veins 14–20 on each side of midvein, reticulate veins sparse and prominent on both surfaces when dry, base broadly cuneate, apex obtuse to acute. Peduncle pendulous, ca. 8 cm, with 2 bract scars, glabrous. Flower buds ovoid; spathaceous bracts glabrous. Tepals 9; tepals of outer whorl 3, green, ovate-elliptic, 6–6.5 × 3–3.5 cm, apex obtuse; tepals of middle and inner whorls milky white, obovate-spoon-shaped, 5.5–6 cm, thickly fleshy; tepals of inner whorl narrower and smaller. Stamens 1.2–1.5 cm; anthers 1–1.2 cm; connective exerted and forming a mucro. Gynoecium narrowly ellipsoid,

3.5–4 cm, glabrous; carpels 85–95, narrowly long ellipsoid, 1.5–2 cm × 2–3 mm, abaxially 4- or 5-ridged; styles 4–9 mm. Fruit ovoid-ellipsoid, 10–15 × 3–5 cm. Fl. May, fr. Aug–Sep.

Evergreen broad-leaved forests; 500–1500 m. S Yunnan [Myanmar, Thailand].

3. *Lirianthe delavayi* (Franchet) N. H. Xia & C. Y. Wu, *comb. nov.*

山玉兰 shan yu lan

Basionym: *Magnolia delavayi* Franchet, Pl. Delavay. 1: 33. 1889; *M. carpunii* M. S. Romanov & A. V. Bobrov.

Trees, to 12 m tall, to 80 cm d.b.h. Bark gray to grayish black, coarse and fissured. Old twigs thick and strong, dotted with lenticels; young twigs olive green, pale yellowish brown pubescent. Stipular scar nearly reaching apex of petiole. Petiole 5–7(–10) cm, densely villous; leaf blade ovate to ovate-oblong, 10–20(–32) × 5–10(–20) cm, leathery, abaxially densely interwoven tomentose and white powdery but later only with residual trichomes on veins, adaxially covered with curved long trichomes at first but later glabrescent, midvein flat to impressed and with residual trichomes, secondary veins 11–16 on each side of midvein, reticulate veins dense and prominent on both surfaces when dry, base broadly rounded to sometimes slightly cordate, margin wavy, apex obtuse to rarely emarginate. Peduncle erect, 3–4 cm. Flowers fragrant, cupular, 15–20 cm in diam. Tepals 9 or 10; tepals of outer whorl pale green, oblong, 6–8(–10) × 2–3(–4) cm, margin revolute; tepals of inner 2 whorls milky white or red, obovate-spoon-shaped, 8–11 × 2.5–3.5 cm; tepals of inner whorl narrower. Stamens ca. 210, 1.8–2.5 cm; connective exerted and forming a sharp triangular tip; anthers divergent. Gynoecium ovoid, 3–4 cm, finely yellow villous, apex acute; carpels ca. 100. Fruit ovoid-ellipsoid, 9–15(–20) cm; mature carpels narrowly ellipsoid, finely yellow villous, completely dehiscent along dorsal suture, apical beak reflexed. Fl. Apr–Jun, fr. Aug–Oct. $2n = 38^*$.

• Forests, limestone areas, wet slopes; 1500–2800 m. Guizhou, S Sichuan, Yunnan.

This species is grown as an ornamental.

4. *Lirianthe odoratissima* (Y. W. Law & R. Z. Zhou) N. H. Xia & C. Y. Wu, *comb. nov.*

馨香木兰 xin xiang mu lan

Basionym: *Magnolia odoratissima* Y. W. Law & R. Z. Zhou, Bull. Bot. Res., Harbin 6(2): 139. 1986.

Trees, 5–6 m tall. Twigs pale grayish brown; young twigs densely white villous. Stipules nearly reaching apex of petiole. Leaf blade ovate-elliptic, elliptic, or oblong-elliptic, 8–14(–30) × 4–7(–10) cm, leathery, abaxially pale green and with white curved trichomes, adaxially dark green, secondary veins 9–13 on each side of midvein, adaxially impressed, and prominent on both surfaces when dry, base cuneate to broadly cuneate, apex acuminate to shortly acute. Flower buds ovoid, 3–3.5 × 2–2.2 cm. Flowers erect, very fragrant. Tepals 9, white, curved, fleshy; tepals of outer whorl obovate to oblong, 5–6 × 2.5–3 cm, thinner, 9-veined; tepals of middle whorl obovate, 5–6 × 2–3 cm; tepals of inner whorl obovate-spoon-shaped, 4–4.5 × 2–2.5 cm. Stamens ca. 175, ca. 3 cm; filaments ca. 5 mm; connective ex-

serted and forming a triangular mucro; anthers ca. 2 cm, dehiscent introrsely. Fruit not seen. Fl. May, fr. Sep.

• Evergreen broad-leaved forests; ca. 1100 m. SE Yunnan (Guangnan).

5. *Lirianthe albosericea* (Chun & C. H. Tsoong) N. H. Xia & C. Y. Wu, *comb. nov.*

绢毛木兰 juan mao mu lan

Basionym: *Magnolia albosericea* Chun & C. H. Tsoong, Acta Phytotax. Sin. 9: 117. 1964.

Trees, to 8 m tall. Bark grayish white, young part densely white sericeous. Stipular scar reaching apex of petiole. Petiole thick and strong; leaf blade elliptic, narrowly elliptic, or narrowly obovate-elliptic, 18–30(–40) × 6–9(–15) cm, abaxially glaucous and white villous, adaxially dark green, midvein sparsely long sericeous on both surfaces, secondary veins 15–20 on each side of midvein, base cuneate to narrowly cuneate, apex acuminate. Peduncle 1.5–2 cm, densely sericeous, with 3 bract scars. Flower buds ovoid, 4–5 cm. Tepals 9, white; tepals of outer whorl oblong, 4–4.6 cm, thinner, abaxially densely papillate, white sericeous near base; tepals of middle whorl 4–5 cm, abaxially white sericeous near base; tepals of inner 2 whorls obovate, thickly fleshy, base clawed; tepals of innermost whorl 3–4 cm. Stamens 0.9–1.2 cm; connective exerted and forming a mucro; anthers 6–8 mm, dehiscent introrsely. Carpels narrowly ellipsoid, 0.8–1.3 cm, abaxially with brown trichomes and inconspicuously papillate, shallow furrow reaching to apex in middle. Fruit dark brown, ellipsoid to obovoid, 4.5–8 cm; mature carpels narrowly ellipsoid, 2–2.5 cm, leathery, abaxially pale brown pubescent and papillate, apex with an outcurved 5–7 mm sharp beak. Seeds red, irregularly triangular, 7–10 × 7–10 mm, laterally flat, adaxially shallowly and narrowly furrowed, base cuneate, apex finely pitted. Fl. Apr–May, fr. Aug–Sep. $2n = 38^*$.

• Evergreen broad-leaved forests, slopes, ravines; 500–800 m. Hainan (Baoting, Diaoluo Shan).

This species is grown as an ornamental.

6. *Lirianthe championii* (Benth) N. H. Xia & C. Y. Wu, *comb. nov.*

香港木兰 xiang gang mu lan

Basionym: *Magnolia championii* Benth, Fl. Hongk. 8. 1861 [“*championii*”]; *M. liliifera* Baillon var. *championii* (Benth) Pampanini; *M. mulunica* Y. W. Law & Q. W. Zeng; *M. paenetaula* Dandy; *M. pumila* Andrews var. *championii* (Benth) Finet & Gagnepain; *M. shangsiensis* Y. W. Law et al.; *M. tenuicarpella* Hung T. Chang.

Shrubs or small trees. Young twigs, petiole adaxial surfaces, leaf blade abaxial surface of bases and midveins, and peduncles with pale brown appressed long trichomes but very soon glabrescent. Young twigs green. Stipular scar nearly reaching apex of petiole. Petiole 0.5–1.5 cm; leaf blade elliptic, narrowly oblong-elliptic, or narrowly obovate-elliptic, 7–14(–20) × 2–4.5(–6.5) cm, leathery, abaxially pale green, adaxially deep green and glossy, secondary veins 8–12 on each side of midvein, divergent near edge, and curving and circling apically, base cuneate to narrowly cuneate and slightly decurrent

on petiole, apex acuminate, cuspidate, or rarely acute. Peduncle 1–1.5 cm, with pale yellow long trichomes; spatheaceous bracts 3 or 4, apical-most bract scar ca. 1 cm basal to tepals. Flowers erect, very fragrant. Tepals 9; outer 3 tepals pale green, oblong-elliptic, 3.5–4 × ca. 2 cm; tepals of inner 2 whorls white, obovate, 2–2.5 × ca. 1.5 cm, fleshy, apex sometimes emarginate. Stamens 7–9 mm; connective exerted and forming a triangular mucro; anthers 6–7 mm, dehiscent introrsely. Gynoecium narrowly obovoid, 1–1.4 cm, white villous; carpels 8–9 mm, furrows abaxially reaching to base of style; ovules 2 per carpel, parallel. Fruit 3–4.5 cm; mature carpels ca. 1 cm, with ca. 2 mm apical beaks. Seeds narrowly ellipsoid or irregularly ovoid, 8–12 × 4–6 mm. Fl. Apr–Jun, fr. Sep–Oct.

Evergreen broad-leaved forests, sandy soil, hills, along riversides; near sea level to 1000 m. Guangdong, Guangxi, S Guizhou, Hainan [N Vietnam].

“*Magnolia bawangensis* Y. W. Law & R. Z. Zhou” (in Y. H. Liu, *Magnolias China*, 34. 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).

One of us (Xia) considers that *Magnolia mulunica* is a distinct species of *Lirianthe*.

7. *Lirianthe coco* (Loureiro) N. H. Xia & C. Y. Wu, **comb. nov.**

夜香木兰 ye xiang mu lan

Basionym: *Liriodendron coco* Loureiro, Fl. Cochinch. 1: 347. 1790; *Magnolia coco* (Loureiro) Candolle; *M. pumila* Andrews; *Talauma coco* (Loureiro) Merrill; *T. pumila* (Andrews) Blume.

Trees or shrubs, 2–4 m tall, glabrous. Bark gray. Twigs green, smooth, slightly ridged, glossy. Stipular scar reaching apex of petiole. Petiole 5–10 mm; leaf blade elliptic, narrowly elliptic, or obovate-elliptic, 7–14(–28) × 2–4.5(–9) cm, leathery, adaxially deep green, glossy, and slightly wavy wrinkled, secondary veins 8–10 on each side of midvein, reticulate veins sparse, base cuneate, margin slightly revolute, apex long acuminate. Peduncle pendulous, with 3 or 4 bract scars. Flowers globose, 3–4 cm in diam. Tepals 9, obovate, fleshy, adaxially concave; 3 tepals of outer whorl greenish, ca. 2 cm, 5-veined; tepals of inner 2 whorls pure white, 3–4 × ca. 4 cm. Stamens 4–6 mm; filaments white, ca. 2 mm; connective exerted and forming a mucro; anthers ca. 3 mm. Gynoecium green, ovoid, 1.5–2 cm; carpels ca. 10, narrowly ovoid, 5–6 mm, abaxially with 1 furrow downward to base of style; styles short, deciduous after anthesis and leaving carpel with a truncate apex. Fruit ca. 3 cm; mature carpels nearly woody. Seeds ovoid, ca. 1 cm, apex laterally pitted adaxially, ventral furrow inconspicuous, base cuneate; endotesta brown. Fl. summer (all year in Guangzhou, Guangdong), fr. autumn. *2n* = 38.

Forests; 600–900 m. Fujian, Guangdong, Guangxi, Taiwan, Yunnan, Zhejiang [Vietnam].

This species is grown as an ornamental and used medicinally.

8. *Lirianthe fujianensis* N. H. Xia & C. Y. Wu, **nom. nov.**

福建木兰 fu jian mu lan

Replaced synonym: *Magnolia fujianensis* R. Z. Zhou, J. Trop. Subtrop. Bot. 12: 473. 2004, not *Magnolia fujianensis* (Q. F. Zheng) Figlar, Proc. Int. Symp. Fam. Magnoliac. 1998, 22. 2000.

Trees, 8–10 m tall, 1.5–2 cm d.b.h., glabrous throughout. Twigs green when young, brown when old. Stipular scar reaching apex of petiole, margin prominent. Petiole 1–1.5 cm; leaf blade long ovate-elliptic to long elliptic, 12–20 × 5.5–6.5 cm, leathery, abaxially green, adaxially dark green and shiny, secondary veins 14–16 on each side of midvein, reticulate veins prominent on both surfaces, base broadly cuneate, apex long acuminate. Brachyblasts ca. 3.5 cm, green, curved downward at anthesis, glabrous. Flowers fragrant. Tepals 9, in 3 whorls; outer 3 tepals pale green, oblong-elliptic, 4–4.2 × 2–2.3 mm; middle 3 tepals white, obovate-spatulate, 4–4.5 × 2.3–2.5 mm, fleshy; inner 3 tepals white, obovate-spatulate, 3–3.5 × 1.6–2 mm, fleshy. Androecium white; stamens ca. 128, 6–7 mm; connective exerted, apex obtuse; anthers 5–6 mm. Gynoecium white; carpels 16–18, abaxially tuberculate; styles purple. Fruit not seen. Fl. Apr–May and Aug–Sep.

• Forests; 300–500 m. Fujian (Nanping).

Flora of China 7: 62–64. 2008.