

15. LOBELIA Linnaeus, Sp. Pl. 2: 929. 1753.

半边莲属 ban bian lian shu

Hong Deyuan (洪德元); Thomas G. Lammers

Cardinalis Fabricius; *Dortmanna* Hill; *Laurentia* Adanson; *Rapuntium* Miller.

Herbs, but some species lignified at base, and even some species in Africa and Hawaiian Islands trees and shrubs. Leaves alternate, in 2 rows or spiral. Flowers solitary and axillary, or in terminal racemes, or in panicles of racemes, bisexual [some Australian species dioecious]; bracteoles present or absent. Flowers pedicellate, solitary and axillary or in terminal racemes (rarely secund or corymbose) or panicles. Calyx lobes entire or serrate, persistent, rarely auriculate. Corolla zygomorphic, rarely with a narrow nectar spur; dorsal side typically divided longitudinally to base or nearly so, sometimes laterally fenestrate; limb commonly bilabiate, dorsal lip 2-lobed, ventral lip 3-lobed, or rarely ventrally unilabiate. Stamens connate, enveloping style, exerted from corolla dorsally; all 5 anthers or just ventral pair barbate at apex (rarely all nude). Ovary inferior or semi-inferior, very rarely almost superior, 2-locular; stigma 2-fid; ovules numerous. Fruit an apically 2-valved capsule or a berry. Seeds numerous, oblong or 3-angled, sometimes winged, smooth, foveolate, striate, or verrucose.

About 414 species: mainly in tropics and subtropics, particularly tropical Africa and America, with a few species extending to temperate regions; 23 species (six endemic) in China.

Doubtful species: *Lobelia cavaleriei* H. Léveillé (Repert. Spec. Nov. Regni Veg. 9: 455. 1911). Type: Guizhou, *Cavalerie* 2989 (isotype, E). See Lammers (World Checkl. Bibliogr. Campanulaceae, Kew, 2007).

- 1a. Plants 0.02–0.5(–2) m tall; stems slender or rarely somewhat robust, herbaceous or rarely subshrubby toward base or throughout; flowers commonly entomophilous; corolla 1–20(–46) mm, commonly bilabiate or sub-bilabiate (if unilabiate then no more than 15 mm), lobes dimorphic or monomorphic; seed coat striate or reticulate.
- 2a. Plants low, stems commonly prostrate and seldom over 40 cm tall; corolla various shades of blue, purple, pink, or white, sub-bilabiate or unilabiate, lobes monomorphic; anther tube with a single elongate bristle or awn at apex of each ventral anther (sometimes also bearded with tufts of shorter filiform hairs, very rarely nude); seed coat commonly reticulate (1. *L.* sect. *Hypsela*).
- 3a. Leaves ovate or broadly ovate, commonly petiolate; corolla sub-bilabiate; fruit a berry 1. *L. nummularia*
- 3b. Leaves elliptic-lanceolate to linear; corolla unilabiate; fruit a capsule 2. *L. chinensis*
- 2b. Plants taller, stems erect, ascending, or decumbent, commonly over 40 cm (sometimes as much as 2 m) tall; corolla distinctly bilabiate, lobes dimorphic, dorsal pair much smaller and narrower than ventral 3 (that commonly form a trifold lip); anther tube bearded with tufts of filiform hairs at apex of at least ventral pair (rarely all nude); seed coat striate.
- 4a. Pedicels typically bibracteolate at base; corolla tube commonly fenestrate laterally; seeds terete or irregularly angular (2. *L.* sect. *Stenotium*).
- 5a. Stems winged; leaves adaxially sparsely puberulent; corolla small, only 3–5 mm 3. *L. heyneana*
- 5b. Stems terete or angular, not winged; leaves glabrous or villous; corolla larger or also small 4. *L. hainanensis*
- 4b. Pedicels typically bibracteolate at or below middle; corolla tube almost always entire laterally; seeds trigonous or compressed (3. *L.* sect. *Delostemon*).
- 6a. Stems prostrate, rooted at nodes; leaves 1–4 × 0.8–3 cm; petiole 3–12 mm 5. *L. zeylanica*
- 6b. Stems erect, not rooted or rooted only at basal nodes; leaves smaller, sessile.
- 7a. Stems and leaves glabrous; bracteoles linear-lanceolate 6. *L. alsinoides*
- 7b. Stems and leaves villous; bracteoles absent or minute 7. *L. terminalis*
- 1b. Plants (0.2–)1–9 m tall; stems robust and sometimes pachycaul, herbaceous, subshrubby, or woody; flowers often ornithophilous; corolla unilabiate or sub-bilabiate, rarely bilabiate, (12–)20–60(–103) mm, lobes monomorphic; seed coat reticulate or striate-reticulate, less often striate.
- 8a. Flowers solitary in upper leaf axils (rarely supplemented by a terminal raceme); corolla tube straight or nearly so; fruit a berry; seeds cuboidal or quadrate, subterete to slightly compressed (5. *L.* sect. *Speirema*).
- 9a. Plants rhizomatous; corolla 12–18 mm, tube 3–6 mm; filament tube 6.5–8 mm; anther tube cream-colored, dorsal anthers 6–8 mm, slightly shorter to slightly longer than filament tube 23. *L. deleiensis*
- 9b. Plants lacking rhizomes; corolla (15–)18–26 mm, tube 6–13 mm; filament tube 8.5–12 mm; anther tube gray, dorsal anthers 4.8–7 mm, 2/5–3/4 as long as filament tube.
- 10a. Stems sparsely to densely puberulent toward apex; leaves sessile; uppermost 10–25 flowers often subtended by bracts only 1/10–1/4 as long as foliage leaves, thus forming a terminal raceme; pedicels densely puberulent; hypanthium pubescent along veins; calyx lobes narrowly triangular or triangular, 1.5–1.9 mm wide, erect; corolla greenish with purple spots on lip; anther tube 1.4–1.8 mm in diam., glabrous; trichomes at apex of ventral anthers 0.5–1 mm 21. *L. fangiana*

- 10b. Stems glabrous (rarely sparsely scabrous); leaves petiolate; all flowers subtended by unreduced foliage leaves; pedicels glabrous; hypanthium glabrous; calyx lobes linear or linear-triangular, 0.5–1.4 mm wide, ascending, spreading, or recurved; corolla dark violet or purple to bluish lilac, lip often paler, or striped or blotched with white; anther tube 2–2.8 mm in diam., dorsal surface sparsely shortly pubescent at least toward apex; trichomes at apex of ventral anthers 1.2–2 mm 22. *L. montana*
- 8b. Flowers in terminal racemes or panicles; corolla tube curved or arcuate; fruit a capsule; seeds ovoid, lenticular (4. *L. sect. Rhynchopetalum*).
- 11a. Leaves truncate, rounded, or obtuse at base; pedicels ebracteolate; calyx lobe margins revolute 20. *L. sessilifolia*
- 11b. Leaves cuneate or attenuate at base; pedicels commonly bibracteolate; calyx lobe margins flat.
- 12a. Stems densely pubescent.
- 13a. Stems tomentose; leaves hispidulous; pedicels 5–12 mm, densely pannose; hypanthium densely pannose; corolla white or faintly tinged with blue or pink 13. *L. clavata*
- 13b. Stems hispidulous or scaberulose; leaves glabrous adaxially and sometimes abaxially; pedicels 3–5 mm, hispidulous; hypanthium scaberulose; corolla purple-red or red-purple.
- 14a. Capsule 6–10 × 6–8 mm; raceme 10–25 cm, densely flowered 19. *L. erectiuscula*
- 14b. Capsule 4–6 × 4–5 mm; raceme 20–50 cm, laxly flowered 18. *L. davidii*
- 12b. Stems glabrous or sparsely pubescent.
- 15a. Corolla 11–20 mm.
- 16a. Leaves rounded and mucronate at apex; corolla glabrous 16. *L. colorata*
- 16b. Leaves acuminate (sometimes acute or obtuse) at apex; corolla pubescent at least internally.
- 17a. Leaves 12–31 cm, attenuate at base; corolla white, sometimes suffused with pale blue or pink; anther tube densely white hirsute in sutures; flowering Jan–May 10. *L. pyramidalis*
- 17b. Leaves 6–12(–15) cm, cuneate at base; corolla purple-red, reddish, or blue-purple; anther tube sparingly pubescent on back; flowering Aug–Oct.
- 18a. Stems and leaves glabrous; pedicels 3–5 mm; calyx lobes 13–21 × < 1 mm, entire 8. *L. melliana*
- 18b. Stems sparsely pubescent; leaves densely white hirsute; pedicels 5–13 mm; calyx lobes 6–14 × 1–1.5 mm, denticulate 9. *L. pleotricha*
- 15b. Corolla 20–35 mm.
- 19a. Bracteoles leaflike, denticulate, 6–12 × 1–2 mm, at summit of pedicel 15. *L. foliiformis*
- 19b. Bracteoles subulate, entire, 1–2 × ca. 0.2 mm, near middle of pedicel.
- 20a. Leaves 3.5–7 cm, obtuse or acute at apex 17. *L. taliensis*
- 20b. Leaves (6–)10–35 cm, acuminate at apex.
- 21a. Raceme lax; hypanthium hemispheric 14. *L. iteophylla*
- 21b. Raceme dense; hypanthium campanulate, oblong, or obconic.
- 22a. Leaves glabrous abaxially; hypanthium glabrous; calyx lobes entire 11. *L. seguinii*
- 22b. Leaves sparsely hispidulous abaxially; hypanthium scaberulose; calyx lobes denticulate 12. *L. doniana*

1. *Lobelia* sect. *Hypsela* (C. Presl) Lammers, comb. nov.

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Basionym: *Hypsela* C. Presl, Prodr. Monogr. Lobel. 45. 1836; *Pratia* Gaudichaud-Beaupré.

Plants perennial or less often annual, 2–40 cm tall; a few species dioecious. Stems commonly prostrate, radicant, or caespitose, rarely decumbent or ascending, slender, herbaceous. Leaves commonly small, petiolate or rarely sessile; blade typically not much longer than wide, variously rounded at apex and base, margin coarsely toothed or shallowly lobed. Flowers typically solitary in axils of upper leaves. Corolla sub-bilabiate (unilabiate in *Lobelia chinensis*), blue, purple, magenta, pink, or white, 2–12(–15) mm; lobes typically monomorphic. Anthers with a single long bristle on apex of each ventral anther, often also bearded with tufts of shorter filiform hairs, very rarely all nude. Fruit a capsule or fleshy berry. Seeds ovoid to oblong, terete (rarely slightly compressed); testa reticulate.

Forty-three species: amphi-Pacific, largely in the S Hemisphere; two species in China.

1. *Lobelia nummularia* Lamarck, Encycl. 3: 589. 1792.

铜锤玉带草 tong chui yu dai cao

Lobelia begoniifolia Wallich; *L. horsfieldiana* Miquel; *L. javanica* Thunberg; *L. obliqua* Buchanan-Hamilton ex D. Don; *Pratia begoniifolia* (Wallich) Lindley; *P. nummularia* (Lamarck) A. Brown & Ascherson; *P. wollastonii* S. Moore.

Herbs, perennial. Stems prostrate, 12–55 cm, villous, rarely glabrous, simple or branched at base, nodes rooted. Leaves alternate, petiolate; petiole 2–14 mm, puberulent; blade

orbicular, reniform, or ovate, 0.7–2.6 × 0.5–2.7 cm, both surfaces glabrous or puberulent, base obliquely cordate or rarely truncate, margin serrate or crenulate, apex acute, obtuse, or rounded. Flowers solitary and axillary; pedicels 0.7–3.5 cm, glabrous. Hypanthium narrowly ellipsoid or urceolate, 2–4 × 2–3 mm, glabrous or villous; calyx lobes linear-triangular, 2.5–6 mm, margin with 2 or 3 pairs of denticles. Corolla purple-red, pale purple, pink, green, or yellow-white, 6–10 mm; tube glabrous or rarely ciliate outside, villous inside; limb 2-lipped; upper 2 lobes linear-triangular; lower 3 lobes lanceolate. Stamens

connate above middle; filament tube glabrous; anther tube 1–1.5 mm, back villous; lower 2 anthers barbate at apex. Fruit a berry, purple-red, ellipsoid or globose, 0.7–1.5 cm. Seeds sub-orbicular, slightly compressed, reticulate. Fl. and fr. all year round.

By fields, roadsides, wet places on hills, grassy slopes, open woods; lower elevations. Hubei, Hunan, Guangxi, Taiwan, Xizang [Bangladesh, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam].

2. *Lobelia chinensis* Loureiro, Fl. Cochinch. 2: 514. 1790.

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Lobelia caespitosa Blume; *L. campanuloides* Thunberg; *L. chinensis* var. *albiflora* (F. E. Wimmer) F. E. Wimmer; *L. radicans* Thunberg; *L. radicans* var. *albiflora* F. E. Wimmer; *Pratia thunbergii* G. Don.

Herbs, perennial. Stems decumbent, slender, 6–30 cm tall, glabrous, lower nodes rooted. Leaves alternate, sessile or petiole to 1 mm; blade narrowly elliptic, elliptic, or lanceolate, 7–26 × 1.5–7 mm, glabrous, base rounded, obtuse, or broadly cu-

neate, margin entire or obviously serrate at upper part, apex acute or acuminate. Flowers usually solitary, axillary at upper leaves of branches; pedicels slender, 1.2–2.5(–3.5) cm; bracteoles 2 at base, ca. 1 mm, glabrous, or absent. Hypanthium narrowly obconical, base attenuate, not well distinguished from pedicel, 3–5 mm, glabrous; calyx lobes lanceolate, ± as long as tube, margin entire or with a pair of denticles. Corolla rose, white, or bluish, 10–15 mm, divided to base at back, white villous below throat; lobes all spreading in a plane on anterior side; lateral 2 lobes lanceolate or oblanceolate, longer than others, central 3 elliptic. Filament tube 6–8 mm, connate above middle, glabrous; anther tube 2–2.5 mm, back glabrous or sparsely villous. Capsule obconic, 6–7 mm. Seeds broadly elliptic, compressed, pitted. Fl. and fr. May–Oct.

By paddy fields, streams, among wet grasses. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bangladesh, Cambodia, India, Japan (including Ryukyu Islands), Korea, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam].

2. *Lobelia* sect. *Stenotium* (C. Presl) Lammers, **comb. nov.**

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Basionym: *Rapuntium* sect. *Stenotium* C. Presl, Prodr. Monogr. Lobel. 11. 1836.

Plants annual or perennial, 2–50(–90) cm tall. Stems slender, herbaceous or subshrubby, prostrate, decumbent, ascending, or erect, sometimes rhizomatous or stoloniferous, terete to sharply 3- or 4-angled or -winged. Leaves sessile or petiolate. Flowers solitary in axils of upper leaves or these reduced in size, creating a terminal sometimes secund raceme (rarely spiciform or corymbose); pedicels often ebracteolate. Corolla bilabiate, various shades of blue, purple, pink, or white, 3–20(–24) mm; lobes strongly dimorphic, spreading, sometimes with a pair of gibbosities on ventral lip at mouth of tube. Anthers bearded with tufts of filiform hairs at apex of ventral pair. Fruit a capsule or rarely baccate. Seeds ovoid to oblong, terete or somewhat compressed; testa striate.

About 145 species: throughout most of the range of the genus; two species (one endemic) in China.

3. *Lobelia heyneana* Schultes, Syst. Veg. 5: 50. 1819.

翅茎半边莲 chi jing ban bian lian

Lobelia trialata Buchanan-Hamilton ex D. Don; *L. trialata* var. *asiatica* Chiovenda.

Herbs, annual, 10–50(–60) cm tall. Stems erect, 3-angular, winged, glabrous, branched. Leaves alternate; petiole 1–4 mm, winged; blade broadly deltoid-ovate, 0.8–2.5 × 0.4–2.5 cm, upper ones smaller and more narrow, abaxially glabrous, adaxially sparsely puberulent, base truncate or shallowly cordate, often decurrent, apex rounded or acute. Flowers solitary, axillary at leaflike bracts, often forming a raceme; bracts narrowly elliptic, shorter than pedicels; pedicels 1–1.5(–2) cm, slender, with 2 bracteoles at base; bracteoles subulate, less than 1 mm, often caducous. Hypanthium campanulate, 1–2 mm, glabrous; calyx lobes longer than hypanthium at anthesis, but shorter than tube after anthesis, subulate, 2–3 mm, entire. Corolla pale purple, 3–5 mm, inside sparsely puberulent; limb 2-lipped, upper lobes erect, linear, less than 1 mm; lower lobes spreading, elliptic to suborbicular, ca. 2 mm. Stamens connate into tube above middle of filaments; anther tube ca. 1 mm, lower 2 anthers barbate at top. Capsule oblong or obovoid-oblong, 4–5 × 2–4 mm. Seeds pale red-brown, ellipsoid, slightly compressed, smooth.

Fl. and fr. Jan–Dec.

Moist places; 500–2700 m. Taiwan, Yunnan [Bhutan, India, Indonesia, Laos, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa].

4. *Lobelia hainanensis* F. E. Wimmer, Ann. Naturhist. Mus. Wien 56: 348. 1948.

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Stems 4-angular, ascending or erect, up to 20 cm tall, glabrous. Leaves alternate, denser at upper part of stems, subsessile; blade oblong or elliptic, ca. 15 × 7 mm, glabrous, base cuneate, margin cartilaginous-crenulate, apex obtuse. Flowers solitary, axillary at leaves; pedicels ca. 12 mm, glabrous, ± as long as leaves. Hypanthium broadly top-shaped, ca. 2 × 2 mm; calyx lobes sublinear, ca. 3 mm, glabrous, margin entire, apex acute. Corolla 2-lipped, blue, ca. 1 cm, glabrous; upper lobes spatulate, shorter than lower ones; lower lobes obovate, ca. 4 × 2 mm, base with a pale black spot, apex rounded, mucronate. Filament tube ca. 5 mm, glabrous; anther tube gray-brown and black striate, ca. 2 mm, back puberulent at apex; lower 2 anthers barbate at top.

● Hainan.

No specimens have been examined by us, but based on the origi-

nal description, we judge it to be distinct from its allies.

3. *Lobelia* sect. *Delostemon* (F. E. Wimmer) Murata, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 15: 356. 1995.

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Lobelia subsect. *Delostemon* F. E. Wimmer, Ann. Naturhist. Mus. Wien 56: 359. 1948.

Plants perennial or annual, 6–60 cm tall. Stems slender, herbaceous or sometimes subshrubby, prostrate, decumbent, ascending, or erect, simple to branched, sometimes stoloniferous, caespitose, or radican. Leaves sessile or petiolate. Flowers solitary in axils of upper leaves or these much reduced, creating a terminal sometimes secund raceme; pedicels bibracteolate at or below middle. Corolla bilabiate, typically some shade of blue or purple, less often pink or white, 5–20(–32) mm; lobes strongly dimorphic, spreading. Anthers bearded with tufts of filiform hairs at apex on all 5 (those on ventral pair sometimes longer). Fruit a capsule. Seeds ovoid to oblong, trigonous or lenticular; testa striate.

Forty-four species: S Hemisphere, north to Senegal, Ethiopia, India, Japan, Colombia, and Hispaniola; three species in China.

5. *Lobelia zeylanica* Linnaeus, Sp. Pl. 2: 932. 1753.

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Lobelia affinis Wallich ex G. Don (1834), not Mirbel (1805); *L. affinis* var. *lobbiana* (J. D. Hooker & Thomson) C. B. Clarke; *L. barbata* Warburg (1891), not Cavanilles (1800); *L. hirta* Linnaeus; *L. lobbiana* J. D. Hooker & Thomson; *L. subcuneata* Miquel; *L. succulenta* Blume; *L. succulenta* var. *lobbiana* (J. D. Hooker & Thomson) F. E. Wimmer; *L. zeylanica* var. *hirta* (Linnaeus) Martyn; *L. zeylanica* var. *lobbiana* (J. D. Hooker & Thomson) Y. S. Lian.

Herbs, succulent. Stems prostrate, 4-angular, 20–60 cm, glabrous or puberulent, laxly branched, lower nodes rooted. Leaves spirally alternate; petiole 3–12 mm, puberulent; blade broadly deltoid-ovate or ovate, 1–5.4 × 0.8–3 cm, abaxially sparsely scaberulose along veins, adaxially glabrescent, base truncate, shallowly cordate, or broadly cuneate, margin serrulate, apex acute or obtuse. Flowers solitary and axillary; pedicels 0.5–2.8 cm, sparsely puberulent, bracteoles 2 at base, 1–2 mm, sometimes caducous. Calyx campanulate, 2–5 mm, puberulent; lobes linear, narrowly triangular, or narrowly oblong, 3–7 × 0.5–1 mm, ciliate. Corolla 2-lipped, purple, pale purple, or white, 5–15 mm, posterior side divided to base, lobes of upper lip obovate-oblong, those of lower lip broadly elliptic, abaxially sparsely villous along middle ribs. Filaments connate into a tube at 2/3; anther tube 1–1.8 mm, abaxially puberulent, anthers all barbate at top. Ovary inferior. Capsule broadly ellipsoid, obovoid, or oblong, 4–7 × 2–4 mm, obviously veined. Seeds 3-angular, red-brown. Fl. and fr. whole year round.

By water and streams in ravines; below 1500(–2000) m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Bangladesh, Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam].

6. *Lobelia alsinoides* Lamarck, Dict. Bot. 3: 588. 1791.

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Herbs, annual, 10–30 cm tall. Stems succulent, decumbent to ascending, laxly branched, glabrous, angular. Leaves alternate, sparse; petiole 1–3 mm, glabrous; blade suborbicular, broadly ovate, elliptic, or lanceolate, 7–14 × 4–6 mm, both surfaces scabrous but glabrous, base cuneate or broadly cuneate, margin crenate or crenulate, apex rounded, obtuse, acute, or

acuminate. Flowers axillary at leaflike bracts forming a lax raceme; pedicels (1–)2–2.7 cm, slender, glabrous; base with 2 lanceolate bracteoles ca. 3 mm. Hypanthium funnellform-campanulate, 2–3 mm, glabrous; calyx lobes linear or subulate, slightly longer than tube at anthesis, but shorter than tube in fruit, glabrous, entire. Corolla 2-lipped, pale blue or white, 4–8 mm; upper lobes erect, oblong-oblancoate; lower lobes spreading, oblong-elliptic. Stamens connate above middle of filaments; filament tube glabrous; anther tube 1–1.5 mm, back glabrous, anthers all barbate at top. Capsule oblong or ovoid, 4–5 × 3–4 mm. Seeds numerous, 3-angular, dark brown. Fl. and fr. Jan–Dec.

Paddy fields, by water or among wet grasses in forests, wet places; below 800 m. Guangdong, Guangxi, Hainan, Taiwan, Xizang, Yunnan [Bangladesh, India, Japan (including Ryukyu Islands), Laos, Malaysia, Myanmar, Nepal, New Guinea, Sri Lanka, Thailand, Vietnam].

Two subspecies are recognized.

- 1a. Leaves suborbicular, ± as long as broad, margin serrate 6a. subsp. *alsinoides*
- 1b. Leaves ovate to ovate-lanceolate, longer than broad, margin less prominently toothed 6b. subsp. *hancei*

6a. *Lobelia alsinoides* subsp. *alsinoides*

短柄半边莲(原亚种) duan bing ban bian lian (yuan ya zhong)

Lobelia stipularis Roth ex Schultes; *L. trigona* Roxburgh.

Leaves suborbicular, ± as long as broad, margin serrate.

Wet places; lower elevations. Hainan [Bangladesh, India, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sri Lanka, Thailand, Vietnam].

6b. *Lobelia alsinoides* subsp. *hancei* (H. Hara) Lammers, Bot. Bull. Acad. Sin. 33: 286. 1992.

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Lobelia hancei H. Hara, J. Jap. Bot. 17: 23. 1941; *L. alsinoides* var. *cantonensis* (F. E. Wimmer ex Danguy) F. E. Wimmer; *L. chinensis* Loureiro var. *cantonensis* F. E. Wimmer ex Danguy.

Leaves ovate or lanceolate, 7–14 × 4–6 mm, longer than

broad, margin less prominently toothed.

Paddy fields, by water or among wet grasses in forests; below 800 m. Guangdong, Guangxi, Taiwan, Xizang, Yunnan [Japan (including Ryukyu Islands)].

7. *Lobelia terminalis* C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 424. 1881.

顶花半边莲 ding hua ban bian lian

Lobelia thorelii F. E. Wimmer.

Herbs, annual, slender. Stems ascending or erect, 10–20(–40) cm tall, branched, angular but wingless, puberulent. Leaves spirally and laxly arranged; petiole 1–3 mm, hairy; blade suborbicular to elliptic, 6–10(–15) × 6–10 mm, both surfaces puberulent, base truncate, subcordate, or rounded, margin subentire for lower several, but obviously serrate for rest, apex rounded. Flowers solitary, axillary at upper leaflike

bracts, forming a lax raceme or corymb; bracts ovate-lanceolate, margin serrate, hairy; pedicels slender, 1.5–4 cm, sparsely puberulent; bracteoles 2, persistent or caducous. Hypanthium obovoid or semiglobose, ca. 2 mm, puberulent; calyx lobes linear-subulate, 2–3 × ca. 0.5 mm, entire. Corolla 2-lipped, pale purple, 4–5(–8) mm; tube 2-divided to base at back, glabrous; upper lobes erect, oblong-linear, lower lobes oblong, slightly shorter than upper ones. Stamens connate into a tube above middle of filaments; filament tube glabrous; anther tube ca. 1 mm, back sparsely villous, apex shortly barbate. Capsule obovoid, 4–5 × ca. 3 mm, sparsely puberulent. Seeds numerous, brown-yellow, 3-angular. Fl. Nov.

Wet places in forests; 200–900 m. S Yunnan [India, Laos, Thailand, Vietnam].

4. *Lobelia* sect. *Rhynchopetalum* (Fresenius) Benth in Benth & J. D. Hooker, Gen. Pl. 2: 552. 1876.

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Rhynchopetalum Fresenius, Flora 21: 603. 1838.

Plants perennial or pliestesial, shrubs, treelets, or trees, 0.5–9 m tall. Stems robust, typically pachycaul, herbaceous, subshrubby, or woody, prostrate, decumbent, ascending, or erect, simple, often apically rosulate. Leaves sessile (very rarely petiolate). Flowers in a terminal raceme or panicle. Corolla sub-bilabiate or unilabiate, various shades of blue, purple, red, yellow, green, or white, (12–) 22–50 mm; tube curved or arcuate; lobes spreading or deflexed, as long as tube or longer. Anthers bearded with tufts of filiform hairs at apex of ventral pair or all anthers nude at apex. Fruit a capsule. Seeds ovoid, lenticular, commonly winged; testa striate-reticulate.

Sixty-one species: tropical Africa, SE Asia, South America (SE Brazil); 13 species (four endemic) in China.

8. *Lobelia melliana* F. E. Wimmer, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 61: 111. 1924.

线萼山梗菜 xian e shan geng cai

Herbs, perennial, 80–150 cm tall. Stems glabrous, simple or branched. Leaves alternate, subsessile or shortly petiolate, ± falcate-ovate to falcate-lanceolate, 6–15 × 1.5–4 cm, thinly papery, glabrous, base broadly cuneate, margin ciliate-denticulate, apex caudate-acuminate. Racemes terminal, 15–40 cm, lax, lower bracts conformable with leaves, upper ones narrowed to linear, longer than flowers, margin ciliate-denticulate; pedicels compressed, 3–5 mm, with 2 subulate bracteoles at middle. Hypanthium semiellipsoid, 3–4 mm, glabrous; calyx lobes filiform, 13–21 × less than 1 mm, margin entire, spreading at fruiting. Corolla reddish, 12–17 mm; limb 2-lipped; upper lobes ascending, linear-lanceolate, as long as tube, inside villous; lower ones lanceolate-elliptic, ca. 2/3 as long as tube, inside densely villous, spreading. Stamens densely villous at base, connate into tube above base; filament tube glabrous; anther tube ca. 4 mm, back sparsely villous, only lower anthers barbate at top. Capsule erect, subglobose, 5–6 mm wide, glabrous. Seeds oblong, slightly compressed, ca. 0.6 mm, foveolate. Fl. and fr. Aug–Oct.

• Ravines, roadsides, by streams or wet places in forests; below 1000 m. Fujian, Guangdong, Hubei (Badong, Zigui), Hunan (Yizhang), Jiangsu (Suzhou), S and W Jiangxi, Zhejiang (Longquan).

9. *Lobelia pleotricha* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 170. 1912.

毛萼山梗菜 mao e shan geng cai

Lobelia davidii Franchet var. *handelii* (F. E. Wimmer) F. E. Wimmer; *L. davidii* var. *pleotricha* (Diels) F. E. Wimmer; *L. handelii* F. E. Wimmer; *L. pleotricha* var. *cacumiflora* Y. S. Lian; *L. pleotricha* var. *handelii* (F. E. Wimmer) C. Y. Wu.

Herbs, perennial, 60–80 cm tall. Stem dark red, sparsely pubescent. Leaves alternate; lower leaves petiolate; petiole 2–3 cm, narrowly winged; upper leaves sessile or shortly petiolate; blade elliptic-lanceolate, 6–12 × 2–3.5 cm, both surfaces densely white hirsute, base cuneate, margin sinuate or irregularly crenate, apex acuminate. Racemes terminal, 10–30 cm; bracts leaflike, lower ones much longer, but upper ones sometimes shorter than flowers; pedicels 5–13 mm, densely white hirsute. Hypanthium shortly oblong, 4–6 × 4–6 mm, densely white hirsute; calyx lobes linear-lanceolate, 6–14 × 1–1.5 mm, reflexed at fruiting, densely white hirsute, margin glandular-denticulate. Corolla purple-red to blue-purple, ca. 2 cm, lobes hairy along midrib and ciliate; upper lobes ascending, linear; lower lobes spreading, ovate-lanceolate. Filament tube glabrous or sparsely puberulent; anther tube ca. 5 mm, back sparsely pubescent; lower 2 anthers barbate at top. Capsule shortly columnar, 7–8 × 5–6 mm, base truncate, concave. Seeds ellipsoid, slightly compressed. Fl. and fr. Aug–Oct.

Grassy slopes, thickets, margins of bamboo forests; 2000–3600 m. Xizang (Médog), W Yunnan [N Myanmar].

10. *Lobelia pyramidalis* Wallich, Asiat. Res. 13: 376. 1820.

塔花山梗菜 ta hua shan geng cai

Lobelia pyramidalis var. *wallichiana* (C. Presl) Steudel; *L. wallichiana* (C. Presl) J. D. Hooker & Thomson; *Rapuntium wallichianum* C. Presl.

Herbs, shrubby, 0.4–3 m tall. Stems glabrous. Leaves alternate, subleathery, sessile or shortly petiolate; basal leaves spatulate; lower ones oblong, up to 25 cm; middle and upper ones narrowly elliptic or narrowly oblong, 12–31 × 1–4 cm, both surfaces glabrous, base attenuate, margin serrulate, apex acuminate. Racemes terminal, paniculate; flowers dense, oriented toward one side. Pedicels 0.6–2.4 cm, arched, bibracteolate or sometimes ebracteolate; bracts linear, often shorter than flowers, entire. Hypanthium campanulate or broadly ellipsoid (rarely obconic), length slightly greater than width, 2–4 × 2–4 mm, glabrous; calyx lobes subulate or linear-triangular, 8–16 × 1–1.8 mm, margin entire. Corolla white, rose, or bluish, 1.1–2.1 cm, outside glabrous, inside tube densely villous, nearly 2-lipped; lobes of upper lip linear, ca. 2/3 as long as total length of corolla; those of lower lip elliptic or lanceolate, ca. 1/3 as long as total length of corolla. Stamens connate into tube above base; filament tube glabrous; anther tube ca. 5 mm, densely villous along sutures, lower 2 anthers barbate at top. Capsule subglobose, obovate, or broadly ovoid, 3.5–6.5 mm in diam., glabrous, often pendulous. Seeds elliptic, obviously compressed, margin pale in color. Fl. Jan–May.

Grassy slopes, scrub, roadsides; 1200–2500 m. W Guangxi, SW Guizhou, Xizang (?Lhasa), Yunnan [Bhutan, N India, N Myanmar, Nepal, N Thailand].

11. *Lobelia seguinii* H. Léveillé & Vaniot, Repert. Spec. Nov. Regni Veg. 12: 186. 1913 [“*seguini*”].

西南山梗菜 xi nan shan geng cai

Lobelia seguinii f. *brevisepala* F. E. Wimmer; *L. seguinii* f. *longisepala* F. E. Wimmer.

Herbs, subshrubby, 0.9–2.5(–5) m tall. Stems much branched, glabrous. Leaves alternate, thickly papery, lower leaves long petiolate, blade narrowly oblong, up to 25 cm; middle and upper ones sessile or shortly petiolate, lanceolate or elliptic (rarely oblanceolate), 6–35 × 0.6–6 cm, both surfaces glabrous, base attenuate or cuneate, margin serrulate, apex acuminate. Racemes terminal, paniculate, densely flowered; flowers oriented to one side; lower bracts linear-lanceolate, longer than flowers, margin denticulate; upper ones lanceolate or linear, shorter than flowers, entire or serrulate; pedicels 3–16 mm, slightly compressed, curved backward, with 2 linear bracteoles. Hypanthium campanulate, oblong, or obconic, 3–8 mm, glabrous; calyx lobes subulate, linear, or linear-triangular, (8–)16–20(–27) × 0.9–2.5 mm, glabrous, entire (rarely with 1 or 2 teeth per side). Corolla purple-red, purple-blue, pale blue, or pinkish, 2–3(–3.5) cm, inside densely villous below throat; upper lobes ascending or spreading, linear, 0.8–1.3 mm wide, ca. 2/3 as long as total length of corolla; lower ones spreading, lanceolate, ca. 1/2 as long as total length of corolla. Stamens connate into tube; filament tube nearly as long as corolla tube, glabrous except at base; anther tube 4.5–7 mm, glabrous or base with several tufts of short hairs, lower 2 anthers barbate at top. Capsule pendent, oblong or ellipsoid, 10–16 × 5–9 mm, glabrous. Seeds

ellipsoid, finely striate. Fl. and fr. Aug–Oct.

Grassy slopes, forest margins, roadsides; 500–3000 m. Chongqing (Fengjie, Wushan, Wuxi), W Guangxi, Guizhou (Anlong, Ceheng), Hubei (Badong, Zigui), SW Sichuan, Taiwan, Yunnan [N Thailand, N Vietnam].

12. *Lobelia doniana* Skottsberg, Acta Horti Gothob. 4: 19. 1928.

微齿山梗菜 wei chi shan geng cai

Lobelia seguinii H. Léveillé & Vaniot var. *doniana* (Skottsberg) F. E. Wimmer.

Herbs, perennial, 0.3–2.4 m tall. Stems erect, up to 1.5 cm in diam., branched above, glabrous or variously shortly pubescent above. Cauline leaves alternate, at least lower ones petiolate; petiole cuneate-winged, up to 3 cm; blade elliptic to linear-elliptic, 6–33 × 1–6 cm, abaxially sparsely hispidulous, adaxially glabrous or sparsely minutely pubescent, base cuneate, margin serrulate, apex acuminate. Racemes terminal, paniculate; lower bracts leaflike, gradually smaller up stems; pedicels 3–15 mm, usually bibracteolate, densely hispidulous. Hypanthium campanulate, oblong, or obconic, scaberulose; calyx lobes linear or linear-triangular, 7–22 mm, with (1–)4–7 teeth on each side. Corolla bilabiate, purple, purple-red, rose-purple, or blue-purple, 20–31 mm, outside scaberulose below, inside villous; upper 2 lobes linear, slightly longer than lower 3. Filaments connate above base, filament tube glabrous or sparsely shortly pubescent; anther tube glabrous or white hirsute only at base; lower 2 anthers barbate at top. Capsule oblong or ellipsoid, 8–16 × 4–9 mm. Seeds ellipsoid, finely striate. Fl. and fr. Sep–Nov.

Grassy slopes, forest margins, glades; (800–)1400–3200 m. Xizang (Nyalam), Yunnan [Bhutan, N India, N Myanmar, Nepal].

This species is very similar to *Lobelia seguinii*, differing primarily in its increased pubescence and toothed calyx lobes.

13. *Lobelia clavata* F. E. Wimmer, Repert. Spec. Nov. Regni Veg. 38: 78. 1935.

密毛山梗菜 mi mao shan geng cai

Herbs, subshrubby, 0.5–3.7 m. Stems terete, fistulose, tomentose. Cauline leaves alternate, sessile; blade oblanceolate or oblong (uppermost often narrowly elliptic or lanceolate), 7–33 × 2.2–8.4 cm, thickly papery, both surfaces hispidulous, base cuneate or attenuate into a petioid base, margin serrulate or crenulate, apex acuminate, acute, or obtuse. Racemes densely paniculate; flowers oriented toward one side, erect; bracts lanceolate, narrowly elliptic, narrowly oblong, or linear, 10–30 mm, shortly panose; pedicels 5–12 mm, terete, panose, twisted toward posterior side, usually bibracteolate near base (rarely at middle). Hypanthium campanulate or hemispherical, 3–6.5 × 3–6 mm, densely panose, base rounded or truncate (rarely obtuse); calyx lobes linear-triangular, 7–16 × 0.7–2.5 mm, margin entire or with 1–4 denticles per side. Corolla subbilabiate, white (rarely tinged pale pink or pale blue), 2–3.4 cm, outside shortly panose, inside villous; upper lobes linear, ca. 2/3 as long as total length of corolla; lower lobes wider, ca. 1/3 as long as total length of corolla. Stamens connate into tube above base; filament tube densely puberulent; anther tube 5–7.5

mm, densely villous along sutures; lower 2 anthers barbate at top. Capsule pendulous, subovoid or broadly ellipsoid, 6–13 × 5–9 mm, densely puberulent. Seeds elliptic, compressed, finely striate, margin pale in color. Fl. and fr. Nov–Apr.

Grassy slopes, forests, roadsides; 700–1800 m. SW Guizhou (Anlong), S Yunnan [NE India, Laos, N Myanmar, N Thailand, Vietnam].

This species is closely related to *Lobelia rosea* Wallich of the E Himalaya, which differs in its narrowly elliptic leaves only 2–3.5 cm wide; typically ebracteolate pedicels; pink, pale rose, or mauve corolla; and shorter staminal column (filament tube 10–15 mm, anther tube 3–5 mm).

14. *Lobelia iteophylla* C. Y. Wu, Rep. Yunnan Trop. Subtrop. Fl. Res. Rep. 1: 93. 1965.

柳叶山梗菜 liu ye shan geng cai

Herbs, perennial, up to 85 cm tall. Stems erect, often purplish, terete, simple, glabrous, lower part often leafless. Cauline leaves alternate, sessile; blade linear-lanceolate, 6.5–11 × 1.3–1.6 cm, both surfaces glabrous, base cuneate, margin glandular-serrate, apex acuminate. Racemes lax; flowers almost oriented toward one side; bracts conformable to leaves, 2.5–5.5 × 0.5–1 cm, longer than flowers; pedicels 5–10 mm, straight, puberulent; bracteoles 2, subulate. Hypanthium semiglobose, 2.5–4 mm, glabrous or sparsely puberulent; calyx lobes linear-lanceolate, 11–15 × 1.5–2 mm, glabrous, margin glandular-denticulate. Corolla nearly 2-lipped, purple-blue, 17–25 mm, glabrous; upper 2 lobes ascending, ca. 13 mm; lower lobes spreading, narrowly oblong, ca. 8 mm, acute. Stamens connate into tube; filament tube ca. 12 mm, glabrous; anther tube gray-blue, 5–6 mm, back sparsely setulose; lower 2 anthers barbate at top. Fl. and fr. Sep–Oct.

• Forests, forest margins and grassy slopes by streams; 800–2500 m. Yunnan.

15. *Lobelia foliiformis* T. J. Zhang & D. Y. Hong, Acta Phytotax. Sin. 30: 155. 1992.

苞叶山梗菜 bao ye shan geng cai

Subshrubs, 1–2 m tall, branched, glabrous. Cauline leaves sessile or shortly petiolate; blade oblong to broadly lanceolate, up to 25 × 3.5 cm, papery, abaxially often puberulent, adaxially glabrous or sparsely puberulent, base cuneate, margin glandular-serrate, apex acuminate. Racemes terminal, densely flowered, 5–20 cm, often pendulous; bracts linear-lanceolate, usually entire; pedicels ca. 5 mm, with 2 bracteoles at top; bracteoles leaflike, 6–12 × ca. 1 mm, margin glandular-denticulate. Hypanthium obconic, ca. 6 × 4 mm, glabrous to puberulent; calyx lobes erect or spreading, linear, 12–16 mm, usually denticulate. Corolla blue-purple or purple-red, 20–30 cm, puberulent; upper 2 lobes ca. 17 mm; lower 3 lobes ovate-lanceolate, ca. 8 mm. Filaments 12–15 mm, puberulent below; anther tube gray-blue, ca. 5 mm, back densely setulose; lower 2 anthers sparsely barbate at top. Capsule oblong, ca. 12 × 8–10 mm. Seeds dark brown, ellipsoid. Fl. and fr. Aug.

• Sunny slopes; 2300–3000 m. Yunnan (Dali).

16. *Lobelia colorata* Wallich, Pl. Asiat. Rar. 2: 42. 1831.

狭叶山梗菜 xia ye shan geng cai

Lobelia colorata var. *baculus* F. E. Wimmer; *L. colorata* var. *dsolinhoensis* F. E. Wimmer; *L. colorata* subsp. *guizhouensis* T. J. Zhang & D. Y. Hong; *L. palustris* Kerr.

Herbs, perennial, 30–100 cm tall. Stems erect, terete, simple, glabrous or puberulent near axils. Cauline leaves alternate, subsessile or winged-petiolate; blade obovate-oblong to linear-lanceolate, 3.5–11 × 0.5–3 cm, glabrous, base cuneate, apex rounded but mucronate. Racemes terminal, 15–30 cm, lax; flowers oriented toward one side; bracts lanceolate to linear, shorter or longer than flowers; pedicels 4–7 mm, glabrous or sparsely setulose, with 2 bracteoles at or below middle. Hypanthium semiellipsoid, 2–4 mm, glabrous or puberulent; calyx lobes linear, 5–12 × ca. 1 mm, margin with 2–4 pairs of glandular denticles. Corolla nearly 2-lipped, purple-blue or blue, rarely white, 12–20 mm, glabrous; upper 2 lobes linear, 11–15 mm; lower ones ovate-oblong, 4–8 mm. Filament tube glabrous, 7–11 mm; anther tube 5–6 mm, glabrous or sparsely villous; lower 2 anthers barbate at top. Capsule ovoid-globose, ca. 6 × 4–6 mm. Seeds ellipsoid, slightly compressed. Fl. and fr. Sep–Oct.

Thickets in ravines, moist meadows; 1000–3000 m. Guizhou, Yunnan [NE India, N Thailand].

“*Lobelia purpurascens*” (Wallich, Numer. List, no. 1307. 1829) belongs here but is a nomen nudum and was therefore not validly published (*Vienna Code*, Art. 32.1(d)).

17. *Lobelia taliensis* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 170. 1912.

大理山梗菜 da li shan geng cai

Lobelia colorata Wallich subsp. *taliensis* (Diels) T. J. Zhang & D. Y. Hong; *L. fossarum* F. E. Wimmer; *L. hybrida* C. Y. Wu (1965), not Voss (1894).

Herbs, perennial, 50–120 cm tall. Rhizomes short. Stems erect, often purplish, terete, simple or few branched, glabrous. Basal leaves petiolate; petiole narrowly winged; blade spatulate, up to 8 cm; cauline leaves sessile or shortly petiolate, blade obovate-oblong to obovate-lanceolate or elliptic, 3.5–7 × 1.5–2(–3) cm, papery, both surfaces glabrous, base cuneate, margin with glandular denticles, apex obtuse or acute. Racemes terminal, lax, one-side-oriented; bracts similar to leaves, sessile; pedicels compressed, 4–7 mm, puberulent; bracteoles 2 at middle of pedicels. Hypanthium oblong, 3–4 mm, puberulent; calyx lobes linear-lanceolate, 9–12 × ca. 1 mm, margin glandular-denticulate or also ciliate. Corolla pale blue or rose, 24–30 mm; lobes of upper lip slightly ascending, linear, ca. 15 mm, back sparsely villous along midvein; lobes of lower lip spreading, oblong-lanceolate, ca. 8 mm. Filament tube ca. 11 mm, glabrous; anther tube ca. 6 mm, back sparsely villous at apex, lower 2 anthers barbate at top. Capsule oblong, ca. 6 × 4 mm. Seeds ellipsoid. Fl. and fr. Aug–Oct.

• Grassy slopes; 1600–2600 m. Hunan, NW Yunnan (Dali, Heqing, Yangbi).

18. *Lobelia davidii* Franchet, Nouv. Arch. Mus. Hist. Nat., sér.

2, 6: 82. 1883 [“*dauidii*”].

江南山梗菜 *jiang nan shan geng cai*

Lobelia davidii var. *dolichothyrsa* (Diels) F. E. Wimmer; *L. davidii* var. *glaberrima* F. E. Wimmer; *L. davidii* var. *kwangsiensis* (F. E. Wimmer) Y. S. Lian; *L. davidii* var. *sichuanensis* Y. S. Lian; *L. dolichothyrsa* Diels; *L. kwangsiensis* F. E. Wimmer; *L. oligantha* C. Y. Wu; *L. tibetica* W. L. Zheng.

Herbs, perennial, up to 180 cm. Stems erect, simple or branched, usually densely hispidulous or scaberulose. Leaves alternate, lower leaves usually petiolate; petiole winged, up to 4 cm; blade ovate-elliptic to linear-lanceolate, up to 17 × 7 cm, abaxially glabrous or hispidulous, adaxially glabrous, base cuneate, apex acuminate. Racemes terminal, 20–50 cm, inflorescence rachises glabrous to densely hispidulous; bracts ovate-lanceolate to lanceolate, longer than flowers; pedicels 3–5 mm, usually hispidulous, with 1 or 2 minute bracteoles near base. Hypanthium obovoid, ca. 4 mm, rounded at base, sparsely to densely scaberulose; calyx lobes linear-lanceolate, 5–12 × 1–1.5 mm, margin denticulate. Corolla nearly 2-lipped, purple-red or red-purple, 1.1–2.8 cm; upper lobes linear; lower lobes narrowly elliptic or lanceolate-elliptic, glabrous or puberulent, villous below throat. Stamens connate above base; filament tube glabrous or puberulent near anthers; lower 2 anthers barbate at top. Capsule globose, 6–10 in diam. Seeds yellow-brown, slightly compressed, one side thicker than other. Fl. and fr. Aug–Oct.

Forest margins, by streams; below 4000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, S Xizang (Cona, Yadong), Yunnan, Zhejiang [Bhutan, N India, Myanmar, Nepal].

19. *Lobelia erectiuscula* H. Hara, J. Jap. Bot. 40: 328. 1965.

直立山梗菜 *zhi li shan geng cai*

Lobelia erecta J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 28. 1857, not de Vriese (1845).

Perennials, erect, 50–80 cm tall. Stems simple, densely hispidulous. Leaves alternate, lower leaves narrowly elliptic or elliptic-lanceolate, 5–13 × 3–4 cm, base cuneate, margin crenate or irregularly doubly serrate, apex acute or acuminate; petiole 2–6 cm; middle and upper leaves elliptic or ovate, 4–8 × 3–4 cm, base broadly cuneate or rounded, margin obscurely serrate, apex acute; petiole 0.5–1.5 cm, winged. Flowers in a raceme, raceme 10–25 cm; pedicels 2–3 mm, densely hispidulous;

bracts leaflike, narrowly elliptic or lanceolate to linear-elliptic, lower ones longer than but upper ones shorter than corolla. Hypanthium subglobose, ca. 5 mm, scaberulose; calyx lobes linear-lanceolate, 6–8 × 1.5–2 mm, ciliate and denticulate. Corolla purple-blue, 13–19 cm. Filament tube villous at top; 2 anterior anthers barbate at top, other 3 glabrous. Capsule globose-cylindric, 9–12 × 6–8 mm. Seeds pale brown, ellipsoid. Fl. Aug–Sep, fr. Sep.

Quercus or mixed forests; 3000–4000 m. SE Xizang (Cona) [NE India (Sikkim), N Myanmar, Nepal].

20. *Lobelia sessilifolia* Lambert, Trans. Linn. Soc. London 10: 260. 1811.

山梗菜 *shan geng cai*

Lobelia camtschatica Pallas ex Sprengel, nom. illeg. superfl.; *L. salicifolia* Fischer ex Trautvetter (1883), not Sweet (1818); *L. saligna* Fischer.

Herbs, perennial, 20–170 cm tall. Stems simple, glabrous. Leaves alternate, larger at middle part of stem, thickly papery, sessile; blade lanceolate, narrowly oblong, or narrowly elliptic, 1.8–9 × 0.2–2.2 cm, both surfaces glabrous, base rounded, truncate, obtuse, or cuneate, margin serrulate, apex acute or acuminate. Racemes terminal, 8–35-flowered, glabrous; bracts leaflike, lanceolate or narrowly elliptic, shorter than flowers but longer than pedicels; pedicels 5–24 mm, ebracteolate. Hypanthium campanulate, hemispheric, ellipsoid, obovoid, or obconic, 3–7 mm, glabrous; calyx lobes subulate or narrowly triangular, 4.5–12 × 1–3 mm, glabrous, margin entire, revolute. Corolla blue-purple or violet, 2.5–3.7 cm, 2-lipped, outside glabrous, inside villous; upper 2 lobes ascending, spatulate, 10–20 × 1.5–4 mm, equaling or longer than corolla tube; lower lobes elliptic, 10–21 × 2.3–6.5 mm, nearly as long as corolla tube, densely long ciliate. Stamens connate above base; filament tube glabrous; anther tube 4–6 mm, glabrous or villous along upper sutures toward apex; lower 2 anthers barbate at top. Capsule obovoid, broadly ellipsoid, or globose, 7–15 × 5–11.5 mm. Seeds brown-red, oblong or ellipsoid, 1.3–2 mm, terete but winged on one side, finely striate. Fl. and fr. Jul–Oct.

Wet meadows; sea level up to 3400 m. Anhui (Jixi), N Guangxi, Heilongjiang, Hunan (Anjiang), Jilin, Liaoning, Shandong, Sichuan, NW Yunnan, Zhejiang [Japan, Korea, Russia (Far East, Siberia)].

5. *Lobelia* sect. *Speirema* (J. D. Hooker & Thomson) Lammers, J. Bot. Res. Inst. Texas 4: 161. 2010.

紫锤草组 *zi chui cao zu*

Speirema J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 27. 1857.

Plants perennial, 0.3–2 m tall. Stems herbaceous or subshrubby. Flowers solitary in axils of little-reduced or unreduced leaves (rarely supplemented by a terminal 10–25-flowered raceme); pedicels ascending, spreading, sigmoid, or incurved, 1/10–3/4 as long as subtending leaf or bract, commonly ebracteolate. Corolla sub-bilabiate with 2 dorsal lobes and a trifid ventral lip. Anther tube 0.4–1.25 × as long as filament tube; ventral anthers bearded at apex with tufts of white filiform hairs. Fruit a berry, black-purple to violet or greenish, globose or obovoid. Seeds numerous, amber-colored or tan, broadly ellipsoid, subterete to slightly compressed or sometimes angular, small; testa striate-reticulate.

Five species: SE Asia, from NE India to Java; three species (one endemic) in China.

21. *Lobelia fangiana* (F. E. Wimmer) S. Y. Hu, J. Arnold Arb. 61: 90. 1980.

峨嵋紫锤草 *e mei zi chui cao*

Pratia fangiana F. E. Wimmer, Repert. Spec. Nov. Regni Veg. 38: 3. 1935; *Lobelia omeiensis* F. E. Wimmer.

Herbs, perennial, up to 1.5 m tall, simple. Stems erect, terete, sparsely to densely puberulent toward apex. Leaves sessile; blade elliptic, narrowly elliptic, narrowly oblong, or lanceolate, 5.5–16 × 1.2–3 cm, both surfaces glabrous, base cuneate, margin glandular-serrulate or -crenulate, apex acuminate. Flowers solitary in axils of little-reduced or unreduced leaves, and uppermost 10–25 often aggregated into a terminal raceme; pedicels 12–38 mm, densely puberulent. Hypanthium obconic or campanulate, 3–5(–7) mm, puberulent on veins or sometimes glabrous; calyx lobes erect, narrowly triangular or triangular, 3–7 mm, glabrous, margin entire or with 1–3 teeth per side. Corolla red-purple or greenish with lip purple spotted, 18–23 mm, both sides sparsely pubescent; dorsal lobes linear or linear-triangular; ventral lobes lanceolate, acuminate. Filament tube glabrous, ca. 2 × as long as anther tube; anther tube gray, 5–6 mm, glabrous; ventral anthers barbate at apex with white hairs ca. 1 mm or smaller. Berry dry, globose or obovoid, 7–17 mm. Seeds amber-colored, dull, broadly ellipsoid, 0.6–0.7 × 0.3–0.4 mm, subterete. Fl. and fr. Aug–Sep.

• Grassy slopes, forests, moist thickets on slopes and riverbanks; 1700–3000 m. SC Sichuan.

22. *Lobelia montana* Reinwardt ex Blume, Bijdr. 728. 1826.

山紫锤草 shan zi chui cao

Lobelia brevisepala (Y. S. Lian) Lammers; *L. reflexisepala* Lammers; *L. wardii* C. E. C. Fischer; *Pratia brevisepala* Y. S. Lian; *P. montana* (Reinwardt ex Blume) Hasskarl; *P. reflexa* Y. S. Lian; *P. wardii* (C. E. C. Fischer) F. E. Wimmer; *Speirema montanum* (Reinwardt ex Blume) J. D. Hooker & Thomson.

Herbs, perennial, up to 2 m tall. Stems erect, arching, or sprawling, terete, commonly branched from base and sometimes above, upper internodes zigzag, glabrous (rarely sparsely scabrous, or puberulent when young). Leaves petiolate; blade elliptic, ovate, or lanceolate, 3.5–13 × 1.2–4.6 cm, papery, glabrous (rarely puberulent when young, or sparsely scabrous on midrib), base cuneate, obtuse, or rounded, margin glandular-serrulate, -denticulate, or -crenulate, apex caudate or sometimes merely acuminate; petiole 0.3–1.3 cm. Flowers solitary and axillary; pedicels slender, 24–55 mm, glabrous. Hypanthium globose or campanulate (rarely obconic), 3–6 mm, glabrous; calyx lobes spreading, recurved, or rarely reflexed, linear-triangular or linear, 2–14 mm, margin entire. Corolla dark violet to bluish lilac, lip often paler, or striped, margined, or blotched with white, 15–26 mm, outside glabrous, inside villous; dorsal lobes linear; ventral lobes elliptic, apex caudate. Filament tube glabrous, up to 2.5 × as long as anther tube; anther tube light gray, 4.8–7 mm, dorsal surface sparsely shortly pubescent at least toward apex; lower 2 anthers barbate at apex with tufts of white hairs up to 2 mm. Berry violet to black-purple, globose, 6–15 mm. Seeds amber-colored, shiny, broadly ellipsoid, slightly compressed, 0.5–0.8 × 0.3–0.5 mm. Fl. Jul–Nov, fr. Aug–Apr.

Moist ravines, glades, meadows, scrub, forest margins; 1000–4000 m. Xizang, SE Yunnan [Bhutan, India, Indonesia, Malaysia,

Myanmar, Nepal, Vietnam].

23. *Lobelia deleiensis* C. E. C. Fischer, Bull. Misc. Inform. Kew 1940: 297. 1941.

滇紫锤草 dian zi chui cao

Pratia montana (Reinwardt ex Blume) Hasskarl var. *deleiensis* (C. E. C. Fischer) F. E. Wimmer.

Herbs, rhizomatous, up to 2 m tall. Stems erect or arching, often branched from base and sometimes above, glabrous. Leaves petiolate; blade elliptic or lanceolate, 6–14 × 1.4–4.2 cm, papery or somewhat leathery, both surfaces glabrous, base cuneate to obtuse, margin glandular-serrulate, -crenulate, or -denticulate, apex caudate; petiole 0.3–1.8 cm. Flowers solitary and axillary; pedicels slender, 1.6–4.5 cm. Hypanthium campanulate or obovoid, 4–7 mm, glabrous; calyx lobes spreading or recurved, linear or linear-triangular, 5–17 mm, glabrous, entire. Corolla cream-colored or greenish with purple or blue markings on lip, 1.2–1.8 cm, outside glabrous, inside pubescent; dorsal lobes linear or linear-spatulate; ventral lobes narrowly elliptic, apex caudate. Filament tube glabrous or sparsely pubescent, ± equaling anther tube; anther tube cream-colored, 6–8 mm, glabrous or sparsely shortly pubescent toward apex; ventral anthers bearded at apex with tufts of white hairs up to 2 mm. Berry greenish, globose, 8–11 mm. Seeds tan, dull, broadly ellipsoid, slightly compressed, ca. 0.6 × 0.4 mm. Fl. Jul–Nov, fr. Aug–Apr.

Evergreen broad-leaved forests; 1500–2400 m. SW Yunnan [NE India].

