

ADOXACEAE

五福花科 wu fu hua ke

Yang Qiner (杨亲二)¹, Hong Deyuan (洪德元)²; Valéry Malécot³, David E. Boufford⁴

Shrubs, less frequently perennial herbs, or small trees. Leaves opposite, simple or compound: ternate, biternate, ternate-pinnate, biternate-pinnate, or odd-pinnate. Inflorescences terminal panicles or umbellate, spicate, or capitate cymes. Flowers bisexual; calyx and corolla both connate, (3–)5-merous. Stamens 5 (*Sambucus*, *Viburnum*) or 5, 4, or 3 (*Adoxa*, *Sinadoxa*), alternate corolla lobes, inserted on corolla tube; filaments cleft into 2 semi-stamens (in *Adoxa*, *Sinadoxa*); anthers 1-celled, peltate, extrorse, longitudinally dehiscent; staminodes 5, 4, or 3, in inner whorl, opposite corolla lobes. Ovary semi-inferior to inferior, 1- or 3–5-loculed; styles 5, 4, or 3, connate or free, or absent; stigmas capitate or 2- or 3-fid. Fruit drupes; seeds 1 or 3–5.

Four genera and ca. 220 species: mainly in the N Hemisphere; four genera (one endemic) and 81 species (49 endemic) in China.

Chiu Lien-ching. 1986. Adoxaceae. In: Lu An-ming & Chen Shu-kun, eds., Fl. Reipubl. Popularis Sin. 73(1): 1–5; Hu Jia-qi & Hsu Ping-sheng. 1988. *Sambucus* and *Viburnum*. In: Hsu Ping-sheng, ed., Fl. Reipubl. Popularis Sin. 72: 4–104.

- 1a. Leaves simple; ovary 1-loculed; drupes 1-seeded; shrubs or small trees 1. *Viburnum*
- 1b. Leaves compound; ovary 3–5-loculed; drupes usually 3–5-seeded; shrubs, perennial herbs, or small trees.
 - 2a. Shrubs or small trees, rarely coarse perennial herbs more than 0.5 m tall; stamens 5, undivided 2. *Sambucus*
 - 2b. Perennial herbs less than 30 cm tall; fertile stamens 5, 4, or 3, cleft into 2 semi-stamens, anthers 2-celled.
 - 3a. Basal and cauline leaves pinnately compound; inflorescence of several condensed cymes in an interrupted spike 3. *Sinadoxa*
 - 3b. Basal leaves simple, 3-cleft, or ternately or biternately compound; cauline leaves simple and 3-cleft or ternate; inflorescences condensed capitate, several flowered cymes or racemelike 4. *Adoxa*

1. VIBURNUM Linnaeus, Sp. Pl. 1: 267. 1753.

荚蒾属 jia mi shu

Yang Qiner (杨亲二); Valéry Malécot

Actinotimus Oliver, p.p.

Shrubs or small trees, deciduous or sometimes evergreen. Branchlets glabrous or pubescent with simple, fascicled or stellate hairs, rarely lepidote hairs; winter buds perulate or naked. Leaves usually opposite, rarely ternate, simple, petiolate, entire, dentate, or 3–5-lobed; stipules usually small or absent. Inflorescence terminal or at apices of short branches with 1- or 2-jugate leaves, compound, corymbose- or paniculate-cymose. Flowers small, actinomorphic, but sometimes marginal flowers of inflorescence enlarged, somewhat zygomorphic and sterile, rarely entire inflorescence consisting of such sterile flowers; bracts and bracteoles usually small and caducous. Calyx small, 5-toothed. Corolla white, rarely reddish, pinkish, or greenish, rotate, campanulate, hypocrateriform, or tubular, 5-lobed. Stamens 5; filaments filiform; anthers medifixed, longitudinally dehiscent, introrse. Ovary semi-inferior, 3-loculed, 1 locule fertile with a single ovule, and 2 sterile; styles short; stigmas slightly capitate to 3-lobed. Fruit a 1-seeded drupe with a ± compressed pyrene, red, purplish, black, or rarely yellow when mature.

About 200 species: mostly in temperate and subtropical regions of Asia and South America; 73 species (45 endemic) in China.

We were unable to check the original material of *Viburnum nervosum* var. *hassianum* Loesener (Beih. Bot. Centralbl., Abt. 2, 37: 185. 1920; Shandong: *Forstamt* 114, 596; *Krug* 236, 561, 305; *Zimmermann* 531). The loci typici are temples where the plant was cultivated (“Kap Yatau: angepflanz in der Tempelanlagen von Huayenan und Taitschingkung”) and are clearly outside the known distribution of *V. nervosum*; additionally, the provided description is quite vague (“a typo indumento parciore recedens”), while the phenological information provided (“mit länglichen Früchten im Mai”) does not match the known phenology of *V. nervosum*.

Viburnum wrightii Miquel (Ann. Mus. Bot. Lugduno-Batavi 2: 267. 1866) was recorded in FRPS (72: 88. 1988) as occurring in Anhui and Zhejiang, but we could not satisfactorily identify this species. Material from Anhui (*Feng* 1046, LBG – sheet no. 00081428) may belong to *V. betulifolium*, as well as material from Jiangxi (*Xiang* 8234, LBG – sheet no. 0029514) and that reported in Fl. Zhejiang (6: 150. 1986).

Viburnum chinense Hooker & Arnott (Bot. Beechey Voy. 190. 1833, not *V. sinense* Zeyher ex Colla, 1824) is a synonym of *Premna integrifolia* Linnaeus (Lamiaceae), according to FRPS (72: 104. 1988), which is treated in Fl. China (17:26. 1994) as a synonym of *P. serratifolia* Linnaeus. *Viburnum dielsii* H. Léveillé (Repert. Spec. Nov. Regni Veg. 9: 443. 1911, not Graebner, 1901) is a synonym of *Callicarpa rubella* Lindley var. *rubella* (see Fl. China 17: 13. 1994). *Viburnum versatile* R. H. Miao, W. B. Liao & Q. Y. Sun (Acta Sci. Nat. Univ. Sunyatseni 38(6): 129. 1999) apparently belongs to the Rubiaceae (Malécot, Hommes & Pl. 49: 22–27. 2004). *Actinotimus* was based on a mixed gathering comprising an inflorescence of *Viburnum* inserted on the terminal bud of a leafy shoot of *Aesculus chinensis* var. *wilsonii* (Rehder) Turland & N. H. Xia (see Fl. China 12: 3. 2007).

¹ Herbarium, South China Botanical Garden, Chinese Academy of Sciences, 723 Xingke Lu, Tianhe Qu, Guangzhou, Guangdong 510650, People’s Republic of China.

² State Key Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences, 20 Nanxincun, Xiangshan, Beijing 100093, People’s Republic of China.

³ Département de Sciences Biologiques, Agrocampus-Ouest – Centre d’Angers, Institut National d’Horticulture et de Paysage, 2 rue Le Nôtre, F-49045 Angers Cedex 01, France.

⁴ Harvard University Herbaria, 22 Divinity Avenue, Cambridge, Massachusetts 02138-2094, U.S.A.

- 1a. Inflorescence a panicle, sometimes densely clustered, rarely a corymblike panicle, rays opposite, decussate, first node of inflorescence with 2 rays; pyrenes with a deep ventral groove (if first node of panicle-like inflorescence with 4–6 rays and pyrenes with 2 deep dorsal grooves and 1 shallow ventral groove then see *V. pyramidatum*) (4. *V.* sect. *Solenotinus*).
- 2a. Corolla rotate, lobes as long as or longer than tube.
- 3a. Leaves papery, abaxially with red-brown glandular dots; inflorescence a corymblike panicle 38. *V. yunnanense*
- 3b. Leaves thickly papery to leathery, abaxially without red-brown glandular dots; inflorescence a corymblike or pyramidal panicle.
- 4a. Panicle corymblike 24. *V. corymbiflorum*
- 4b. Panicle pyramidal.
- 5a. Lateral veins at least partly directly ending in teeth; inflorescence axes glabrous or subglabrous; calyx reddish 28. *V. henryi*
- 5b. Lateral veins arched and anastomosing near margin, not directly ending in teeth; inflorescence axes glabrous or stellate-pubescent; calyx green.
- 6a. Leaves thickly papery; pyrenes ca. 4 × 3.5 mm 36. *V. tengyuehense*
- 6b. Leaves leathery; pyrenes 7–8 × 4–5 mm.
- 7a. Calyx and corolla glabrous; flowers fragrant; pyrenes ovoid or ovoid-ellipsoid, apex rounded 30. *V. odoratissimum*
- 7b. Calyx and corolla, or at least calyx, stellate-pubescent outside; flowers not fragrant; pyrenes ovoid or narrowly ovoid, apex acuminate 21. *V. brachybotryum*
- 2b. Corolla funnelliform or hypocrateriform, very rarely rotate-campanulate, lobes shorter than tube.
- 8a. Stamens inserted at or above middle of corolla tube, generally at different heights; flowers opening before leaves; leaves papery.
- 9a. Leaves abaxially slightly pubescent on veins, veins 5–7-jugate, apex acute; inflorescence a panicle, at apices of short branchlets with young leaves; bracts ciliate, subglabrous 26. *V. farreri*
- 9b. Leaves abaxially densely pubescent, veins 6–10-jugate, apex acuminate; inflorescence densely clustered at apices of leafless short branchlets; bracts densely silvery sericeous initially 27. *V. grandiflorum*
- 8b. Stamens inserted at apex of corolla tube; flowers opening after leaves; leaves papery to leathery.
- 10a. Leaves abaxially with sparse red-brown glandular dots, orbicular or broadly elliptic 34. *V. subalpinum*
- 10b. Leaves abaxially without red-brown glandular dots, broadly elliptic to linear.
- 11a. Both surfaces of leaf blade glabrous.
- 12a. Leaf margin remotely crenulate except at base, apex acute; corolla tube ca. 3.5 mm 32. *V. omeiense*
- 12b. Leaf margin remotely and shallowly serrate above base, apex abruptly narrowed or acuminate to long acuminate, shortly or long caudate; corolla tube 6–8 mm.
- 13a. Leaves subleathery to leathery, rarely thickly papery, midvein adaxially obviously raised, petiole purple-red; inflorescence peduncle (1.2–)2.5–7 cm; anthers purple-reddish; fruit 6–7 mm 31. *V. oliganthum*
- 13b. Leaves papery, midvein adaxially not obviously raised, petiole green; inflorescence peduncle (3.5–)6–9 cm; anthers yellow-whitish; fruit 8–10 mm 29. *V. longipedunculatum*
- 11b. Leaf blade abaxially stellate-pubescent in axils of veins at least, sometimes also along veins, adaxially glabrous or sparsely pubescent.
- 14a. Petiole glabrous, 2.5–5 cm; leaf blade 14–20 cm 37. *V. trabeculosum*
- 14b. Petiole stellate-pubescent, sparsely stellate-pubescent, or glabrous, less than 2.5 cm; leaf blade 2–14 cm.
- 15a. Petiole less than 10 mm.
- 16a. Inflorescence 4–5 × 3–4 cm, rays sparsely stellate-pubescent, immediately glabrescent; anthers purple-brownish; plant deciduous 22. *V. brevitubum*
- 16b. Inflorescence ca. 3 × 2 cm, rays stellate-pubescent; anthers yellow-whitish; plant evergreen 35. *V. taitoense*
- 15b. Petiole 10–25 mm.
- 17a. Lateral veins mostly anastomosing near margin; leaves subleathery 23. *V. chingii*
- 17b. Lateral veins mostly directly ending in teeth; leaves papery.
- 18a. Corolla hypocrateriform, tube 5–6(–8) mm; stamens slightly exceeding corolla tube; flowers fragrant; leaf petiole purple 25. *V. erubescens*
- 18b. Corolla rotate-campanulate, tube ca. 3 mm; stamens obviously exceeding corolla tube; flowers not fragrant; leaf petiole green or reddish 33. *V. shweliense*
- 1b. Inflorescence compound and umbel-like, rarely pyramidal panicle consisting of umbels; rays whorled, first node of inflorescence with 4–8 rays, (if first node of corymblike inflorescence with 2 rays and pyrenes with a deep ventral groove then see *V. yunnanense* and *V. corymbiflorum*); pyrenes with 1 shallow ventral, or with both ventral and dorsal grooves.

- 19a. Winter buds naked; young branchlets and young leaves densely stellate-tomentose, fruit maturing from green, to red then black.
- 20a. Stipules 2 subulate, sometimes absent; inflorescence not pedunculate; pyrenes with 1 shallow dorsal groove and 1 deep ventral groove (2. *V.* sect. *Pseudotimus*).
- 21a. Inflorescence without large sterile flowers, inflorescence rays and calyx tube with small red-brownish glands; anthers purple; style exceeding calyx lobes 14. *V. nervosum*
- 21b. Inflorescence with large sterile flowers on margin, inflorescence rays and calyx tube without small red-brownish glands; anthers yellow; style not exceeding calyx lobes 15. *V. sympodiale*
- 20b. Stipules always absent; inflorescence pedunculate; pyrenes usually with 2 dorsal grooves and (1–)3 ventral grooves (1. *V.* sect. *Viburnum*).
- 22a. Shrubs or small trees, evergreen or semievergreen; leaf margin entire or indistinctly dentate, rarely serrulate; lateral veins often anastomosing near margin, not directly ending in teeth.
- 23a. Calyx tube glabrous; leaves 2–6(–8.5) cm, veins adaxially not impressed.
- 24a. Corolla campanulate-funnelform, lobes shorter than tube; old leaves abaxially evenly stellate-pubescent, hairs not totally covering leaf surface; flowers fragrant; leaf lateral veins 3 or 4 pairs 5. *V. congestum*
- 24b. Corolla rotate, lobes as long as or slightly longer than tube; stellate hairs totally covering abaxial surfaces of old leaves; flowers not fragrant; leaf lateral veins 5 or 6 pairs 13. *V. utile*
- 23b. Calyx tube ± stellate-pubescent; leaves 5–25 cm.
- 25a. Leaf blade adaxially densely stellate-pubescent, margin serrulate, apex acute to shortly acuminate, rarely obtuse to rounded 1. *V. buddleifolium*
- 25b. Leaf blade adaxially glabrous or glabrescent, sparsely stellate-pubescent when young particularly on midvein and lateral veins, margin entire or rarely inconspicuously dentate, apex slightly acute or obtuse.
- 26a. Leaves lanceolate-oblong to narrowly oblong, usually 5–15 × 1.5–4.5 cm, thickly papery when old; lateral veins and veinlets adaxially slightly impressed, not obviously rugose; petioles 1–2 cm; corolla outside sparsely stellate-pubescent; flowers on rays of 2nd order 4. *V. chinshanense*
- 26b. Leaves ovate-lanceolate to ovate-oblong, usually 8–25 × 2.5–8 cm, leathery; midvein, lateral veins, and veinlets adaxially deeply impressed, strongly rugose; petioles 1.5–4 cm; corolla outside subglabrous; flowers on rays of 3rd order 10. *V. rhytidophyllum*
- 22b. Leaves deciduous in winter, margin often dentate.
- 27a. Lateral veins directly ending in teeth, not anastomosing, or at least mostly so.
- 28a. Calyx tube glabrous; corolla lobes shorter than tube; stamens shorter than corolla; style exceeding calyx lobes; leaf margin serrulate or entire 6. *V. cotinifolium*
- 28b. Calyx tube stellate-tomentose; corolla lobes nearly as long as or less than 2 × as long as tube; stamens slightly exceeding corolla lobes; style not exceeding calyx lobes; leaf margin dentate 7. *V. glomeratum*
- 27b. Lateral veins anastomosing near margin, not directly ending in teeth, or at least mostly so.
- 29a. Inflorescence with large sterile radiant flowers 8. *V. macrocephalum*
- 29b. Inflorescence with only fertile flowers, without large sterile radiant flowers.
- 30a. Corolla rotate, tube shorter than lobes.
- 31a. Branchlets of previous year gray-brownish; leaves apically obtuse or rounded, sometimes emarginate or slightly acute; flowers mostly on rays of 3rd and 4th orders, flowers appearing with leaves; pyrenes dorsally raised or indistinctly 2-grooved 11. *V. schensianum*
- 31b. Branchlets of previous year yellow-white; leaves apically usually acute, rarely slightly obtuse; flowers mostly on rays of 2nd order, flowers appearing after leaves; pyrenes with 2 dorsal grooves 2. *V. burejaeticum*
- 30b. Corolla tubular-campanulate, rarely hypocateriform, tube obviously longer than lobes.
- 32a. Corolla hypocateriform 3. *V. carlesii*
- 32b. Corolla tubular-campanulate.
- 33a. Leaves broadly ovate or elliptic to rarely suborbicular, 2.5–5(–6) cm, apex acute or obtuse; petioles 4–10 mm; flowers usually on rays of 1st order; corolla yellow-white 9. *V. mongolicum*
- 33b. Leaves ovate-lanceolate or ovate-oblong, 7–15(–18) cm, apex acuminate to narrowly caudate; petioles 1–4 cm; flowers on rays from 3rd to 4th order; corolla purple outside 12. *V. urceolatum*
- 19b. Winter buds with 1 or 2 (very rarely 3 or more) pairs of scales (rarely winter bud naked, and if such, buds, young branchlets, abaxial surfaces of leaves, inflorescences, calyces, corollas, and fruit with lepidote scales, see *V. punctatum*); young branchlets and young leaves stellate-pubescent, bristlelike hairy, or glabrous, fruit maturing from green to red (*V.* sect. *Odontotimus* and *V.* sect. *Opulus*) or from green to blue-black (*V.* sect. *Timus* and *V.* sect. *Megalotimus* p.p.), rarely maturing from green, to red then black (*V.* sect. *Tomentosa* and *V.* sect. *Megalotimus* p.p.).

- 34a. Pyrenes globose, ovoid, or ellipsoid, with or without a shallow and narrow ventral groove, absolutely not compressed; fruit blue-black or turning from blue to black; leaves evergreen, glabrous or subglabrous (3. *V.* sect. *Timus*).
- 35a. Leaves pinnateveined 16. *V. atrocyanum*
- 35b. Leaves triplinerved.
- 36a. Leaves apically obtuse to rounded, 2–6(–7.5) cm, margin entire; inflorescence peduncle ca. 1 cm 20. *V. triplinerve*
- 36b. Leaves apically acute to acuminate, margin entire or remotely serrate; inflorescence peduncle 1–3.5(–4) cm.
- 37a. Corolla white; old leaves thickly leathery; veinlets adaxially deeply impressed, obviously rugose; anthers red-blackish 18. *V. davidii*
- 37b. Corolla greenish white or yellowish green; old leaves leathery; veinlets adaxially sometimes slightly impressed, not obviously rugose; anthers yellow.
- 38a. Shrubs 1–2 m tall; inflorescence 2–7 cm in diam., glabrous; leaves 3–9(–11) cm, margin usually remotely serrate 19. *V. propinquum*
- 38b. Shrubs or small trees 3–6 m tall; inflorescence 6–15 cm in diam.; leaves 6–13(–18) cm, margin entire or occasionally remotely serrate toward apex 17. *V. cinnamomifolium*
- 34b. Pyrenes not as above; if ellipsoid then pyrenes with a deep ventral groove wide in upper part yet narrow in lower part; fruit red when mature, or turning from red to black, rarely yellow.
- 39a. Winter buds surrounded by 2 pairs of connate scales; leaves 3–5-lobed; petiolar apex or leaf base adaxially with 1–4 conspicuous glands (8. *V.* sect. *Opulus*).
- 40a. Inflorescence without large sterile flowers; leaves 3–5-lobed; petioles not longer than 2.5 cm 72. *V. koreanum*
- 40b. Inflorescence with large sterile flowers on margin; leaves usually 3-lobed or those in upper part of branchlets undivided; petioles 1–5 cm 73. *V. opulus*
- 39b. Winter buds with 1 or 2 pairs of separate scales; glands absent at petiolar apex or leaf base adaxially, but abaxially sometimes with circular glands on both sides of midvein near base.
- 41a. Leaves palmately 3–5-lobed, palmatinerved (7. *V.* sect. *Odontotinus*, p.p.) 62. *V. kansuense*
- 41b. Leaves not divided or 2- or 3-lobed, mostly pinnateveined, sometimes 2 lateral veins at base appearing triplinerved.
- 42a. Inflorescence with large sterile flowers; fruit maturing from green to red then black; pyrenes with 1 ventral groove broad in upper part yet narrow in lower part (5. *V.* sect. *Tomentosa*).
- 43a. Leaves with more than 10 pairs of lateral veins; peduncle with 6–8 rays; inflorescences at apices of short lateral branches 40. *V. plicatum*
- 43b. Leaves with 5–7(–9) pairs of lateral veins; peduncle usually with 5 rays; inflorescence terminal 39. *V. hanceanum*
- 42b. Inflorescence without large sterile flowers; fruit maturing from green to red, rarely to black (if so see *V. cylindricum*, *V. lutescens*, and *V. punctatum*); pyrenes usually compressed, usually with shallow ventral and dorsal grooves.
- 44a. Shrubs or small trees evergreen, rarely deciduous (if so see *V. ternatum*); stipules usually absent (but present in *V. ternatum* and *V. inopinatum*); winter buds with a pair of separate scales, very rarely naked (if so see *V. punctatum*) (6. *V.* sect. *Megalotinus*).
- 45a. Winter buds naked; winter buds, abaxial leaf surfaces, inflorescences, and outside of corollas with lepidote scales 47. *V. punctatum*
- 45b. Winter buds 2-perulate; plant not lepidote.
- 46a. Lateral veins totally or at least partly ending in teeth; inflorescence at apices of lateral short branchlets with 1-jugate leaves.
- 47a. Young branchlets, petioles, and inflorescences yellow-brown stellate-tomentose; first node of inflorescence with 6 or 7 rays 41. *V. amplifolium*
- 47b. Plant glabrous throughout; first node of inflorescence with 4 or 5 rays 44. *V. laterale*
- 46b. Lateral veins arched and anastomosing near margin, not directly ending in teeth; inflorescences at apices of branchlets with 1 to several pairs of leaves.
- 48a. Corolla campanulate; lobes short, erect; leaves abaxially with reddish or yellow glandular dots 42. *V. cylindricum*
- 48b. Corolla rotate.
- 49a. Leaf margin serrate, or sometimes serrate except at base, base not glandular spotted; stamens slightly exceeding corolla, filaments not folded in bud.
- 50a. Branchlets and abaxial leaf surfaces sparsely stellate-pubescent, glabrescent; plant elsewhere subglabrous; leaves leathery; inflorescence a compound umbel-like or panicle-like cyme, fragrant 46. *V. lutescens*

- 50b. Branchlets, abaxial leaf surfaces, petioles, peduncles, pedicels, and calyces yellow-brown stellate-tomentose; leaves papery; inflorescence a pyramidal panicle composed of 2–4 layers of umbels, not fragrant 48. *V. pyramidatum*
- 49b. Leaf margins entire or sometimes slightly dentate at apex, base often glandular spotted on midvein; stamens obviously exceeding corolla, filaments folded in bud.
- 51a. Leaves often whorled, 3 per whorl; stipules 2, persistent; inflorescence peduncle nearly absent 49. *V. ternatum*
- 51b. Leaves opposite; stipules absent or 2, caducous; inflorescence peduncle (1–)1.5–3 cm, rarely absent.
- 52a. Leaves pubescent or only so on veins, papery; calyx tube glabrous 45. *V. leiocarpum*
- 52b. Leaves thickly stellate-tomentose, leathery; calyx tube stellate-tomentose 43. *V. inopinatum*
- 44b. Shrubs, rarely small trees, deciduous, rarely evergreen; stipules sometimes present; winter buds with 2 pairs of separate scales (*V. sect. Odontotinus*, p.p.).
- 53a. Leaf blade oblong-lanceolate, lanceolate, or linear-lanceolate, 9–19(–27) × 1–4 cm, irregularly or remotely serrate, sometimes subentire; pyrenes compressed, subquadrangular or slightly rectangular.
- 54a. Young branchlets, leaves, petioles, and inflorescence axes glabrous; leaves with ca. 6 pairs of lateral veins 71. *V. squamulosum*
- 54b. Young branchlets, veins on abaxial leaf surfaces, petioles, and inflorescence axes stellate-pubescent; leaves with 7–12 pairs of lateral veins 63. *V. lancifolium*
- 53b. Leaf blade orbicular, ovate to elliptic-oblong, obovate, or rhombic-ovate, rarely broadly oblong-lanceolate, generally less than 10 cm, margin dentate, serrate, denticulate, or entire, if more than 10 cm then more than 4 cm wide and with margin dentate, or less than 4 cm wide and with margin entire (see *V. integrifolium*); pyrenes obovoid, ovoid, ellipsoid-ovoid, or ellipsoid.
- 55a. Leaf margin entire, possibly remotely serrate or remotely dentate above middle part.
- 56a. Shrubs deciduous; inflorescence peduncle more than 2 cm.
- 57a. Leaves glabrous on both sides, margin entire, apex abruptly narrowed and long caudate, petiole green; style not exceeding calyx lobes 61. *V. integrifolium*
- 57b. Leaves stellate-pubescent at least abaxially, margin subentire, apex acute to shortly acuminate, petiole reddish purple; style exceeding calyx lobes 56. *V. foetidum*
- 56b. Shrubs evergreen; inflorescence peduncle less than 2 cm or nearly absent.
- 58a. Leaves abaxially with both golden yellow glandular dots and red-brown to black-brown glandular dots, adaxially usually not nigrescent when dry 51. *V. chunii*
- 58b. Leaves with black or brown glandular dots, nigrescent when dry.
- 59a. Calyx tube stellate-pubescent; leaves subleathery; fruit acute at apex 59. *V. hainanense*
- 59b. Calyx tube glabrous; leaves leathery; fruit rounded at apex 69. *V. sempervirens*
- 55b. Leaf margin dentate, serrate, or denticulate, sometimes only so above 1/3 from base.
- 60a. Leaves with 2–4 pairs of lateral veins, basal pair often appearing triplinerved.
- 61a. Leaf blade 0.8–3 cm, apex rounded or slightly acute; inflorescence ca. 2.5 cm in diam., peduncles ca. 5 mm; pyrenes with 1 ventral groove 68. *V. parvifolium*
- 61b. Leaf blade 4–10 cm, apex acute to shortly acuminate; inflorescence 5–8 cm in diam., peduncles 2–5 cm; pyrenes with 3 ventral grooves 56. *V. foetidum*
- 60b. Leaves with more than 5 pairs of pinnate lateral veins.
- 62a. Corolla outside glabrous or subglabrous, very rarely hairy in bud but later glabrescent (cf. *V. betulifolium*).
- 63a. Inflorescence or infructescence nodding; leaves nigrescent or slightly pale black when dry 70. *V. setigerum*
- 63b. Inflorescence or infructescence not nodding; leaves not nigrescent when dry.
- 64a. Inflorescence peduncles (5–)6–10(–12.5) cm 60. *V. hengshanicum*
- 64b. Inflorescence peduncles shorter than 5 cm.
- 65a. Petioles more than 1 cm; inflorescence 4–12 cm in diam.
- 66a. Stipules caducous, or absent; first node of inflorescence usually with 5 rays; flowers on rays of 2nd and 3rd orders; fruit dark purple-red, maturing black, ellipsoid; branchlet of current year grayish black 66. *V. melanocarpum*
- 66b. Stipules persistent, often present; first node of inflorescence usually with 7 rays; flowers on rays from 3rd to 5th orders; fruit red, globose; branchlet of current year purple-brown 50. *V. betulifolium*

- 65b. Petiole less than 15 mm, inflorescence less than 4 cm in diam.
 67a. Stipules absent, petiole 5–15 mm, leaf blade ovate, apex caudate 58. *V. formosanum*
 67b. Stipules present or absent, petiole 3–5 mm, leaf blade ovate-lanceolate, ovate-oblong, narrowly ovate, elliptic, or oblong-lanceolate, apex acuminate or acute 55. *V. erosum*
- 62b. Corolla sparsely or densely stellate-pubescent.
 68a. Leaves abaxially with yellow or yellowish or nearly colorless transparent glandular dots.
 69a. Petiole 1–3 cm, stellate pubescent or simple hairs less than 1 mm; calyx tube stellate-pubescent, flowers fragrant; plant 2.5–5 m tall 54. *V. dilatatum*
 69b. Petiole 0.5–1 cm, densely yellowish brown bristlelike hairy; calyx tube with simple hairs, flowers not fragrant; plant 1–2 m tall 52. *V. corylifolium*
- 68b. Leaves abaxially without glandular dots.
 70a. Leaves adaxially with transparent or dispersed red-brown glandular dots.
 71a. Leaf blade abaxially densely stellate-pubescent, adaxially with dispersed red-brown glandular dots; inflorescence peduncle 1–3.5 cm or very rarely nearly absent; pyrenes compressed, ovoid, ca. 6 × 4 mm, with 1 dorsal groove and 2 ventral grooves 57. *V. fordiae*
 71b. Leaf blade abaxially sparsely stellate-pubescent or forklike pubescent, adaxially with transparent glandular dots; inflorescence peduncle usually very short or nearly absent, very rarely to 1.5 cm; pyrenes very compressed, ovoid, 4–5 × 3–4 mm, with 3 shallow dorsal grooves and 2 shallow ventral grooves 65. *V. luzonicum*
- 70b. Leaves adaxially without glandular dots.
 72a. Leaf blade abaxially glabrous except midvein and lateral veins yellow-brown bristlelike hairy; lateral veins 8–12-jugate 53. *V. dalzielii*
 72b. Leaf blade abaxially stellate-pubescent, or only so in vein axils; lateral veins 5–9-jugate.
 73a. Styles very short, shorter than calyx lobes; corolla lobes nearly as long as tube; stamens shorter than corolla; pyrenes 4–6 mm; leaf margin serrate 67. *V. mullaha*
 73b. Styles exceeding calyx lobes; corolla lobes longer than tube; stamens equaling or slightly exceeding corolla; pyrenes 6–7.5 mm; leaf margin crenate 64. *V. longiradiatum*

1. *Viburnum* sect. *Viburnum*

裸芽组 *luo ya zu*

Winter buds naked. Inflorescence a compound umbel-like cyme, without large sterile radiant flowers, pedunculate. Corolla rotate, hypocrateriform or tubular. Fruit initially turning red, maturing black; pyrenes with 2 dorsal grooves and 3 ventral grooves; albumen solid.

About 20 species: mostly in temperate Asia and Europe; 13 species (seven endemic) in China.

This section was divided into three subsections by H. Hara (Ginkgoana 5: 204–213. 1983): *Viburnum* subsect. *Solenolantana* (Nakai) H. Hara for *V. carlesii*, *V.* subsect. *Urceolata* Nakai for *V. urceolatum*, and *V.* subsect. *Viburnum* for the remaining species. Recent phylogenetic work shows that *V.* subsect. *Urceolata* may be separated from the remainder of *V.* sect. *Viburnum*. *Viburnum* subsect. *Lantana* and *V.* subsect. *Solenolantana* form a monophyletic group, and the recognition of *V.* subsect. *Solenolantana* makes *V.* subsect. *Lantana* paraphyletic.

1. *Viburnum buddleifolium* C. H. Wright, Gard. Chron. 33: 257. 1903.

醉鱼草状荚蒾 *zui yu cao zhuang jia mi*

Shrubs, semievergreen, to 5 m tall. Bark gray-brownish. Branchlets of current year whitish stellate-tomentose; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, whitish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–2(–4) cm, gray-whitish or whitish stellate-pubescent; leaf blade whitish green when young, lanceolate or lanceolate-oblong, rarely ovate-lanceolate, 9–13(–18) × 4–5(–7.5) cm, papery, abaxially gray-whitish stellate-pubescent, adaxially densely stel-

late-pubescent, midvein raised abaxially, lateral veins 7–9-jugate, pinnate, arched, branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised or inconspicuous abaxially, inconspicuous adaxially, not lobed, base rounded, frequently unequal, rarely cordate, without glands, margin serrulate, apex acute to shortly acuminate, rarely obtuse to rounded. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 9–12 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, gray-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 1–3 cm; bracts caducous, leaflike, green, linear-lanceolate, stellate-pubescent; bracteoles scalelike. Flowers on rays of 3rd order, not fragrant, subsessile or shortly pedicellate. Calyx greenish; tube tubular-campanulate, 2–3 mm,

gray-whitish stellate-pubescent; lobes broadly triangular-ovate, very small, 0.5–1 mm, stellate-tomentose, apex obtuse, ciliate. Corolla white, rotate, ca. 7 mm in diam., outside sparsely stellate-hairy; tube 3–4 mm; lobes spreading, orbicular-ovate, 2–3 mm, equaling tube, apex rounded, margin entire. Stamens slightly exceeding corolla lobes, inserted near base of corolla tube; filaments ca. 6 mm; anthers yellow, broadly elliptic, ca. 1 mm. Styles slightly exceeding or subequaling calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, oblong, ca. 9 × 7 mm, base rounded, apex rounded, glabrous or sparsely stellate-pubescent; pyrenes compressed, oblong, 6–8 × 5–6 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. Apr–May, fr. Jul. $2n = 20^*$.

- Forests; 1000–2000 m. W Hubei.

2. *Viburnum burejaeticum* Regel & Herder, *Gartenflora* 11: 407. 1862.

修枝荚蒾 xiu zhi jia mi

Viburnum arcuatum Komarov; *V. burejanum* Herder; *V. davuricum* Maximowicz (1859), not Pallas (1789).

Shrubs, deciduous, to 5 m tall. Bark dark grayish. Branchlets of current year gray-whitish stellate-tomentose; branchlets of previous year yellow-whitish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, gray-whitish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 5–12 mm, gray-whitish stellate-tomentose; leaf blade greenish white when young, broadly ovate to elliptic-obovate, (3–)4–6(–10) × 2–3 cm, papery, abaxially at first densely stellate pubescent but later only midvein and lateral veins hairy, adaxially sparsely stellate-pubescent or glabrous at first, later stellate-pubescent on midvein and lateral veins only, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, branched, anastomosing near margin, or some ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised or inconspicuous abaxially, inconspicuous adaxially, not lobed, base obtuse or rounded, both sides often unequal, without glands, margin serrulate, apex acute, rarely slightly obtuse. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 4–5 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, gray-whitish stellate-tomentose, without large sterile radiant flowers; peduncle to 2 cm or nearly absent; bracts caducous, leaflike, green, linear to linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers mostly on rays of 2nd order, not fragrant, sessile. Calyx greenish; tube oblong-tubular, ca. 4 mm, glabrous or rarely sparsely stellate-pubescent; lobes triangular, small, 1–2 mm, glabrous or with few stellate ciliate hairs, apex obtuse. Corolla white, rotate, ca. 7 mm in diam., glabrous; tube 1–2 mm; lobes spreading, broadly ovate, 2.5–3 mm, nearly 2 × as long as tube, apex rounded, margin entire. Stamens slightly exceeding corolla lobes, inserted near base of corolla tube; filaments ca. 3 mm; anthers yellow, broadly ellipsoid, ca. 1 mm. Styles taller than calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, ellipsoid to oblong, ca. 1 cm, base rounded, apex rounded, glabrous or sparsely stellate pubescent; pyrenes compressed, oblong, 9–10 × 4–5 mm, with

2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. May–Jun, fr. Aug–Sep.

Needle-leaved and broad-leaved mixed forests; 600–1400 m. Heilongjiang, Jilin, Liaoning [N Korea, Mongolia, Russia].

3. *Viburnum carlesii* Hemsley var. ***bitchiuense*** (Makino) Nakai, *Bot. Mag. (Tokyo)* 28: 295. 1914.

备中英蒾 bei zhong jia mi

Viburnum bitchiuense Makino, *Bot. Mag. (Tokyo)* 16: 156. 1902.

Shrubs, deciduous, to 3 m tall. Bark gray-brownish. Branchlets of current year grayish stellate-pubescent; branchlets of previous year grayish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, grayish stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 4–12 mm, grayish stellate-pubescent; leaf blade greenish white when young, ovate to elliptic-ovate, 4–10 × 2–6 cm, papery, abaxially stellate-pubescent particularly along veins, adaxially sparsely simple hairy and stellate-pubescent, glabrescent, midvein raised abaxially, lateral veins 4- or 5-jugate, pinnate, slightly arched, branched, anastomosing near margin, or rarely ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base rounded to slightly cordate, without glands, margin denticulate, apex acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, ca. 6 cm in diam.; rays whorled; first node of inflorescence usually with 4–7 rays, dense, gray-whitish stellate-pubescent, without large sterile radiant flowers; peduncle 1–4 cm; bracts caducous, leaflike, green, ovate to elliptic, stellate-pubescent; bracteoles scalelike. Flowers on rays of 2nd or 3rd order, fragrant, subsessile or shortly pedicellate. Calyx greenish or reddish; tube oblong-tubular, 0.7–1 mm, glabrous; lobes ovate, very small, 0.5–1 mm, glabrous, apex obtuse. Corolla pinkish, hypocrateriform, ca. 1 cm in diam., glabrous; tube 8–10 mm; lobes spreading, broadly ovate, 5–6 × 3–5 mm, apex rounded, margin entire. Stamens inserted at or below middle of corolla tube, ca. 5 mm; filaments 2–4 mm; anthers yellow, oblong, ca. 2 mm. Styles nearly as long as calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, elliptic, 1.1–1.4 cm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, 6–8 × ca. 4 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. Mar–May, fr. Jun–Sep. $2n = 18(16)$.

Forests; 700–1300 m. W Anhui [Japan, Korea].

The typical variety, var. *carlesii*, occurs in Japan and Korea.

4. *Viburnum chinshanense* Graebner, *Bot. Jahrb. Syst.* 29: 585. 1901.

金佛山荚蒾 jin fo shan jia mi

Viburnum cavaleriei H. Léveillé; *V. hypoleucum* Rehder; *V. rosthornii* Graebner; *V. utile* Hemsley var. *elaegnifolium* Rehder.

Shrubs, semievergreen, to 5 m tall. Bark gray-brownish or gray-whitish. Branchlets of current year yellow-whitish or

brownish stellate-tomentose; branchlets of previous year brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, yellow-whitish or brownish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–2 cm, gray-whitish or yellow-whitish stellate-tomentose; leaf blade greenish white when young, dark green when mature, lanceolate-oblong or narrowly oblong, 5–10(–15) × 1.5–4.5 cm, papery to thickly leathery, abaxially gray-whitish or yellow-whitish stellate-pubescent (particularly on young leaves), on old leaves gray-brownish, adaxially glabrous, or with sparse short hairs on midvein and lateral veins when young, midvein raised abaxially, lateral veins 7–10-jugate, pinnate, arched, branched, anastomosing near margin, raised abaxially, slightly (more conspicuously on young leaves) raised adaxially, veinlets transverse, conspicuous abaxially, slightly impressed or inconspicuous adaxially, not lobed, base rounded or slightly cordate, without glands, margin entire or rarely inconspicuously dentate, apex slightly acute or obtuse. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 4–6(–8) cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, subequal in length, dense, gray-whitish or yellow-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 1–2.5 cm; bracts caducous, leaflike, green, linear-lanceolate, stellate-pubescent; bracteoles scalelike. Flowers usually on rays of 2nd order, not fragrant, shortly pedicellate. Calyx greenish; tube oblong-ovate, ca. 2.5 mm, ± stellate-hairy; lobes broadly ovate, very small, 0.5–1 mm, sparsely stellate-pubescent, apex obtuse. Corolla white, rotate, ca. 7 mm in diam., outside sparsely stellate-hairy; tube ca. 3 mm; lobes spreading, orbicular-ovate or suborbicular, ca. 2 mm, apex rounded, margin entire. Stamens slightly exceeding corolla lobes, inserted near base of corolla tube; filaments ca. 5 mm; anthers yellow, broadly elliptic, ca. 1 mm. Styles slightly exceeding or subequaling calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, oblong-ovoid, base rounded, apex rounded, sparsely stellate-pubescent; pyrenes very compressed, oblong, 8–9 × 4–5 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. Apr–May, fr. Jul.

• Sparse forests, thickets; 100–1900 m. Chongqing, Gansu, Guizhou, Shaanxi, Sichuan, E Yunnan (Luoping).

5. *Viburnum congestum* Rehder in Sargent, *Trees & Shrubs* 2: 111. 1908.

密花荚蒾 mi hua jia mi

Hedyotis mairei H. Léveillé; *Oldenlandia mairei* (H. Léveillé) Chun; *Premna esquirolii* H. Léveillé; *Viburnum mairei* H. Léveillé.

Shrubs, evergreen, to 5 m tall. Bark gray-brownish. Branchlets of current year gray-whitish stellate-tomentose; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, gray-whitish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 5–10 mm, gray-whitish stellate-tomentose; leaf blade greenish white when young, elliptic-ovate or elliptic, rarely elliptic-oblong, 2–4(–6) × 1–2 cm, leathery, abaxially gray-

whitish stellate-tomentose, adaxially sparsely stellate-hairy at first, immediately glabrescent, midvein raised abaxially, lateral veins 3- or 4-jugate, pinnate, arched, branched, anastomosing near margin, slightly raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base rounded or narrowed, without glands, margin entire, apex obtuse or slightly acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 2–5 cm in diam.; rays whorled; first node of inflorescence with 5 short rays, dense, gray-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 0.5–2 cm; bracts caducous, leaflike, green, linear to linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers on rays of 1st and 2nd orders, fragrant, sessile. Calyx greenish; tube tubular, 2–3 mm, glabrous; lobes broadly ovate, very small, 0.5–1 mm, glabrous, apex obtuse. Corolla white, campanulate-funnelform, ca. 6 mm in diam., glabrous; tube 4–5 mm; lobes spreading, orbicular-ovate, ca. 1/2 as long as tube, apex rounded, margin entire. Stamens nearly as long as corolla, inserted near base of corolla tube; filaments ca. 6 mm; anthers yellow, broadly ellipsoid, ca. 1 mm. Styles taller than calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, globose, 5–6 mm in diam., base rounded, apex rounded, glabrous; pyrenes very compressed, oblong, ca. 5 mm in diam., ca. 2 mm thick, with 2 shallow dorsal grooves and 3 ventral grooves, apex rounded. Fl. Jan–Sep, fr. Aug–Oct.

• Forests, forest margins, thickets; 1000–2800 m. Gansu, NE Guizhou, SW Sichuan, Yunnan.

6. *Viburnum cotinifolium* D. Don, *Prodr. Fl. Nepal.* 141. 1825.

黄栌叶荚蒾 huang lu ye jia mi

Viburnum multratum K. Koch; *V. polycarpum* Wallich ex Candolle.

Shrubs, deciduous, to 5 m tall. Bark gray-brownish. Branchlets of current year yellow-whitish or gray-whitish stellate-tomentose; branchlets of previous year gray-brownish, slightly quadrangular, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, yellow-whitish or gray-whitish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 6–17 mm, yellow-whitish or gray-whitish stellate-tomentose; leaf blade greenish white when young, orbicular-ovate or shallowly cordate to ovate-lanceolate, 5–12 × 4–8.5 cm, papery, abaxially stellate-pubescent, adaxially densely stellate-pubescent, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised or inconspicuous abaxially, inconspicuous adaxially, not lobed, base truncate, rounded to slightly cordate, without glands, margin remotely serrulate or subentire, apex acute to shortly acuminate, rarely obtuse to rounded. Flowers appearing with leaves; inflorescence a compound umbel-like cyme, terminal, 5–8 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, yellow-whitish or gray-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 1–3 cm, slightly sulcate; bracts caducous, leaflike, green, linear-lanceolate, stellate-pubescent; bracteoles scalelike. Flowers on rays of 2nd and 3rd orders, not fragrant; pedicel 2–3 mm. Calyx greenish; tube

tubular-obconical, 3–4.5 mm, glabrous; lobes ovate-orbicular, very small, 0.5–1 mm, glabrous, apex obtuse. Corolla white, pinkish outside, funnellform-campanulate, glabrous; tube 5.5–6.5 mm, longer than lobes; lobes spreading, orbicular-ovate, 1–2 mm, shorter than tube, apex rounded, margin entire. Stamens shorter than corolla, inserted near base of corolla tube; filaments ca. 3 mm; anthers yellow, subglobose, ca. 1 mm. Styles taller than calyx lobes; stigmas capitate. Fruit black, oblong-ellipsoid, 8–12 × 5–6 mm, base rounded, apex rounded, glabrous; pyrenes ellipsoid to ovoid-oblong, 7–10 mm, with 2 shallow dorsal grooves and 3 ventral grooves, apex rounded. Fl. Apr–Jun, fr. Jul–Aug.

Mixed *Abies* and *Quercus* forests; 2300–2600 m. S Xizang [Afghanistan, E Bhutan, N India, Kashmir, Nepal].

7. *Viburnum glomeratum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 483. 1880.

聚花荚蒾 *ju hua jia mi*

Shrubs or small trees, deciduous, to 3(–6) m tall. Bark gray-brownish or gray-whitish. Branchlets of current year yellow or yellow-whitish stellate-tomentose; branchlets of previous year gray-brownish or gray-whitish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, yellow or yellow-whitish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–2(–3) cm, yellow or yellow-whitish stellate-tomentose; leaf blade yellowish white when young, ovate-elliptic, ovate, or broadly ovate, rarely suborbicular, obovate, or obovate-oblong, (3.5–)6–10(–19) × (2.5–)3.5–8(–10) cm, papery, abaxially at first densely but later sparsely stellate-tomentose, adaxially sparsely stellate-pubescent, midvein raised abaxially, lateral veins 5–11-jugate, pinnate, arched, branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised or inconspicuous abaxially, inconspicuous adaxially, not lobed, base rounded or ± slightly obliquely cordate, without glands, margin dentate, apex obtuse, acute, or shortly acuminate. Flowers appearing with leaves; inflorescence a compound umbel-like cyme, terminal, 3–6 cm in diam.; rays whorled; first node of inflorescence with (4 or)5–7(–9) rays, dense, yellow or yellow-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 1–2.5(–7) cm; bracts caducous, leaflike, green, linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers on rays of 3rd order, not fragrant, shortly pedicellate. Calyx greenish; tube tubular-obconical, 1.5–3 mm, stellate-tomentose; lobes triangular, small, 1–2 mm, ca. as long as or less than 2 × as long as calyx tube, stellate-tomentose, apex acute. Corolla white, rotate, ca. 5 mm in diam., glabrous; tube 1.5–2.5 mm; lobes spreading, ovate-orbicular, ca. 2 mm, nearly as long as or slightly longer than tube, apex rounded, margin entire. Stamens slightly taller than corolla lobes, inserted near base of corolla tube; filaments ca. 7 mm; anthers yellow, subglobose, ca. 1 mm. Styles not exceeding calyx lobes; stigmas 3-lobed. Fruit initially turning red, maturing black, oblong-globose, 10–13 × 6–8 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, 5–7(–9) × (4–)5(–6) mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. Apr–Jun, fr. Jul–Sep.

Forests, thickets, shaded moist places on grassy slopes; 300–3200 m. W Anhui, S Gansu, W Henan, W Hubei, Jiangxi, S Ningxia, E Shaanxi, Sichuan, SE Xizang, NW Yunnan, NW Zhejiang [N Myanmar].

- 1a. Leaves suborbicular, veins 5 or 6 7c. subsp. *rotundifolium*
 1b. Leaves ovate or ovate-oblong, veins 6–11.
 2a. Leaves ovate; inflorescence 5–7 cm in diam.; fruit 5–7(–9) mm 7a. subsp. *glomeratum*
 2b. Leaves ovate-oblong; inflorescence 8–10 cm in diam.; fruit 9–11 mm 7b. subsp. *magnificum*

7a. *Viburnum glomeratum* subsp. *glomeratum*

聚花荚蒾(原亚种) *ju hua jia mi* (*yuan ya zhong*)

Viburnum veitchii C. H. Wright.

Leaves ovate, (3.5–)6–10(–15) × 4–6 cm, lateral veins 6–11. Inflorescence 5–7 cm in diam. Fruit 5–7(–9) mm.

Forests, thickets, shaded moist places on grassy slopes; 300–3200 m. W Anhui, S Gansu, W Henan, W Hubei, Jiangxi, S Ningxia, E Shaanxi, Sichuan, SE Xizang, NW Yunnan, NW Zhejiang [N Myanmar].

7b. *Viburnum glomeratum* subsp. *magnificum* (P. S. Hsu) P. S. Hsu, Fl. Reipubl. Popularis Sin. 72: 21. 1988.

壮大荚蒾 *zhuang da jia mi*

Viburnum veitchii subsp. *magnificum* P. S. Hsu, Acta Phytotax. Sin. 11: 75. 1966.

Leaves ovate-oblong, 10–19 × 4.5–11.5 cm, lateral veins 6–11. Inflorescence 8–10 cm in diam. Fruit 9–11 mm.

- Forests, thickets; 300–1000 m. W Anhui, NW Zhejiang.

7c. *Viburnum glomeratum* subsp. *rotundifolium* (P. S. Hsu) P. S. Hsu, Fl. Reipubl. Popularis Sin. 72: 21. 1988.

圆叶荚蒾 *yuan ye jia mi*

Viburnum veitchii subsp. *rotundifolium* P. S. Hsu, Acta Phytotax. Sin. 11: 75. 1966; *V. glomeratum* var. *rockii* Rehder.

Leaves suborbicular, 3.5–6 × 3–5 cm, lateral veins 5 or 6. Inflorescence less than 4 cm in diam. Fruit 4–7 mm.

Forests, thickets, shaded moist places on grassy slopes; 2200–3200 m. S Gansu, Sichuan, NW Yunnan [N Myanmar].

8. *Viburnum macrocephalum* Fortune, J. Hort. Soc. London 2: 244. 1847.

绣球荚蒾 *xiu qiu jia mi*

Viburnum macrocephalum var. *sterile* Dippel.

Shrubs, deciduous or semievergreen, to 4 m tall. Bark gray-brownish or gray-whitish. Branchlets of current year densely gray-whitish or yellow-whitish stellate-pubescent, glabrescent; branchlets of previous year gray-brownish or gray-whitish, terete, glabrous, with dispersed, small, rounded lenticels. Winter

buds naked, densely gray-whitish or yellow-whitish stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–1.5 cm, gray-whitish or yellow-whitish stellate-pubescent; leaf blade greenish white when young, ovate to elliptic or ovate-elliptic, 5–11 × 2–5 cm, papery, abaxially stellate-pubescent, adaxially densely stellate-pubescent at first, later only so on midvein, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, branched, anastomosing near margin, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised or inconspicuous abaxially, inconspicuous adaxially, not lobed, base rounded or sometimes slightly cordate, without glands, margin denticulate, apex obtuse or slightly acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 8–15 cm in diam.; rays whorled; first node of inflorescence with 5 rays, dense, gray-whitish or yellow-whitish stellate-pubescent, totally composed of large sterile flowers, or of fertile flowers yet with 8–18 large sterile radiant flowers; peduncle 1–2 cm; bracts caducous, leaflike, green, linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers on rays of 3rd order, not fragrant, sessile or shortly pedicellate. Sterile flowers: calyx like fertile flowers; corolla white, rotate, 1.5–4 cm in diam., glabrous; lobes orbicular-obovate, apex rounded; stamens and pistils not developed. Fertile flowers: calyx greenish; tube tubular, ca. 2.5 mm, glabrous; lobes oblong, small, ca. 2 mm, nearly as long as calyx tube, glabrous, apex obtuse; corolla white, rotate, 10–12 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, orbicular-obovate, ca. 2 mm, longer than tube, apex rounded, margin entire; stamens slightly taller than corolla lobes, inserted near base of corolla tube; filaments ca. 3 mm; anthers yellow, subglobose, small; styles slightly exceeding or subequaling calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, elliptic, ca. 12 mm, base rounded, apex rounded, glabrous; pyrenes compressed, oblong, 10–12 × 6–8 mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. Apr–May, fl. Sep–Oct. $2n = 18^*$.

• Forests, thickets on mountain slopes; 400–1000 m. W Anhui, Henan, W Hubei, Hunan, S Jiangsu, NW Jiangxi, S Shandong, Zhejiang; also commonly cultivated.

Two forms may be recognized as follows. The typical form (f. *macrocephalum*) has its inflorescence totally composed of large sterile flowers (without anthers) and is known from cultivation only, while f. *keteleeri* (Carrière) Rehder (Bibl. Cult. Trees, 603. 1949; *Viburnum keteleeri* Carrière, Rev. Hort. 1863: 269. 1863; *V. arborescens* Hemsley; *V. macrocephalum* var. *keteleeri* (Carrière) G. Nicholson; *V. macrocephalum* var. *indutum* Handel-Mazzetti) is the wild-related taxa and has its inflorescence with 8–18 large sterile radiant flowers (without anthers) only at margin and fertile flowers (with stamens) at center. Also commonly cultivated, the latter also occurs in forests, thickets on mountain slopes, at 400–1000 m, in W Anhui, W Hubei, Hunan, S Jiangsu, NW Jiangxi, and Zhejiang.

9. *Viburnum mongolicum* (Pallas) Rehder in Sargent, Trees & Shrubs 2: 111. 1908.

蒙古荚蒾 *meng gu jia mi*

Lonicera mongolica Pallas, Reise Russ. Reich. 3: 721. 1771; *Viburnum davuricum* Pallas.

Shrubs, deciduous, to 2 m tall. Bark gray-yellowish. Branchlets of current year yellow-whitish stellate-tomentose; branchlets of previous year yellow-whitish, very rounded, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, yellow-whitish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 4–10 mm, yellow-whitish stellate-tomentose; leaf blade abaxially gray-greenish and adaxially yellowish green when young, broadly ovate to elliptic, rarely suborbicular, 2.5–5(–6) × 1.5–3 cm, papery, abaxially stellate-pubescent, adaxially stellate-pubescent or forked-hairy, midvein raised abaxially, lateral veins 4- or 5-jugate, pinnate, arched, branched, anastomosing near margin, raised abaxially, slightly impressed adaxially or inconspicuous, veinlets transverse, inconspicuous on both surfaces, not lobed, base rounded or cuneate-rounded, without glands, margin crenulate, with tips of teeth mucronate, apex acute or obtuse. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 1.5–3.5 cm in diam.; rays whorled; first node of inflorescence with 5 or fewer rays, few flowered, yellow-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 5–10 mm; bracts caducous, leaflike, green, linear to linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers mostly on rays of 1st order, not fragrant, sessile. Calyx greenish; tube oblong-tubular, 3–5 mm, glabrous; lobes repand, very small, 0.5–1 mm, glabrous, apex obtuse. Corolla yellowish whitish, tubular-campanulate, ca. 3 mm in diam., glabrous; tube 5–7 mm; lobes spreading, orbicular-ovate, ca. 1.5 mm, shorter than tube, apex rounded, margin entire. Stamens nearly as long as corolla, inserted near base of corolla tube; filaments ca. 6 mm; anthers yellow, oblong, ca. 2 mm. Styles taller than calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, ellipsoid, ca. 1 cm, base rounded, apex rounded, glabrous; pyrenes compressed, oblong, ca. 8 × 5–6 mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. May–Jul, fr. Jul–Sep. $2n = 18(16)$.

Sparse forests; 800–2700 m. S Gansu, Hebei (Neiqiu), Henan, Nei Mongol, S Ningxia, NE Qinghai, Shaanxi, Shanxi [Mongolia, Russia].

10. *Viburnum rhytidophyllum* Hemsley, J. Linn. Soc., Bot. 23: 355. 1888.

皱叶荚蒾 *zhou ye jia mi*

Callicarpa vastifolia Diels.

Shrubs or small trees, evergreen, to 4 m tall. Bark gray-brownish. Branchlets of current year robust, thickly yellow-whitish, yellow-brownish, or red-brownish stellate-tomentose; branchlets of previous year red-brownish or gray-blackish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, yellow-brownish, or red-brownish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1.5–3(–4) cm, thickly yellow-whitish, yellow-brownish, or red-brownish stellate-tomentose; leaf blade yellow-whitish, yellow-brownish, or red-brownish when young, becoming intense green adaxially, ovate-oblong to ovate-lanceolate, rarely lanceolate, 8–18(–25) × (1.5–)2.5–8 cm, leathery, abaxially strongly rugose, obviously reticulate, adaxially lustrous, sparsely stellate-pubescent when

young, glabrescent, midvein raised abaxially, lateral veins 6–8(–12)-jugate, pinnate, arched, branched, anastomosing near margin, very rarely ending in teeth, raised abaxially, slightly raised adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base rounded or slightly cordate, without glands, margin entire or inconspicuously dentate, apex slightly acute or obtuse. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 7–12 cm in diam.; rays whorled; first node of inflorescence usually with 7 rays, dense, yellow-whitish, yellow-brownish, or red-brownish stellate-tomentose, without large sterile radiant flowers; peduncle robust, 1.5–4(–7) cm; bracts caducous, leaflike, green, linear to linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers on rays of 3rd order, not fragrant, subsessile or shortly pedicellate. Calyx greenish; tube tubular-campanulate, 2–3 mm, yellow-whitish stellate-tomentose; lobes broadly triangular-ovate, very small, 0.5–1 mm, sparsely stellate-pubescent, apex obtuse, slightly ciliate. Corolla white, pinkish in bud and outside, rotate, 5–7 mm in diam., subglabrous; tube 3–4 mm; lobes spreading, orbicular-ovate, 2–3 mm, apex rounded, margin entire. Stamens exceeding corolla, inserted near base of corolla tube; filaments ca. 6 mm; anthers yellow, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, broadly elliptic, 6–8 mm, base rounded, apex rounded, glabrous or sparsely stellate-pubescent; pyrenes compressed, broadly elliptic, 6–7 × 4–5 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. Apr–May, fr. Sep–Oct. $2n = 18^*$.

• Forests, thickets; 700–2400 m. Guizhou, W Hubei, S Shaanxi, Sichuan.

11. *Viburnum schensianum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 480. 1880.

陕西荚蒾 shan xi jia mi

Viburnum dielsii Graebner (1901), not H. Léveillé (1911); *V. giraldii* Graebner; *V. schensianum* subsp. *chekiangense* P. S. Hsu & P. L. Chiu; *V. schensianum* var. *chekiangense* (P. S. Hsu & P. L. Chiu) Y. Ren & W. Z. Di.

Shrubs, deciduous, to 3 m tall. Bark gray-brownish. Branchlets of current year yellow-whitish stellate-tomentose; branchlets of previous year gray-brownish, slightly rectangular or terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, often rusty-brownish stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 7–10(–15) mm, yellow-whitish stellate-tomentose; leaf blade greenish white when young, ovate-elliptic, broadly ovate, or suborbicular, 3–6(–8) × 2–4.5 cm, papery, abaxially stellate-pubescent, adaxially sparsely stellate-pubescent at first, later almost glabrous, midvein raised abaxially, lateral veins 5–7-jugate, pinnate, arched, branched, anastomosing near margin, or some ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, slightly raised on both surfaces, not lobed, base rounded, without glands, margin denticulate, apex obtuse or rounded, sometimes emarginate or slightly acute. Flowers appearing with leaves; inflorescence a compound umbel-like cyme, terminal, (4–)6–7(–8) cm in diam., to 9 cm at fruiting stage; rays

whorled; first node of inflorescence with (3–)5 rays, 1–2 cm, dense, yellow-whitish stellate-tomentose, without large sterile radiant flowers; peduncle 1–1.5(–7) cm or very short; bracts caducous, leaflike, green, linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers mostly on rays of 3rd order, not fragrant, sessile or shortly pedicellate. Calyx greenish; tube cylindrical, 3.5–4 mm, glabrous or rarely stellate-tomentose; lobes ovate, very small, 0.5–1 mm, glabrous or with few stellate ciliate hairs, apex obtuse. Corolla white, rotate, ca. 6 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, orbicular-ovate, ca. 2 mm, longer than tube, apex rounded, margin entire. Stamens ca. as long as or slightly longer than corolla, inserted near base of corolla tube; filaments ca. 2 mm; anthers yellow, globose, ca. 1 mm. Styles slightly exceeding or subequaling calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, elliptic, ca. 8 mm, base rounded, apex rounded, glabrous; pyrenes ovoid-globose, 6–8 × 4–5 mm, dorsally raised and grooves absent, or indistinctly 2-grooved, ventrally 3-grooved, apex rounded. Fl. May–Jul, fr. Aug–Sep.

• Mixed forests, *Pinus* forests, thickets; 500–3200 m. Anhui, S and SE Gansu, Hebei (Neiqiu), Henan, Hubei, S Jiangsu, S Shaanxi, Shandong (Jinan), Shanxi, N Sichuan (Songpan), Zhejiang.

12. *Viburnum urceolatum* Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(3): 172. 1846.

壶花荚蒾 hu hua jia mi

Viburnum taiwanianum Hayata; *V. urceolatum* f. *brevifolium* (Makino) Nakai; *V. urceolatum* var. *brevifolium* Makino; *V. urceolatum* f. *procumbens* Nakai; *V. urceolatum* var. *procumbens* (Nakai) H. Hara.

Shrubs, deciduous, to 3(–4) m tall. Bark gray-brownish. Branchlets of current year gray-whitish or gray-brownish stellate-tomentose; branchlets of previous year dark purple-brownish to blackish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, gray-whitish or gray-brownish stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1–4 cm, gray-whitish or gray-brownish stellate-pubescent; leaf blade greenish white when young, ovate-lanceolate or ovate-oblong, 7–15(–18) × 4–6 cm, papery, abaxially stellate-pubescent along veins, adaxially hairy on midvein, midvein raised abaxially, lateral veins 4–6-jugate, pinnate, arched, branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base cuneate, rounded, or slightly cordate, without glands, margin often serrulate except at base, apex acuminate to narrowly caudate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short branches with 1- or 2-jugate leaves, ca. 5 cm in diam.; rays whorled; first node of inflorescence with 4 or 5 rays, dense, reddish sparsely stellate-pubescent, without large sterile radiant flowers; peduncle purplish, 3–7(–8.5) cm; bracts persistent, leaflike, reddish, lanceolate to ovate, sparsely stellate-pubescent; bracteoles linear; flowers mostly on rays of 3rd or 4th order, not fragrant, shortly pedicellate. Calyx reddish; tube tubular, ca. 2 mm, glabrous; lobes subdeltoid to ovate, very small, 0.5–1 mm, glabrous, apex ob-

tuse, slightly ciliate. Corolla purple-reddish outside, white inside, urceolate or tubular-campanulate, ca. 3 mm in diam., glabrous; tube 2–4 mm; lobes spreading or erect, broadly ovate, 1/5–1/4 as long as tube, apex rounded, margin papillose. Stamens obviously taller than corolla, inserted near base of corolla tube or sometimes below middle at slightly different levels, unequal in length, longest ca. 6 mm; filaments 3–4 mm; anthers yellow, elliptic-oblong, ca. 1.5 mm. Styles taller than calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, ellipsoid, 6–8 × 5–6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, 4–5 × 3–4 mm, with 2 shallow dorsal grooves and 3 ventral grooves, base rounded, apex rounded. Fl. Jun–Jul, fr. Sep–Oct. $2n = 18^*$.

Forests; 600–2600 m. Fujian, Guangdong, NE Guangxi, Guizhou, Hunan, W Jiangxi, Taiwan, Yunnan, Zhejiang [Japan].

13. *Viburnum utile* Hemsley, J. Linn. Soc., Bot. 23: 356. 1888.

烟管荚蒾 *yan guan jia mi*

Viburnum bockii Graebner; *V. fallax* Graebner; *V. utile* var. *minus* Pampanini; *V. utile* var. *ningqiangense* Y. Ren & W. Z. Di.

Shrubs, evergreen, to 2 m tall. Bark gray-brownish. Branchlets of current year glabrescent, yellowish brown or grayish white stellate-tomentose; branchlets of previous year red-brownish, terete, glabrous, with dispersed, small, rounded, lenticels. Winter buds naked, yellowish brown or grayish white stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 5–10(–15) mm, gray-whitish or yellow-whitish stellate-tomentose; leaf blade greenish white when young, becoming intense green, lustrous, and glabrous, or dark green and sparsely stel-

late-hairy adaxially, ovate-oblong to ovate-lanceolate, 2–5(–8) × 1–2.5(–3.5) cm, leathery, abaxially veins sometimes with rusty stellate hairs, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, branched, anastomosing near margin, slightly raised abaxially, slightly raised or inconspicuous adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base rounded or narrowed, without glands, margin entire or rarely inconspicuously dentate, slightly involute, apex rounded to slightly obtuse, sometimes emarginate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 5–7 cm in diam.; rays whorled; first node of inflorescence with 5 rays, dense, gray-whitish or yellow-whitish stellate-tomentose, without large sterile radiant flowers; peduncle robust, 1–3 cm; bracts caducous, leaflike, green, linear to linear-lanceolate, stellate-pubescent; bracteoles linear. Flowers usually on rays of 2nd and 3rd orders, not fragrant, sessile. Calyx greenish; tube tubular, ca. 2 mm, glabrous; lobes ovate-triangular, very small, 0.5–1 mm, glabrous or with few stellate ciliate hairs, apex obtuse, slightly ciliate. Corolla white, reddish in bud, rotate, 6–7 mm in diam., glabrous; tube 2–3 mm; lobes spreading, orbicular-ovate, ca. 2 mm, ca. as long as or slightly longer than tube, apex rounded, margin entire. Stamens nearly as long as corolla lobes, inserted near base of corolla tube; filaments ca. 4 mm; anthers yellow, suborbicular, ca. 1 mm. Styles nearly as long as calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, ellipsoid-oblong to ellipsoid, (6–)7–8 mm in diam., base rounded, apex rounded, glabrous; pyrenes slightly compressed, ellipsoid or obovoid, (5–)7 × (4–)5 mm, with 2 very shallow dorsal grooves and 3 ventral grooves, apex rounded. Fl. Mar–Apr, fr. Aug. $2n = 18^*$.

• Forest margins, thickets; 500–1800 m. NE Guizhou, Henan, W Hubei, Hunan, SW Shaanxi, Sichuan.

2. *Viburnum* sect. *Pseudotinus* C. B. Clarke, Fl. Brit. India 3: 6. 1880.

合轴组 *he zhou zu*

Winter buds naked. Inflorescence a compound umbel-like cyme, with or without large sterile radiant flowers, subsessile. Corolla rotate. Fruit initially turning red, maturing black; pyrenes with 1 deep ventral groove; albumen ruminant.

Four species: temperate Asia and North America; two species (one endemic) in China.

Recent phylogenetic work shows that this section is clearly monophyletic and sister to *Viburnum* sect. *Lantana* Spach.

14. *Viburnum nervosum* D. Don, Prodr. Fl. Nepal. 141. 1825.

显脉荚蒾 *xian mai jia mi*

Solenotinus nervosus (D. Don) Oersted; *Viburnum cordifolium* Wallich ex Candolle; *V. cordifolium* var. *hypsophilum* Handel-Mazzetti; *V. nervosum* var. *hypsophilum* (Handel-Mazzetti) H. W. Li.

Shrubs or small trees, deciduous, to 5 m tall. Bark gray-brownish. Branchlets of current year lepidote or furfuraceous stellate-pubescent; branchlets of previous year gray or gray-brownish, terete, glabrous, with sparse, dispersed, large, elliptic lenticels. Winter buds naked, furfuraceous stellate-pubescent. Leaves often clustered at apices of branchlets; stipules 2, subulate, 2–5 mm, caducous, or absent; petiole green, robust, 2–5.5 cm, brownish stellate-pubescent; leaf blade greenish brown

when young, ovate to broadly ovate, rarely oblong-ovate, (4–)7–18 × (2.5–)4–11 cm, papery, abaxially often ± stellate-pubescent particularly along veins, adaxially glabrous or subglabrous, midvein raised abaxially, lateral veins 8–10-jugate, pinnate, arched, branched, anastomosing near margin, raised abaxially, impressed adaxially, veinlets transverse, conspicuous on both surfaces, not lobed, base cordate or rounded, without glands, margin irregularly serrate, apex acuminate. Flowers appearing with leaves; inflorescence a compound umbel-like cyme, terminal, 5–15 cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, dense, with small red-brownish glands, without large sterile radiant flowers; peduncles absent; bracts caducous, leaflike, green, ovate to elliptic, stellate-pubescent; bracteoles scalelike. Flowers on rays of 2nd and 3rd orders, fragrant, subsessile or shortly pedicellate. Calyx greenish; tube tubular-campanulate, ca. 1.5 mm, with small red-

brownish glands; lobes ovate, very small, 0.5–1 mm, sparsely stellate-pubescent, apex obtuse. Corolla white or reddish, rotate, 5–8 mm in diam., glabrous; tube 3–4 mm; lobes spreading, ovate-oblong to oblong, ca. 2 × as long as tube, unequal in size, outer ones, particularly marginal ones, often larger, apex rounded, margin entire. Stamens shorter than corolla, inserted near base of corolla tube; filaments ca. 1 mm; anthers purple, broadly ovoid, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit initially turning yellow, then red, maturing purplish black, ovoid, 7–9 × 5–7 mm, base rounded, apex rounded, glabrous; pyrenes compressed, oblong, 6–8 × 4–5 mm, with 1 shallow dorsal groove and 1 deep ventral groove, apex rounded. Fl. Apr–Jun, fr. Sep–Oct. $2n = 18$.

Forests (usually *Abies* forests), scrub; (1800–)2100–4500 m. Sichuan, Xizang, Yunnan [Bhutan, India, N Myanmar, Nepal, N Vietnam].

15. *Viburnum sympodiale* Graebner, Bot. Jahrb. Syst. 29: 587. 1901.

合轴荚蒾 *he zhou jia mi*

Viburnum furcatum Blume ex J. D. Hooker & Thomson var. *melanophyllum* (Hayata) H. Hara; *V. martini* H. Léveillé; *V. melanophyllum* Hayata.

Shrubs or small trees, deciduous, to 10 m tall. Bark gray-brownish. Branchlets of current year yellow-brownish lepidote or furfureaceous stellate-pubescent; branchlets of previous year red-brownish or gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds naked, furfureaceous stellate-pubescent. Leaves often clustered at apices of branchlets; stipules 2, subulate, 2–9 mm, bases often adnate to petioles, sometimes absent; petiole green, robust, 1.5–3(–4.5) cm, yellow-brownish stellate-pubescent; leaf blade greenish brown when young, ovate to elliptic-ovate or orbicular-ovate, 6–13

(–15) × 3–9(–11) cm, papery, abaxially yellow-brownish lepidote or furfureaceous stellate-pubescent particularly along veins, adaxially glabrous or stellate-pubescent on veins, midvein raised abaxially, lateral veins 6–8-jugate, pinnate, arched, branched, anastomosing near margin, raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuous on both surfaces, not lobed, base rounded, rarely shallowly cordate, without glands, margin irregularly serrate, apex acuminate or acute. Flowers appearing with leaves; inflorescence a compound umbel-like cyme, terminal, 5–9 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, subglabrescent or yellow-brownish lepidote or furfureaceous stellate-pubescent, with large white sterile radiant flowers on margin; peduncles absent; bracts caducous, leaflike, green, ovate to elliptic, stellate-pubescent; bracteoles scalelike. Flowers on rays of 3rd order, fragrant, subsessile or shortly pedicellate. Sterile flowers: calyx like fertile flowers, 2.5–3 cm in diam.; corolla lobes obovate, often unequal in size; stamens and pistils not developed. Fertile flowers: calyx greenish; tube subglobose, ca. 2 mm, glabrous; lobes ovate-orbicular, very small, 0.5–1 mm, sparsely stellate-pubescent, apex obtuse; corolla white or reddish, rotate, 5–6 mm in diam., glabrous; tube ca. 2 mm; lobes spreading, ovate, ca. 2 × as long as tube, apex rounded, margin entire; stamens shorter than corolla, inserted near base of corolla tube; filaments ca. 1 mm; anthers yellow, ovoid, ca. 1 mm; styles not exceeding calyx lobes; stigmas capitate. Fruit initially turning yellow, then red, maturing purple-nigrescent, ovoid, 8–9 mm, base rounded, apex rounded, glabrous; pyrenes slightly compressed, oblong, ca. 7 × 5 mm, with 1 shallow dorsal groove and 1 deep ventral groove, apex rounded. Fl. Apr–May, fr. Aug–Sep.

• Forests, thickets; 800–2600 m. S Anhui, N Fujian, S Gansu, N Guangdong, NE Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang.

3. *Viburnum* sect. *Tinus* (Miller) C. B. Clarke, Fl. Brit. India 3: 6. 1880.

球核组 *qiu he zu*

Tinus Miller, Gard. Dict. Abr., ed. 4. 1754.

Winter buds with 1 pair of separate scales. Inflorescence a compound umbel-like cyme, without large sterile radiant flowers, pedicellate or subsessile. Corolla rotate. Fruit not turning red, maturing blue-blackish; pyrenes with 1 very shallow ventral groove or without groove; albumen deeply ruminant.

Six to nine species: temperate and subtropical Asia and temperate Europe; five species (four endemic) in China.

Recent phylogenetic work shows that this section is clearly monophyletic and related to New World representatives of *Viburnum* sect. *Odontotinus* and *V.* sect. *Oreiotinus* (Oersted) Benth & J. D. Hooker.

16. *Viburnum atrocyaneum* C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 7. 1880.

蓝黑果荚蒾 *lan hei guo jia mi*

Viburnum calvum Rehder; *V. schneiderianum* Handel-Mazzetti.

Shrubs, evergreen, to 3 m tall. Bark gray-brownish. Branchlets of current year purplish at first, later grayish yellowish, stellate-pubescent or subglabrous; branchlets of previous year gray or gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong,

with one pair of separate scales; scales reddish brown, ciliate, apex acute. Leaves generally opposite, sometimes in whorls of 3, not clustered at apices of branchlets; stipules absent; petiole green, slender, 6–12 mm, glabrous; leaf blade purplish when young, becoming abaxially pale greenish and adaxially intense green and lustrous, broadly ovate or ovate to ovate-lanceolate or rhombic-elliptic, rarely orbicular, (0.8–)3–6(–10) × 1.5–3(–6.5) cm, leathery, both surfaces glabrous, midvein raised abaxially, lateral veins 5–8-jugate, pinnate, arched, branched, anastomosing near margin, inconspicuous abaxially, impressed adaxially, veinlets transverse, inconspicuous abaxially, slightly impressed adaxially, not lobed, base broadly cuneate, both sides

often slightly asymmetric, without glands, margin often remotely irregularly denticulate, rarely entire, apex obtuse, mucronate, rarely acute or emarginate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 2–6 cm in diam.; rays whorled; first node of inflorescence usually with 5–7 rays, lax, glabrous, without large sterile radiant flowers; peduncles 0.6–6 cm; bracts caducous, leaflike, green, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers usually on rays of 2nd order, not fragrant; pedicel 2–3 mm. Calyx greenish; tube obconical, ca. 1 mm, glabrous; lobes broadly triangular, broader than long, very small, ca. 0.5 mm, nearly 1/2 as long as calyx tube, glabrous, apex obtuse. Corolla white, rotate, ca. 5 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, ovate-orbicular, ca. 1.5 mm, slightly longer than tube, apex rounded, margin entire. Stamens slightly shorter than corolla, inserted near base of corolla tube; filaments ca. 2 mm; anthers yellow, ovoid, ca. 1 mm. Styles nearly as long as calyx lobes; stigmas subsessile. Fruit not turning red, maturing blue-blackish, ovoid or globose, 5–6 mm, base rounded, apex acute, glabrous; pyrenes globose, ca. 5 mm in diam., with 1 very shallow ventral groove, apex rounded. Fl. Apr–Jun, fr. Jul–Oct.

Forests, scrub; 1000–3200 m. NW Guangxi, Guizhou, Sichuan, SE Xizang, Yunnan [Bhutan, N India, Myanmar, N Thailand].

Two forms may be recognized as follows: the typical form (*V. atrocyaneum* f. *atrocyaneum*) has leaves always opposite, leaf blade broadly ovate or ovate to ovate-lanceolate or rhombic-elliptic, whereas *V. atrocyaneum* f. *harryanum* (Rehder) P. S. Hsu (Acta Phytotax. Sin. 13(1): 120. 1975; *V. harryanum* Rehder, Mitt. Deutsch. Dendrol. Ges. 22: 263. 1913; *V. atrocyaneum* subsp. *harryanum* (Rehder) P. S. Hsu; *V. atrocyaneum* var. *puberulum* (C. K. Schneider) P. S. Hsu; *V. calvum* Rehder var. *kwapiense* Handel-Mazzetti; *V. calvum* var. *puberulum* C. K. Schneider) has leaves in whorls of 3, leaf blade orbicular.

17. *Viburnum cinnamomifolium* Rehder in Sargent, Trees & Shrubs 2: 31. 1907.

樟叶荚蒾 zhang ye jia mi

Shrubs or small trees, evergreen, to 6 m tall. Bark gray-brownish. Branchlets of current year purple-brownish, with many conspicuous lenticels, subglabrous; branchlets of previous year purple-brownish, terete, glabrous, with numerous, large, rounded lenticels. Winter buds ovoid, with 1 pair of separate scales; scales reddish brown, glabrous, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1.5–3.5 cm, glabrous; leaf blade purplish when young, elliptic-oblong, 6–13(–18) × 3–5(–7) cm, leathery, abaxially often yellowish stellate-pubescent in axils of veins, adaxially glabrous, midvein raised abaxially, triplinerved, veins pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, impressed adaxially, veinlets transverse, conspicuous abaxially, slightly impressed but not conspicuously rugose adaxially, not lobed, base cuneate to broadly cuneate, without glands, margin entire or occasionally remotely serrate near apex, apex acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 6–15 cm in diam.; rays whorled; first node of inflorescence with 6–8 rays, lax, large, glabrous, without large sterile radiant flowers; peduncles 1.5–3.5 cm; bracts caducous, leaflike, green, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flow-

ers on rays of 2nd and 3rd orders, not fragrant; pedicels 2–3 mm, slender. Calyx greenish; tube obconical, 1–2 mm, glabrous; lobes suborbicular or triangular, very small, ca. 0.5 mm, glabrous, apex obtuse. Corolla white, rotate, 4–5 mm in diam., glabrous; tube ca. 1 mm; lobes recurved, broadly ovate, ca. 1 mm, nearly as long as tube, apex rounded, margin entire. Stamens longer than corolla, inserted near base of corolla tube; filaments ca. 3 mm; anthers yellow, subglobose, ca. 1 mm. Styles nearly as long as calyx lobes; stigmas subsessile. Fruit not turning red, maturing blue-blackish, subglobose, ca. 4 mm in diam., base rounded, apex acute, glabrous; pyrenes globose, ca. 3 mm in diam., with 1 very small and shallow ventral groove or without groove, apex rounded. Fl. May, fr. Jun–Jul. $2n = 18^*$.

● Thickets; 1000–1500(–1800) m. Sichuan, SE Yunnan.

18. *Viburnum davidii* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 251. 1885 [*“davidii”*].

川西荚蒾 chuan xi jia mi

Shrubs, evergreen, to 10 m tall. Bark gray-brownish. Branchlets of current year purple-brownish, with raised lenticels, subglabrous; branchlets of previous year gray-whitish, terete, glabrous, with numerous, large, rounded lenticels. Winter buds ovoid, with 1 pair of separate scales; scales reddish brown, glabrous, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purplish, robust, 0.8–2.5(–3) cm, glabrous; leaf blade purplish when young, elliptic-obovate to elliptic, 6–14 × 4–7 cm, thickly leathery, lustrous and conspicuously rugose, abaxially yellowish stellate-pubescent only in axils of veins, adaxially glabrous, midvein raised abaxially, triplinerved, veins pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, impressed adaxially, veinlets transverse, conspicuous abaxially, deeply impressed and conspicuously rugose adaxially, not lobed, base broadly cuneate to subrounded, without glands, margin entire or sometimes with few irregular teeth above middle part, apex shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 4–6 cm in diam.; rays whorled; first node of inflorescence with 5 or 6 rays, 1–3 cm, dense, glabrous, without large sterile radiant flowers; peduncles (1–)1.5–3(–3.5) cm; bracts caducous, leaflike, green, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays of 2nd order, not fragrant, with very short pedicels. Calyx greenish; tube campanulate, ca. 1 mm, glabrous; lobes lanceolate, very small, ca. 1/2 as long as tube, glabrous, apex acute. Corolla white, rotate, ca. 5 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, orbicular, ca. 2 mm in diam., 2–4 × as long as tube, apex rounded, margin entire. Stamens ca. 1/2 as long as corolla, inserted near base of corolla tube; filaments ca. 2 mm; anthers red-blackish, subglobose, less than 1 mm. Styles nearly as long as calyx lobes; stigmas subsessile. Fruit not turning red, maturing blue-blackish, ovoid or ellipsoid-oblong, ca. 6 × 4 mm, base rounded, apex acute, glabrous; pyrenes globose, 4–5 mm in diam., with 1 small and shallow ventral groove, apex rounded. Fl. Jun, fr. Sep–Oct. $2n = 18^*$.

● Mountains; 1800–2400 m. W Sichuan.

19. *Viburnum propinquum* Hemsley, J. Linn. Soc., Bot. 23: 355. 1888.

球核荚蒾 qiu he jia mi

Shrubs, evergreen, to 2 m tall. Bark gray-brownish. Branchlets of current year red-brownish, lustrous, with small prominent lenticels, glabrous; branchlets of previous year grayish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 1 pair of separate scales; scales reddish brown, glabrous, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1–2 cm, glabrous; leaf blade purplish when young, ovate to ovate-lanceolate or elliptic to elliptic-oblong, or linear-lanceolate or oblanceolate, 3–9(–11) × 1–4.5 cm, leathery, abaxially sometimes stellate-pubescent in axils of veins, adaxially glabrous, midvein raised abaxially, triplinerved, veins reaching to middle of leaves or above, pinnate, arched, branched, anastomosing near margin, raised abaxially, impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base subrounded or cuneate, both sides slightly asymmetric, without glands, margin usually remotely serrate, apex acuminate or acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, (2–)4–7 cm in diam.; rays whorled; first node of inflorescence usually with 7 rays, lax, glabrous, without large sterile radiant flowers; peduncles 1.5–2.5(–4) cm, slender; bracts caducous, leaflike, green, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays of 3rd order, not fragrant; pedicels 1–2 mm, slender. Calyx greenish; tube obconical, ca. 0.6 mm, glabrous; lobes broadly triangular-ovate, very small, ca. 0.4 mm, glabrous, apex obtuse. Corolla greenish white, rotate, ca. 4 mm in diam., outside glabrous, inside with long hairs at base; tube ca. 1 mm; lobes spreading, broadly ovate, ca. 1 mm, nearly as long as tube, apex rounded, margin entire. Stamens usually slightly longer than corolla, inserted near base of corolla tube; filaments 2–3 mm; anthers yellow, subglobose, ca. 1 mm. Styles nearly as long as calyx lobes; stigmas subsessile. Fruit not turning red, maturing blue-blackish, lustrous, subglobose or ovoid, (3–)5–6 × (3–)3.5–4 mm, base rounded, apex acute, glabrous; pyrenes globose, ca. 4 × 3 mm, with 1 very small and shallow ventral groove or without groove, apex rounded. Fl. Mar–May, fr. May–Oct.

• Forests, scrub; 400–1300 m. Chongqing, N Fujian, S Gansu, N Guangdong, Guangxi, Guizhou, SW and W Hubei, Hunan, N Jiangxi, SW Shaanxi, Sichuan, Taiwan, Yunnan, S Zhejiang.

- 1a. Leaves ovate to ovate-lanceolate, or elliptic to elliptic-oblong, base subrounded or cuneate 19a. var. *propinquum*
 1b. Leaves linear-lanceolate or oblanceolate, base cuneate 19b. var. *mairei*

19a. *Viburnum propinquum* var. *propinquum*

球核荚蒾(原变种) qiu he jia mi (yuan bian zhong)

Viburnum propinquum f. *parvifolium* (Graebner) Nakai; *V. propinquum* var. *parvifolium* Graebner.

Leaves ovate to ovate-lanceolate, or elliptic to elliptic-oblong, base subrounded or cuneate.

• Forests, scrub; 500–1300 m. Chongqing, N Fujian, S Gansu, N Guangdong, Guangxi, Guizhou, W Hubei, Hunan, N Jiangxi, SW Shaanxi, Sichuan, Taiwan, Yunnan, S Zhejiang.

19b. *Viburnum propinquum* var. *mairei* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 140. 1916.

狭叶球核荚蒾 xia ye qiu he jia mi

Leaves narrower, linear-lanceolate to oblanceolate, 3–8 × 1–1.5 cm, base cuneate, margin sparsely acutely denticulate, apex acute or acuminate. Inflorescence smaller, 2–4 cm wide. Fruit 3–4 mm in diam.

• Scrub; 400–500 m. W Guizhou, SW Hubei, Sichuan, Yunnan.

20. *Viburnum triplinerve* Handel-Mazzetti, Sinensia 5: 15. 1934.

三脉叶荚蒾 san mai ye jia mi

Shrubs, evergreen, to 2 m tall. Bark gray-brownish. Branchlets of current year brownish, slender, sometimes with dense lenticels, glabrous; branchlets of previous year gray-whitish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 1 pair of separate scales; scales reddish brown, glabrous, apex acute. Leaves often clustered at apices of branchlets; stipules absent; petiole green, slender, 7–15 mm, glabrous; leaf blade purplish when young, elliptic, elliptic-ovate, or suborbicular, 2–6(–7.5) × 1–3 cm, leathery, both surfaces glabrous, midvein raised abaxially, triplinerved, veins reaching 3/4 length of leaves, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, impressed adaxially, veinlets transverse, inconspicuous abaxially, slightly impressed adaxially, not lobed, base obtuse or rounded, without glands, margin entire, apex obtuse or rounded. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 1.5–10 cm in diam.; rays whorled; first node of inflorescence with 6–8 rays, lax, glabrous, without large sterile radiant flowers; peduncle ca. 1 cm, slender; bracts caducous, leaflike, green, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers usually on rays of 2nd order, not fragrant; pedicels 1–2 mm, slender. Calyx greenish; tube broadly campanulate, less than 1 mm, glabrous; lobes broadly triangular or broadly ovate, very small, ca. 0.5 mm, nearly 1/2 as long as calyx tube, glabrous, apex obtuse. Corolla greenish white, rotate, ca. 4 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, suborbicular, ca. 1 mm in diam., ca. 2 × as long as tube, apex rounded, margin entire. Stamens nearly as long as corolla, inserted near base of corolla tube; filaments ca. 3 mm; anthers yellow, globose, ca. 1 mm. Styles nearly as long as calyx lobes; stigmas subsessile. Fruit not turning red, maturing purple-blackish, suborbicular, 4–5 mm in diam., base rounded, apex acute, glabrous; pyrenes globose, ca. 4 mm in diam., with 1 very small and shallow ventral groove, apex rounded. Fl. Apr–May, fr. Jun–Oct.

• Mountains; 500–600 m. Guangxi.

This species is perhaps conspecific with *Viburnum propinquum*.

4. *Viburnum* sect. *Solenotinus* Candolle, Prodr. 4: 328. 1830.

圆锥组 yuan zhui zu

Microtinus Oersted; *Solenotinus* (Candolle) Spach; *Thyrsoisma* Rafinesque.

Winter buds with 2 or 3 pairs of separate scales. Inflorescence paniculate, usually pyramidal, without large sterile radiant flowers, pedicellate or subsessile. Corolla rotate, tubular-campanulate, funnellform-hypocrateriform, or hypocrateriform. Fruit maturing red or purple-reddish and later nigrescent; pyrenes with 1 deep ventral groove; albumen solid.

About 20 species: temperate and subtropical Asia; 18 species (13 endemic) in China.

This section was divided into four subsections by H. Hara (Ginkgoana 5: 190–204. 1983): *Viburnum* subsect. *Loniceroides* (Oersted) H. Hara for *V. farreri* and *V. grandiflorum*, *V.* subsect. *Microtinus* (Oersted) H. Hara for *V. odoratissimum* and ca. six other species, *V.* subsect. *Sieboldiana* (Nakai) H. Hara for *V. sieboldii* and probably the Chinese *V. yunnanense* and *V. shweliense*, and *V.* subsect. *Solenotinus* for ca. ten species. Recent phylogenetic work shows that this section is clearly monophyletic (excluding the Bornean *V. clemensiae*) and sister to *V.* sect. *Tomentosa*. Current sampling does not allow a more precise discussion regarding the monophyly of subsections.

21. *Viburnum brachybotryum* Hemsley, J. Linn. Soc., Bot. 23: 349. 1888.

短序荚蒾 duan xu jia mi

Shrubs or small trees, evergreen, to 8 m tall. Bark light brown. Branchlets of current year yellow-whitish or sometimes gray-brownish, yellow-brownish stellate-pubescent, with sparse raised lenticels; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales yellow-brownish stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–2(–3) cm, sparsely stellate-pubescent, glabrescent; leaf blade green when young, obovate, obovate-oblong, or oblong, 7–20 × (2–)3–7 cm, leathery, abaxially sparsely yellow-brownish stellate-pubescent or subglabrous, adaxially glabrous, intense green and lustrous, midvein raised abaxially, lateral veins 5–7-jugate, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base broadly cuneate to subrounded, without glands, margin remotely serrate except at base, sometimes subentire, apex acuminate or acute. Flowers appearing after leaves; inflorescence paniculate, usually pyramidal, terminal or axillary on short branches, erect or nodding, 5–11(–22) × 2.5–8.5(–15) cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, large, yellow-brownish stellate-pubescent, without large sterile radiant flowers; peduncles 3–10 cm; bracts and bracteoles persistent, leaflike, yellowish green, lanceolate, yellow-brownish stellate-pubescent. Flowers on rays of 2nd and 3rd orders, not fragrant, sessile or shortly pedicellate. Calyx green; tube tubular-campanulate, ca. 1.5 mm, sparsely yellow-brownish stellate-pubescent; lobes ovate, ca. 1 mm, sparsely yellow-brownish stellate-pubescent, apex obtuse. Corolla white, rotate, 4–5(–6) mm in diam., sparsely stellate-pubescent; tube very short, ca. 1 mm; lobes spreading, ovate to oblong-ovate, ca. 1.5 mm, ca. 2 × as long as tube, apex obtuse, margin entire. Stamens slightly shorter than corolla, inserted at apex of corolla tube; filaments ca. 2 mm; anthers yellow-whitish, ellipsoid, ca. 1 mm. Styles slightly obviously exceeding calyx lobes; stigmas capitate, 3-lobed. Fruit initially turning yellow, maturing red, ovoid, ca. 1 cm × 6 mm, base rounded, apex acuminate, often stellate-pubescent; pyrenes slightly compressed, ovoid or narrowly ovoid, ca. 8 × 5 mm, with a deep ventral groove, apex acuminate. Fl. Nov–Feb, fr. May–Aug.

• Dense forests, scrub; (400–)600–1900 m. Guangxi, Guizhou, W Hubei, Hunan, Jiangxi, Sichuan, Yunnan.

22. *Viburnum brevityubum* (P. S. Hsu) P. S. Hsu, Acta Phytotax. Sin. 17(2): 80. 1979.

短筒荚蒾 duan tong jia mi

Viburnum erubescens Wallich var. *brevityubum* P. S. Hsu, Acta Phytotax. Sin. 11: 67. 1966; *V. carnosulum* (W. W. Smith) P. S. Hsu var. *impressinerviium* P. S. Hsu; *V. chingii* P. S. Hsu var. *impressinerviium* (P. S. Hsu) P. S. Hsu.

Shrubs, deciduous, to 4 m tall. Bark light brown. Branchlets of current year grayish green, glabrous, with dispersed lenticels; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales brownish, oblong, ca. 7 mm, inside pubescent, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, robust, 7–10 mm, sparsely stellate-pubescent, subglabrescent; leaf blade purplish green when young, becoming intense green and lustrous adaxially, elliptic-oblong to narrowly oblong, sometimes orbicular-oblong or suborbicular, 3–7.5 × 2–3 cm, papery, abaxially sparsely stellate-pubescent along veins, and with pedate holes in axils of veins, adaxially glabrous, midvein raised abaxially, lateral veins ca. 5-jugate, pinnate, arched, branched, ending in teeth or anastomosing near margin, slightly raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base obtuse to subrounded, without glands, margin serrate except at base, apex acuminate or acute. Flowers appearing after leaves; inflorescence paniculate, at apices of branchlets with 1-jugate leaves, 4–5 × 3–4 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, sparsely stellate-pubescent, immediately glabrescent, without large sterile radiant flowers; peduncles (0.8–)2–3.5 cm; bracts and bracteoles persistent, leaflike, purple-reddish, lanceolate, conspicuous, glabrous. Flowers mostly on rays of 2nd order, not fragrant, sessile. Calyx green; tube tubular, ca. 3 mm, glabrous; lobes broadly triangular, ca. 1 mm, glabrous, apex obtuse. Corolla white and reddish, tubular-campanulate, ca. 5 mm in diam., glabrous; tube ca. 4 mm; lobes spreading, broadly ovate, ca. 2.5 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of corolla tube; filaments ca. 2 mm; anthers purple-brownish, oblong, ca. 1 mm, slightly exerted. Styles nearly as long as calyx lobes; stigmas capitate. Fruit ma-

turing red, ellipsoid, ca. 6×4 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 5×3 mm, with a broad and deep ventral groove, apex rounded. Fl. May–Jun, fr. Jul.

• Forests; 1300–2300 m. NE Guizhou, W Hubei, W Jiangxi, Sichuan.

23. *Viburnum chingii* P. S. Hsu, Acta Phytotax. Sin. 11: 68. 1966.

漾濞荚蒾 yang bi jia mi

Shrubs or small trees, evergreen, to 5 m tall. Bark light brown. Branchlets of current year sparsely or densely yellowish stellate-pubescent, glabrescent; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales reddish brown, stellate-pubescent, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, robust, 1–2 cm, sparsely yellowish stellate-pubescent, glabrescent; leaf blade purplish green when young, elliptic, ovate-elliptic, or obovate to obovate-oblong, 3.5–9 cm, subleathery, abaxially sparsely yellowish stellate-pubescent or glabrescent on veins, adaxially lustrous, midvein raised abaxially, lateral veins ca. 6-jugate, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous or slightly impressed on both surfaces, not lobed, base broadly cuneate or obtuse, without glands, margin serrate except at base, apices of teeth slightly mucronate, apex shortly acute or obtuse, sometimes abruptly narrowed and shortly caudate. Flowers appearing with leaves; inflorescence paniculate, terminal, $5-6 \times 4.5-5$ cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, yellowish stellate-pubescent, without large sterile radiant flowers; peduncles (2–)3.5–4.5(–6) cm; bracts caducous, leaflike, reddish, linear to linear-lanceolate, ciliate; bracteoles linear. Flowers on rays of 1st order or 2nd order, not fragrant, mostly sessile. Calyx reddish; tube tubular, ca. 2 mm, glabrous; lobes ovate-triangular, short, less than 1 mm, glabrous, apex obtuse. Corolla pinkish in bud, white when open, funnel-form-hypocrateriform, ca. 6 mm in diam., glabrous; tube ca. 7 mm; lobes spreading, broadly ovate, 2–3 mm, apex rounded, margin entire. Stamens nearly as long as corolla, inserted at apex of corolla tube; filaments ca. 2 mm; anthers purple-blackish, oblong, ca. 1.5 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, obovoid-orbicular, ca. 8×6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, obovoid, ca. 7×4 mm, with 1 broad and deep ventral groove, apex rounded. Fl. Apr–May, fr. Jun–Oct.

Forests, thickets; 1500–3200 m. ?Sichuan, Yunnan [N Myanmar].

Viburnum chingii is very similar to *V. erubescens*; so much so that it may be included in the variation of the latter taxon.

- 1a. Young branches, petioles, leaf veins
sparsely yellowish stellate-pubescent,
glabrescent 23a. var. *chingii*
1b. Young branches, petioles, leaf veins
densely yellowish stellate-pubescent
..... 23b. var. *limitaneum*

23a. *Viburnum chingii* var. *chingii*

漾濞荚蒾(原变种) yang bi jia mi (yuan bian zhong)

Viburnum carnosulum (W. W. Smith) P. S. Hsu; *V. chingii* var. *carnosulum* (W. W. Smith) P. S. Hsu; *V. chingii* var. *patentiserratum* P. S. Hsu; *V. chingii* var. *tenuipes* P. S. Hsu; *V. erubescens* Wallich var. *carnosulum* W. W. Smith; *V. erubescens* var. *neurophyllum* Handel-Mazzetti.

Young branches, petioles, leaf veins sparsely yellowish stellate-pubescent, glabrescent.

• Forests; 2000–2900 m. Yunnan.

23b. *Viburnum chingii* var. *limitaneum* (W. W. Smith) Q. E. Yang, **comb. nov.**

多毛漾濞荚蒾 duo mao yang bi jia mi

Basionym: *Viburnum erubescens* var. *limitaneum* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 138. 1916; *V. subalpinum* Handel-Mazzetti var. *limitaneum* (W. W. Smith) P. S. Hsu.

Young branches, petioles, and leaf veins densely yellowish stellate-pubescent.

Forests, thickets; 1500–2900 m. W Yunnan (Tengchong) [N Myanmar].

24. *Viburnum corymbiflorum* P. S. Hsu & S. C. Hsu, Acta Phytotax. Sin. 11: 73. 1966.

伞房荚蒾 san fang jia mi

Shrubs or small trees, to 5 m tall. Bark light brown. Branchlets of current year yellow-whitish or pale brown, glabrous; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, ca. 1 cm, sparsely stellate-pubescent, later subglabrous; leaf blade green when young, becoming intense green and lustrous adaxially, oblong or oblong-lanceolate, or elliptic to obovate, $5-10(-13) \times 3-4.5$ cm, papery, very rarely subleathery, abaxially glabrous or very sparsely stellate-pubescent on veins, midvein raised abaxially, lateral veins 4–6-jugate, pinnate, slightly arched, rarely branched, mostly ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, inconspicuous adaxially, not lobed, base rounded to broadly cuneate, without glands, margin remotely serrate except at base, apex acute. Flowers appearing after leaves; inflorescence paniculate, corymblike due to shortening of inflorescence axis, at apices of short branchlets with 1 pair of leaves, $(1.5-3)3-4 \times (3-4)4-5.5(-6)$ cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, sparsely stellate-pubescent, without large sterile radiant flowers; peduncles 2–4.5 cm; bracts persistent, leaflike, greenish, lanceolate, sparsely hairy; bracteoles scalelike. Flowers on rays of 3rd order, not fragrant, long pedicellate. Calyx green; tube tubular, ca. 2 mm, glabrous or subglabrous; lobes narrowly ovate, ca. 2 mm, glabrous, apex obtuse. Corolla white, rotate, ca. 8 mm in diam., glabrous; tube less than 1 mm; lobes spreading, oblong-orbicular, ca. 3 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of

corolla tube; filaments ca. 1.5 mm; anthers yellow-whitish, ellipsoid, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ellipsoid, 7–8(–10) × 5–6 mm, base rounded, apex rounded, glabrous; pyrenes obovoid or obovoid-oblong, ca. 6 × 4 mm, with a deep ventral groove, apex rounded. Fl. Apr–May, fr. Jun–Jul.

• Forests, scrub; 1000–2400 m. N Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, SW Jiangxi, Sichuan, Yunnan, S Zhejiang.

- 1a. Branchlets yellow-whitish; leaves oblong or oblong-lanceolate, 6–13 × 3–4 cm 24a. subsp. *corymbiflorum*
 1b. Branchlets pale brown; leaves elliptic to obovate, 5–9.5 × 3–4.5 cm 24b. subsp. *malifolium*

24a. *Viburnum corymbiflorum* subsp. *corymbiflorum*

伞房荚蒾(原亚种) *san fang jia mi* (*yuan ya zhong*)

Branchlets yellow-whitish. Leaves oblong or oblong-lanceolate, 6–13 × 3–4 cm.

• Forests, scrub; 1000–1800 m. N Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, SW Jiangxi, Sichuan, Yunnan, S Zhejiang.

24b. *Viburnum corymbiflorum* subsp. *malifolium* P. S. Hsu, Acta Phytotax. Sin. 11: 74. 1966.

苹果叶荚蒾 *ping guo ye jia mi*

Branchlets pale brown. Leaves elliptic to obovate, 5–9.5 × 3–4.5 cm.

• Forests; 1700–2400 m. Yunnan.

25. *Viburnum erubescens* Wallich, Pl. Asiat. Rar. 2: 29. 1831.

红荚蒾 *hong jia mi*

Solenotinus erubescens (Wallich) Oersted; *Viburnum botryoideum* H. Léveillé; *V. burmanicum* (Rehder) C. Y. Wu ex P. S. Hsu; *V. burmanicum* var. *motoense* P. S. Hsu; *V. erubescens* var. *burmanicum* Rehder; *V. erubescens* var. *gracilipes* Rehder; *V. erubescens* var. *parvum* P. S. Hsu & S. C. Hsu; *V. erubescens* var. *prattii* (Graebner) Rehder; *V. prattii* Graebner; *V. pubigerum* Wight & Arnott; *V. thibeticum* C. Y. Wu & Y. F. Huang; *V. wightianum* Wallich.

Shrubs or small trees, deciduous, to 6 m tall. Bark light brown. Branchlets of current year stellate-pubescent or glabrous; branchlets of previous year gray-brownish or gray-whitish, terete, glabrous, with sparse, dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales reddish brown, stellate-pubescent, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purplish, robust, 1–2.5 cm, stellate-pubescent or glabrous; leaf blade green when young, elliptic or oblong-lanceolate to narrowly oblong, rarely ovate-cordate or slightly obovate, (2–)6–14 × 1–9 cm, papery, abaxially stellate-pubescent on midvein and lateral veins, adaxially glabrous or pubescent on midvein, midvein raised abaxially, lateral veins 4–9-jugate, pinnate, slightly arched, branched, mostly ending in teeth, raised abaxially, impressed adaxially, veinlets transverse,

slightly impressed on both surfaces, not lobed, base cuneate or obtuse to rounded or cordate, without glands, margin serrulate except at base, apex acuminate or acute to obtuse. Flowers appearing with leaves; inflorescence paniculate, at apices of short branchlets with 1-jugate leaves, usually nodding, (5–)7.5–10 × 3–4 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, stellate-pubescent or subglabrous, without large sterile radiant flowers; peduncles 2–6 cm; bracts caducous, leaflike, reddish, linear to linear-lanceolate, glabrous; bracteoles linear. Flowers on rays from 1st to 3rd orders, fragrant, sessile or shortly pedicellate. Calyx reddish; tube tubular, 2.5–3 mm, usually glabrous, sometimes with tiny red-brown glands; lobes ovate-triangular, very small, ca. 0.5 mm, glabrous or stellate-pubescent, apex obtuse. Corolla white tinted pink outside, or pink, hypocrateriform, ca. 8 mm in diam., glabrous; tube 5–6 mm; lobes spreading, ovate, 2–3.5 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of corolla tube; filaments very short; anthers yellow-whitish, slightly exerted, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing purple-reddish, later nigrescent, ellipsoid, 6.5–8.5 × 4.5–6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, obovoid, 7–9 × 4–5 mm, with 1 broad and deep ventral groove, apex rounded. Fl. Apr–Jun, fr. Aug. $2n = 48, 64$.

Forests, scrub; (1500–)2400–3500 m. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, SE Xizang, Yunnan [Bhutan, N India, N Myanmar, Nepal].

This taxon shows a complex variation pattern. The number of flowers in the inflorescence and the number of lateral veins have been used to recognize separate taxa such as *Viburnum burmanicum*, *V. erubescens* var. *parvum*, or *V. prattii*.

In Fl. Xizang. (4: 483. 1985), “*Viburnum burmanicum* var. *medogense* P. S. Hsu” was written instead of *Viburnum burmanicum* var. *motoense* P. S. Hsu.

26. *Viburnum farreri* Stearn, Taxon 15: 22. 1966.

香荚蒾 *xiang jia mi*

Lonicera mongolica Gmelin; *Viburnum farreri* var. *stellipilum* D. Z. Ma & H. L. Liu; *V. fragrans* Bunge (1833), not Loisel (1824).

Shrubs, deciduous, to 5 m tall. Bark gray-brownish. Branchlets of current year green, subglabrous; branchlets of previous year red-brownish, later gray-brownish or gray-whitish, terete, glabrous, with sparse, dispersed, small, rounded lenticels. Winter buds ellipsoid, with 2 or 3 pairs of separate scales; scales reddish brown, ciliate, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purplish, robust, (1–)1.5–3 cm, adaxially pubescent on margin when young; leaf blade purplish green when young, elliptic or rhombic-obovate, 4–8 × 1–2.5 cm, papery, abaxially slightly pubescent on veins, adaxially sparsely pubescent with fine and short hairs when young, later glabrous on both surfaces but stellate-pubescent in axils of veins, midvein raised abaxially, lateral veins 5–7-jugate, pinnate, straight or slightly arched, branched, ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, inconspicuous or slightly impressed on both sur-

faces, not lobed, base cuneate to broadly cuneate, without glands, margin triangular-serrate except at base, apex acute. Flowers appearing before leaves; inflorescence paniculate, at apices of short branchlets that can produce new leaves, 3–5 × 2.5–3.5 cm; rays opposite, decussate; first node of inflorescence with 2 rays, many flowered, sparsely pubescent when young, glabrescent, without large sterile radiant flowers; peduncles very short when flowers just open, later gradually elongated; bracts caducous, leaflike, reddish, linear-lanceolate, ciliate, subglabrous; bracteoles linear. Flowers on rays from 1st to 3rd orders, fragrant, sessile. Calyx reddish; tube tubular-obconical, ca. 2 mm, glabrous; lobes ovate, very small, ca. 0.5 mm, glabrous, apex obtuse. Corolla pink in bud, white when open, hypocrateriform, ca. 1 cm in diam., glabrous; tube 7–10 mm, slightly spreading in upper part; lobes spreading, broadly ovate, ca. 4 × 3 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted above middle of corolla tube generally at different heights; filaments very short or absent; anthers yellow-whitish, subglobose, ca. 1.5 mm. Styles not exceeding calyx lobes; stigmas 3-lobed. Fruit initially turning yellow, maturing purple-reddish, oblong, 8–10 × ca. 6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, oblong, ca. 7 × 5 mm, with 1 deep ventral groove, apex rounded. Fl. Apr–May, fr. Jun–Jul. *2n* = 16*, 32*.

• Forests; 1600–2800 m. Gansu, Qinghai, Xinjiang; commonly cultivated in Gansu, Hebei, Henan, Qinghai, Shandong.

27. *Viburnum grandiflorum* Wallich ex Candolle, Prodr. 4: 329. 1830.

大花荚蒾 da hua jia mi

Shrubs or small trees, deciduous, to 5 m tall. Bark gray-brownish. Branchlets of current year green, glabrous or sometimes pubescent; branchlets of previous year gray or brown, trabeculate, glabrous, with sparse, dispersed, small, rounded lenticels. Winter buds ellipsoid, with 2 or 3 pairs of separate scales; scales reddish brown, ciliate, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purplish, robust, 1–1.5 cm, sparsely stellate-pubescent or glabrous; leaf blade purplish green when young, elliptic-oblong, rarely elliptic or obovate-elliptic, 6–10 × 2.5–4 cm, papery, abaxially densely pubescent, adaxially sparsely pubescent, later pubescent only on veins and in axils of veins abaxially, midvein raised abaxially, lateral veins 6–10-jugate, pinnate, straight or slightly arched, branched, ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, inconspicuous or slightly impressed on both surfaces, not lobed, base cuneate, without glands, margin crenate-serrate except at base, apex acuminate. Flowers appearing before leaves; inflorescence paniculate, densely clustered at apices of leafless short branchlets, 2–7 × 3–4 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, sericeous, without large sterile radiant flowers, subtended by ovate to orbicular-ovate scales; outer scales nearly leaflike, to ca. 1 cm, intense brown, pubescent or glabrous; inner scales tomentose on margins of both sides; scales deciduous when inflorescence opens; peduncles very short when flowers just open, later gradually elongated; bracts caducous, leaflike, reddish, oblong to linear, to 1 cm, silvery

sericeous at first, later glabrous; bracteoles oblong to linear. Flowers on rays from 1st to 3rd orders, fragrant, sessile. Calyx reddish; tube tubular, ca. 3 mm, glabrous; lobes triangular, small, ca. 1 mm, glabrous, apex obtuse. Corolla pink outside, white inside, hypocrateriform, ca. 1 cm in diam., glabrous; tube to 1 cm; lobes spreading, broadly ovate, 4–5 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at or above middle of corolla tube, generally at different heights; filaments ca. 3 mm; anthers yellow, elliptic-oblong, ca. 2 mm. Styles exceeding calyx lobes; stigmas discoid, 2-lobed. Fruit initially turning yellow, maturing purple-reddish, ellipsoid or oblong-ellipsoid, ca. 12 × 8 mm, usually only 1 infructescence mature, base rounded, apex rounded, glabrous; pyrenes slightly compressed, oblong, 9–11 × 5–6 mm, with 1 deep ventral groove, apex rounded. Fl. May, fr. Jun–Jul. *2n* = 16.

Forests; 2800–4300 m. Xizang [Bhutan, India (Sikkim), Kashmir, Nepal, Pakistan].

In China, only *Viburnum grandiflorum* f. *grandiflorum* is reported. A glabrous form, with pure white or pink-tinged corolla, known as *V. grandiflorum* f. *foetens* (Decaisne) N. P. Taylor & Zappi, occurs in India, Nepal, and Pakistan.

28. *Viburnum henryi* Hemsley, J. Linn. Soc., Bot. 23: 353. 1888.

巴东荚蒾 ba dong jia mi

Viburnum rosthornii Graebner var. *xerocarpum* Graebner.

Shrubs or small trees, evergreen or semievergreen, to 7 m tall. Bark light brown. Branchlets of current year purplish brown or green, glabrous; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds oblong, with 2 pairs of separate scales; scales yellow stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, robust, 1–2 mm, glabrous; leaf blade purplish green when young, obovate-oblong to oblong or narrowly oblong, 5–10(–13) × 2–4 cm, subleathery, abaxially stellate-pubescent in axils of veins, and with pedate holes in axils of veins, adaxially glabrous and lustrous, midvein raised abaxially, lateral veins 5–7-jugate, pinnate, slightly arched, rarely branched, partly ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base cuneate to rounded, without glands, margin serrate above middle part, apex acute to acuminate. Flowers appearing after leaves; inflorescence paniculate, terminal, 4–9 × 5–8 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, glabrous, without large sterile radiant flowers; peduncles 2–4 cm, slender; bracts and bracteoles late deciduous or persistent and conspicuous, leaflike, green-whitish, linear-lanceolate, glabrous. Flowers on rays of 2nd and 3rd orders, fragrant, sessile. Calyx reddish; tube tubular to obconical-tubular, ca. 2 mm, glabrous; lobes broadly triangular, ca. 1 mm, glabrous, apex obtuse. Corolla white, rotate, ca. 6 mm in diam., glabrous or subglabrous; tube ca. 1 mm; lobes spreading, ovate-orbicular, ca. 2 mm, apex rounded, margin entire. Stamens equaling or slightly exceeding corolla lobes, inserted at apex of corolla tube; filaments ca. 2 mm; anthers yellow-whitish, oblong, ca. 1 mm. Styles nearly as long

as calyx lobes; stigmas capitate. Fruit initially turning red, maturing purple-blackish, ellipsoid, 8–9 × ca. 6 mm, base rounded, apex rounded, glabrous; pyrenes slightly compressed, ellipsoid, 7–8 × ca. 4 mm, with a deep ventral groove, apex rounded. Fl. Jun, fr. Aug–Sep. $2n = 48^*$.

• Dense forests, moist grassy slopes; 900–2600 m. N Fujian, Guangxi, SE Guizhou, W Hubei, W Jiangxi, S Shaanxi, Sichuan, S Zhejiang.

29. *Viburnum longipedunculatum* (P. S. Hsu) P. S. Hsu, Acta Phytotax. Sin. 17(2): 78. 1979.

长梗荚蒾 chang geng jia mi

Viburnum corymbiflorum P. S. Hsu & S. C. Hsu var. *longipedunculatum* P. S. Hsu, Acta Phytotax. Sin. 13(1): 115. 1975.

Shrubs, deciduous, total size unknown. Bark unknown. Branchlets of current year grayish yellow, with dispersed, rounded lenticels; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales brownish, yellow-brownish stellate-pubescent, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–2 cm, glabrous; leaf blade green when young, becoming dark green adaxially, oblong to obovate-oblong, (4–)5–14 × (1.5–)2.5–6 cm, papery, both surfaces glabrous, midvein raised abaxially but not adaxially, lateral veins 4- or 5-jugate, pinnate, arched, branched, anastomosing near margin, conspicuously raised abaxially, inconspicuous adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base broadly cuneate, without glands, margin remotely and shallowly serrate above 1/5–1/3 from base, apex abruptly narrowed and caudate. Flowers appearing after leaves; inflorescence paniculate, at apices of short branchlets with 1-jugate leaves, 2.5–4.5 × 2–4 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, with dispersed small glands, without large sterile radiant flowers; peduncles (3.5–)6–9 cm, nodding at fruiting stage; bracts persistent, leaflike, reddish, linear to linear-lanceolate, large and conspicuous, sparsely glandular hairy; bracteoles persistent, scalelike. Flowers on rays of 1st and 2nd orders, not fragrant, sessile. Calyx reddish; tube obconical, ca. 3 mm, outside with few small glands; lobes orbicular-ovate to ovate-triangular, ca. 1 mm, glabrous, apex slightly acute or obtuse. Corolla white, tubular-funnelform, ca. 8 mm in diam., glabrous; tube ca. 7 mm; lobes spreading, orbicular-ovate, ca. 3 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of corolla tube; filaments very short; anthers yellow-whitish, elliptic-oblong, ca. 1.7 mm. Styles nearly as long as calyx lobes; stigmas slightly 3-lobed. Fruit initially turning red, maturing intense red, ellipsoid or oblong-ellipsoid, 8–10 × 5–6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 7.5 × 5 mm, with 1 deep ventral groove, apex rounded. Fl. Apr–May, fr. Jul–Aug.

• Dense forests; 1400–1600 m. Guangxi, SE Yunnan (Xichou).

30. *Viburnum odoratissimum* Ker Gawler, Bot. Reg. 6: t. 456. 1820.

珊瑚树 shan hu shu

Shrubs or small trees, evergreen, to 10(–15) m tall. Bark gray-brownish. Branchlets of current year green or reddish, glabrous or sometimes sparsely yellow-brownish stellate-pubescent; branchlets of previous year gray or gray-brownish, terete, glabrous, with dispersed, small, raised lenticels. Winter buds ovoid-lanceolate, with 2–4 pairs of separate scales; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, robust, 1–2(–3) cm, glabrous or stellate-pubescent; leaf blade green when young, becoming intense green and lustrous adaxially, elliptic to oblong or oblong-obovate to obovate, sometimes suborbicular, 7–20 × (3–)4–9 cm, leathery, abaxially sometimes with sparse, dispersed dark red minute glands, both surfaces glabrous or sparsely stellate-pubescent on veins, midvein raised and conspicuous abaxially, lateral veins 4–9-jugate, pinnate, arched, branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised abaxially, inconspicuous adaxially, not lobed, base broadly cuneate, rarely rounded, without glands, margin irregularly serrate except at base or subtire, apex shortly acute to obtusely acute and mucronate, sometimes obtuse or subrounded. Flowers appearing after leaves; inflorescence paniculate, pyramidal, terminal or at apices of short lateral branchlets with 1-jugate leaves, (3.5–)6–13.5 × (3–)4.5–6 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, large, glabrous or stellate-pubescent, without large sterile radiant flowers; peduncles 4–10 cm; bracts caducous, leaflike, greenish, less than 1 cm × 2 mm, lanceolate to ovate, sparsely hairy; bracteoles scalelike. Flowers usually on rays of 2nd and 3rd orders, fragrant, sessile or shortly pedicellate. Calyx green; tube tubular-campanulate, 1.5–4 mm, glabrous; lobes broadly triangular, ca. 1 mm, glabrous, apex obtuse. Corolla white, later yellow-whitish, sometimes reddish, rotate, ca. 7 mm in diam., glabrous; tube ca. 2 mm; lobes reflexed, orbicular-ovate, 2–3 mm, apex rounded, margin entire. Stamens slightly exceeding corolla lobes, inserted at apex of corolla tube; filaments 2.5–3 mm; anthers yellow, oblong, nearly 2 mm. Styles not exceeding calyx lobes; stigmas capitate or slightly 3-lobed. Fruit initially turning red, maturing nigrescent, ovoid or ovoid-ellipsoid, ca. 8 × 5–6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid or ovoid-ellipsoid, ca. 7 × 4 mm, with a deep ventral groove, apex rounded. Fl. Mar–May, fr. Jun–Sep. $2n = 40$.

Forests, scrub; sea level to 2500 m. SE Fujian, Guangdong, Guangxi, ?Guizhou, Hainan, Hebei, Henan, Hunan, Taiwan, Yunnan, Zhejiang [E India, Japan, Korea, N Myanmar, ?Philippines, Thailand, Vietnam].

This species is commonly cultivated in China.

- 1a. Inflorescence axes brownish
stellate-pubescent 30c. var. *arboricola*
- 1b. Inflorescence axes glabrous.
 - 2a. Leaf blade elliptic-obovate, thickly
leathery and lustrous, petiole reddish,
lateral veins 5–8-jugate; corolla
campanulate, tube 3–4 mm 30b. var. *awabuki*
 - 2b. Leaf blade obovate, papery and
dull, petiole green, lateral veins
4–6-jugate; corolla subrotate,
tube less than 2.5 mm 30a. var. *odoratissimum*

30a. *Viburnum odoratissimum* var. *odoratissimum*

珊瑚树(原变种) shan hu shu (yuan bian zhong)

Microtinus odoratissimus (Ker Gawler) Oersted; *Thyrso-ma chinensis* Rafinesque, nom. illeg. superfl.; *Viburnum kerrii* Geddes; *V. sinense* Zeyher ex Colla (1824), not *V. chinense* Hooker & Arnott (1833).

Petiole green; leaf blade dull, obovate, papery, lateral veins 4–6-jugate. Inflorescence axes glabrous. Corolla subtrotate; tube less than 2.5 mm. $2n = 32$.

Forests; 200–1300 m. SE Fujian, Guangdong, Guangxi, ?Guizhou, Hainan, Hebei, Henan, Hunan, Taiwan, Yunnan [E India, Japan, Korea, N Myanmar, Thailand, Vietnam].

This variety is commonly cultivated in China.

30b. *Viburnum odoratissimum* var. *awabuki* (K. Koch) Zabel ex Rümpler, Ill. Gartenbau-Lex., ed. 3, 877. 1902.

日本珊瑚树 ri ben shan hu shu

Viburnum awabuki K. Koch, Wochenschr. Vereines Beförd. Gartenbaues Königl. Preuss. Staaten 10: 109. 1867; *V. awabuki* var. *serratum* (Makino) Nakai; *V. odoratissimum* var. *conspersum* W. W. Smith; *V. odoratissimum* var. *serratum* Makino; *V. sessiliflorum* Geddes; *V. simonsii* J. D. Hooker & Thomson.

Petiole reddish; leaf blade lustrous, elliptic-obovate, thickly leathery, lateral veins 5–8-jugate. Inflorescence axes glabrous. Corolla campanulate; tube 3–4 mm. $2n = 40$.

Forests; sea level to 1500 m. Taiwan [Japan, ?Philippines].

This variety is commonly cultivated in China (e.g., Anhui, Jiangsu, Zhejiang).

30c. *Viburnum odoratissimum* var. *arboricola* (Hayata) Yamamoto, J. Soc. Trop. Agric. 8: 69. 1936.

台湾珊瑚树 tai wan shan hu shu

Viburnum arboricola Hayata, Icon. Pl. Formosan. 4: 12. 1914; *V. sphaerocarpum* Y. C. Liu & C. H. Ou.

Petiole green; leaf blade dull, elliptic to oblong, papery to subleathery, lateral veins 6–9-jugate. Inflorescence axes brownish stellate-pubescent. Corolla campanulate; tube ca. 1.5 mm.

• Forests; 1500–2500 m. Taiwan.

31. *Viburnum oliganthum* Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 13: 372. 1894.

少花荚蒾 shao hua jia mi

Viburnum stapfianum H. Léveillé.

Shrubs or small trees, evergreen, to 6 m tall. Bark gray-brownish. Branchlets of current year brown, with rounded lenticels; branchlets of previous year gray-brownish or black, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds oblong, with 2 pairs of separate scales; scales brownish, stellate-pubescent, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purple-

reddish, robust, 5–15 mm, stellate-pubescent or glabrous; leaf blade green when young, becoming intense green and lustrous adaxially, oblanceolate to linear-oblanceolate or obovate-oblong to oblong, rarely obovate, 5–10(–13) × (1.5–)2–3.5 cm, subleathery or leathery, very rarely thickly papery, both surfaces glabrous, midvein raised on both surfaces, particularly so adaxially, lateral veins 5- or 6-jugate, pinnate, arched, branched, anastomosing near margin, slightly conspicuous abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base cuneate to obtuse, rarely subrounded, without glands, margin remotely and shallowly serrate above 1/3–1/2 from base, apex abruptly narrowed and acuminate to long acuminate, shortly or long caudate. Flowers appearing after leaves; inflorescence paniculate, at apices of short branchlets with 1-jugate leaves, 2.5–4.5(–10) × 2–4 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, glabrous, without large sterile radiant flowers; peduncles (1.2–)2.5–7 cm, slender and compressed, purple-reddish, sparsely yellow-brownish stellate-pubescent; bracts persistent, leaflike, purple-reddish, linear to linear-lanceolate, glabrous; bracteoles persistent, scalelike. Flowers on rays of 1st and 2nd orders, not fragrant, sessile. Calyx purple-reddish; tube tubular-obconical, ca. 2 mm, glabrous; lobes triangular-ovate, ca. 0.5 mm, glabrous, apex acute. Corolla white or reddish, funneliform, ca. 6 mm in diam., glabrous; tube 6–8 mm; lobes spreading, broadly ovate, ca. 2 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of corolla tube; filaments very short; anthers purple-reddish, oblong, ca. 1.5 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit initially turning red, maturing nigrescent, ellipsoid, 6–7 × 4–5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 6 × 4 mm, with 1 broad and deep ventral groove, apex rounded. Fl. Apr–Jun, fr. Jun–Aug.

• Forests, scrub; 1000–2200 m. Guizhou, W Hubei, Sichuan, Xizang, NE Yunnan.

32. *Viburnum omeiense* P. S. Hsu, Acta Phytotax. Sin. 11: 67. 1966.

峨眉荚蒾 e mei jia mi

Shrubs, deciduous, ca. 75 cm tall. Bark unknown. Branchlets of current year gray-yellowish, with dispersed, raised lenticels; branchlets of previous year gray-yellowish, terete, glabrous, with dispersed, small, raised lenticels. Winter buds oblong, with 2 pairs of separate scales; scales reddish brown, glabrous, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole reddish, robust, 5–10 mm, glabrous; leaf blade purplish green when young, oblong, 3–7 × 1.5–3 cm, thickly papery, both surfaces glabrous, midvein raised on both surfaces, lateral veins ca. 4-jugate, pinnate, arched, rarely branched, anastomosing near margin, slightly raised abaxially, inconspicuous or slightly impressed adaxially, veinlets transverse, inconspicuous or slightly impressed on both surfaces, not lobed, base cuneate, without glands, margin remotely crenulate except at base, apices of teeth slightly mucronate, apex acute. Flowers appearing with leaves; inflorescence paniculate, terminal or at apices of short lateral branchlets with 1 pair of leaves, ca. 3.5 × 4.5 cm; rays

opposite, decussate; first node of inflorescence with 2 rays, dense, glabrous, without large sterile radiant flowers; peduncle 2–3 cm; bracts caducous, leaflike, green, oblong or linear, ca. 1.8 × 0.8 mm, midvein red at base, lateral veins inconspicuous, apex obtuse, sparsely stellate-pubescent or sometimes sparsely ciliate; bracteoles scalelike. Flowers on rays of 1st and 2nd orders, not fragrant, sessile. Calyx reddish; tube tubular-obconical, ca. 1.8 mm, glabrous; lobes broadly ovate, short, ca. 0.8 mm, glabrous, apex acute. Corolla white, hypocrateriform, less than 5 mm in diam., glabrous; tube ca. 3.5 mm; lobes ?spreading, broadly ovate, ca. 1 mm, 1 slightly larger than others, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of corolla tube; filaments very short; anthers yellow-whitish, elliptic-oblong, ca. 1 mm. Styles slightly exceeding calyx lobes or not; stigmas 3-lobed. Fruit unknown. Fl. Nov–May.

- Mountains; ca. 1300 m. Sichuan (Emei Shan).

This species is represented by the type collection, which appears to have a premature inflorescence, and an additional collection with old flowers. Field work is needed to determine the identity of these plants.

33. *Viburnum shweliense* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 12: 227. 1920.

瑞丽荚蒾 *rui li jia mi*

Shrubs or small trees, deciduous, to 3 m tall. Bark light brown. Branchlets of current year reddish green, glabrous, with dispersed, gray lenticels; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds oblong, with 2 pairs of separate scales; scales reddish brown, stellate-pubescent, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, robust, 2–2.5 cm, sparsely stellate-pubescent or glabrous; leaf blade purplish green when young, broadly elliptic or oblong-elliptic, 8–12.5 cm, papery, abaxially stellate-pubescent on midvein and lateral veins, adaxially glabrous, midvein raised abaxially, lateral veins 6- or 7-jugate, pinnate, slightly arched, branched, ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, slightly impressed adaxially, not lobed, base nearly broadly cuneate, without glands, margin conspicuously serrulate, apex obtuse or mucronate. Flowers appearing with leaves; inflorescence paniculate, at apices of short branchlets with 1-jugate leaves, ca. 5 × 5 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, densely whitish stellate-pubescent or subglabrous, without large sterile radiant flowers; peduncles 3–4 cm, sparsely pubescent; bracts caducous, leaflike, green, ovate to elliptic, ciliate; bracteoles linear. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate. Calyx reddish; tube obconical, ca. 3 mm, usually glabrous, sometimes with few hairs; lobes ovate-triangular, very small, less than 1 mm, glabrous, apex acute. Corolla whitish, rotate-campanulate, ca. 6 mm in diam., glabrous; tube ca. 3 mm; lobes recurved, broadly ovate, 1.5–2 mm, apex rounded. Stamens obviously exceeding corolla tube, inserted at apex of corolla tube; filaments ca. 3 mm; anthers yellow, elliptic-oblong, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit unknown. Fl. Jul.

- Forests; ca. 800 m. W Yunnan [?Myanmar].

34. *Viburnum subalpinum* Handel-Mazzetti, Symb. Sin. 7: 1034. 1936.

亚高山荚蒾 *ya gao shan jia mi*

Shrubs, deciduous, very rarely to 1 m tall. Bark light brown. Branchlets of current year sparsely or densely yellow-brownish stellate-pubescent or subglabrous; branchlets of previous year gray-yellowish, terete, glabrous, with dispersed, rounded lenticels. Winter buds oblong, with 2 pairs of separate scales; scales reddish brown, glabrous, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purple-reddish, robust, 5–13 mm, sparsely yellow-brownish stellate-pubescent, glabrescent; leaf blade purplish green when young, orbicular or broadly elliptic, 1.5–4(–5) × 1.5–4.5 cm, papery, abaxially with sparse red-brownish tiny glands, sparsely stellate-pubescent on veins, adaxially sparsely pubescent or glabrous, midvein raised on both surfaces, lateral veins 3–5-jugate, pinnate, arched, rarely branched, mostly anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base truncate to broadly cuneate, without glands, margin remotely serrate except at base, apex obtuse or rounded and mucronate, rarely acuminate. Flowers appearing with leaves; inflorescence paniculate, at apices of lateral branchlets with 1-jugate leaves, 2–4 × 2–3 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, glabrous, without large sterile radiant flowers; peduncles nodding, 1.2–3.7 cm, slender, stellate-pubescent; bracts persistent, leaflike, purple-reddish, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays of 1st and 2nd orders, not fragrant, shortly pedicellate. Calyx reddish; tube tubular-obconical, ca. 2 mm, glabrous; lobes broadly triangular, ca. 0.7 mm, glabrous, apex acute. Corolla pinkish in bud, white when open, funnelform, ca. 6 mm in diam., glabrous; tube 4–5 mm; lobes recurved, broadly ovate, ca. 2 mm, apex rounded, margin papillose-ciliate. Stamens longer than corolla, inserted at apex of corolla tube; filaments ca. 2 mm; anthers purple-reddish, elliptic, ca. 0.8 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ellipsoid, 5–7 × 4–5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 5 × 4 mm, with 1 deep ventral groove, apex rounded. Fl. May–Jul, fr. Jul.

Bamboo forests, *Abies* forests; 1600–3800 m. NW and W Yunnan [N Myanmar].

35. *Viburnum taitoense* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 136. 1911.

台东荚蒾 *tai dong jia mi*

Viburnum tubulosum P. S. Hsu.

Shrubs, evergreen, to 2 m tall. Bark gray-brownish. Branchlets of current year purple-brownish, densely or sparsely stellate-pubescent; branchlets of previous year gray-yellowish or gray-whitish, terete, glabrous, with conspicuously raised lenticels. Winter buds lanceolate, with 2 pairs of separate scales; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 6–10(–15)

mm, stellate-pubescent; leaf blade green when young, becoming intense green and lustrous adaxially, oblong, oblong-lanceolate, or ovate-oblong, 5–9 × 2–3 cm, thickly papery or slightly leathery, abaxially stellate-pubescent in axils of veins, adaxially glabrous, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, branched, anastomosing near margin, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, inconspicuous adaxially, not lobed, base broadly cuneate or subrounded, without glands, margin serrate except at base, apex shortly acute or subrounded. Flowers appearing after leaves; inflorescence paniculate, terminal, ca. 3 × 2 cm; rays opposite, decussate; first node of inflorescence with 2 rays, few flowered, stellate-pubescent, without large sterile radiant flowers; peduncles ca. 2 cm, slender; bracts and bracteoles late deciduous, leaflike, greenish, linear-lanceolate, stellate pubescent. Flowers on rays of 1st and 2nd orders, not fragrant; pedicels 3–4 mm. Calyx reddish; tube tubular-campanulate, ca. 2 mm, glabrous or sparsely stellate-pubescent; lobes triangular, ca. 1 mm, with few stellate ciliate hairs, apex obtuse. Corolla white, funnellform, ca. 6 mm in diam., glabrous; tube 5–9 mm; lobes spreading, ovate to suborbicular, 2–3 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at apex of corolla tube; filaments very short; anthers yellow-whitish, oblong, ca. 1 mm. Styles long, slender, obviously exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid-ellipsoid, 7–9 × ca. 6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 7 × 5 mm, with a deep ventral groove, apex rounded. Fl. Mar–Apr, fr. Sep–Nov.

• Rocky scrub, streamsides of mountain valleys; 1600–3000 m. N Guangxi, S Hunan, E Taiwan.

36. *Viburnum tengyuehense* (W. W. Smith) P. S. Hsu, Acta Phytotax. Sin. 11: 72. 1966.

腾越荚蒾 *teng yue jia mi*

Shrubs, deciduous, to 7 m tall. Bark light brown. Branchlets of current year stellate-pubescent, glabrescent; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales pubescent outside. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, ca. 1 cm, stellate-pubescent, glabrescent; leaf blade green when young, elliptic-oblong or ovate-oblong, 7–11 × 2.5–5 cm, thickly papery, abaxially sometimes stellate-pubescent in axils of veins, adaxially glabrous, midvein raised abaxially, lateral veins 5–10-jugate, pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base broadly cuneate to obtuse, without glands, margin serrate except at base, apex shortly acuminate to shortly cuspidate. Flowers appearing after leaves; inflorescence paniculate, terminal or at apices of short lateral branchlets with 1 pair of leaves, 2.5–3 × 3–3.5 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, yellow-brownish stellate-pubescent, without large sterile radiant flowers; peduncles 1.5–5 cm; bracts persistent, leaflike, greenish, ovate-lanceolate, sparsely hairy; bracteoles scalelike. Flowers on rays of 2nd and 3rd orders, not fragrant, sessile or shortly pedicellate. Calyx green; tube tubu-

lar, ca. 2.5 mm, glabrous; lobes triangular, ca. 0.7 mm, glabrous, apex ± acute. Corolla white, rotate, ca. 4.5 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, broadly ovate, ca. 2 × 1.8 mm, ca. 2 × as long as tube, apex obtuse, margin entire. Stamens nearly as long as corolla, inserted at apex of corolla tube; filaments ca. 2 mm; anthers yellow-whitish, ellipsoid, ca. 1 mm. Styles equaling or slightly exceeding calyx lobes; stigmas slightly 2-lobed. Fruit maturing red, oblong or ovoid-ellipsoid, 5–6 × 3.5–5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 4 × 3.5 mm, with a deep, broad ventral groove, both ends rounded. Fl. Apr–Jun, fr. Jul–Nov.

• Forests; 1500–2300 m. Guizhou, Yunnan [?Myanmar].

- 1a. Leaves with 5- or 6-jugate lateral veins; serrations acute 36a. var. *tengyuehense*
 1b. Leaves with 6–10-jugate lateral veins; serrations obtuse 36b. var. *polyneurum*

36a. *Viburnum tengyuehense* var. *tengyuehense*

腾越荚蒾(原变种) *teng yue jia mi* (yuan bian zhong)

Viburnum brachybotryum Hemsley var. *tengyuehense* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 137. 1916; *V. oblongum* P. S. Hsu; *V. oblongum* var. *tengyuehense* (W. W. Smith) P. S. Hsu.

Leaves with 5- or 6-jugate lateral veins, serrations acute.

• Forests; 1500–2200 m. Guizhou, Yunnan.

36b. *Viburnum tengyuehense* var. *polyneurum* (P. S. Hsu) P. S. Hsu, Fl. Reipubl. Popularis Sin. 72: 60. 1988.

多脉腾越荚蒾 *duo mai teng yue jia mi*

Viburnum oblongum var. *polyneurum* P. S. Hsu, Acta Phytotax. Sin. 13(1): 114. 1975.

Leaves with 6–10-jugate lateral veins, serrations obtuse. Fl. Apr–Jun, fr. Jul.

• Forests; ca. 2300 m. Guizhou (Weining), S Yunnan (Wenshan).

37. *Viburnum trabeculosum* C. Y. Wu ex P. S. Hsu, Acta Phytotax. Sin. 17(2): 79. 1979.

横脉荚蒾 *heng mai jia mi*

Trees, deciduous, to 8 m tall. Bark light brown. Branchlets of current year gray-brownish, glabrous, with dispersed lenticels; branchlets of previous year brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales yellow-brownish, glabrous, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, robust, 2.5–5 cm, glabrous; leaf blade purplish green when young, oblong-elliptic or rhombic-elliptic to oblong, sometimes ovate-orbicular, 14–20 × 6–10 cm, papery, abaxially stellate-pubescent in axils of veins, adaxially glabrous and lustrous, midvein raised abaxially, lateral veins 7- or 8-jugate, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base cuneate to subtruncate, without glands, margin remotely serrate

except at base, apex shortly acuminate. Flowers appearing with leaves; inflorescence paniculate, pyramidal, 4–20 × 4–7 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, densely gray-yellowish stellate-pubescent, without large sterile radiant flowers; peduncles 4.5–6 cm; bracts caducous, leaflike, greenish, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays from 1st to 4th orders, not fragrant, shortly pedicellate. Calyx green; tube tubular, ca. 2 mm, glabrous; lobes ovate or ovate-triangular, ca. 1/4 as long as calyx tube, glabrous, apex rounded or obtuse. Corolla ?funneliform, unknown. Fruit initially turning red, maturing purple-reddish, slightly compressed, ca. 7 mm, base rounded, apex rounded, glabrous; pyrenes obovoid, ca. 6 mm, with a deep ventral groove, apex rounded. Fl. May, fr. Sep.

- Forests, scrub; 2000–2400 m. S Yunnan.

38. *Viburnum yunnanense* Rehder in Sargent, *Trees & Shrubs* 2: 106. 1908.

云南荚蒾 *yun nan jia mi*

Shrubs, deciduous, to 3 m tall. Bark light brown. Branchlets of current year yellow-brownish stellate-pubescent; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds small, ovoid, with 2 pairs of separate scales; scales yellow-brownish, stellate-pubescent, apex obtuse. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green or reddish, slender, 1–2 cm, yellow-brownish tomentose; leaf blade pur-

plish green when young, becoming dark green adaxially, broadly elliptic, broadly elliptic-oblong, or oblong-obovate, 3–9.5 × 2.5–4.5 cm, papery, abaxially pubescent, with dispersed red-brownish scalelike tiny glands, adaxially pubescent, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, rarely branched, anastomosing near margin, slightly raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base rounded to acuminate, sometimes ± truncate, without glands, margin serrate except at base, apex obtuse to rounded. Flowers appearing after leaves; inflorescence a compound corymblike panicle, terminal or at apices of lateral branchlets with 1-jugate leaves, 3–4 × 4.5–6 cm; rays opposite, decussate; first node of inflorescence with 2 rays, dense, yellow-brownish tomentose, without large sterile radiant flowers; peduncles (3–)4–6 cm; bracts and bracteoles caducous, leaflike, green-whitish, linear to linear-lanceolate, densely yellow-brownish stellate-tomentose. Flowers on rays of 3rd order, not fragrant, sessile. Calyx green; tube tubular-campanulate, ca. 2 mm, with red-brownish tiny glands; lobes broadly ovate or ovate-triangular, ca. 0.7 mm, glabrous, apex obtuse. Corolla white, rotate, 2.5–5 mm in diam., glabrous; tube 1.5–2 mm; lobes spreading, orbicular, ca. 2 mm, slightly exceeding tube, apex rounded, margin entire. Stamens exceeding corolla lobes, inserted at apex of corolla tube; filaments ca. 2.5 mm; anthers yellow-whitish, globose, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit unknown. Fl. Jun.

- Scrub on mountain slopes; 2300–2900 m. Yunnan.

5. *Viburnum* sect. *Tomentosa* (Maximowicz) Nakai, *J. Coll. Sci. Imp. Univ. Tokyo* 42(2): 27. 1921 [*“Tomentosi”*].

蝶花组 *die hua zu*

Viburnum subser. *Tomentosa* Maximowicz, *Bull. Acad. Imp. Sci. Saint-Petersbourg* 26: 476. 1880.

Winter buds with a pair of adnate scales. Inflorescence a compound umbel-like cyme, pedicellate, with large sterile radiant flowers. Corolla rotate. Fruit turning red, maturing black or red; pyrenes with 1 broad ventral groove; albumen solid.

Two species: temperate Asia; two species (one endemic) in China.

Recent phylogenetic work shows that this small and homogeneous section is sister to *Viburnum* sect. *Solenotinus*, even if it is classically expected to be related to *V. sect. Pseudotimus*.

39. *Viburnum hanceanum* Maximowicz, *Bull. Acad. Imp. Sci. Saint-Petersbourg* 26: 487. 1880.

蝶花荚蒾 *die hua jia mi*

Shrubs, deciduous, to 2 m tall. Bark light brown. Branchlets of current year yellow-brown or rusty stellate-pubescent; branchlets of previous year purple-brown, terete, sparsely pubescent or subglabrous, with dispersed, small, raised lenticels. Winter buds lanceolate-triangular, with a pair of adnate scales; scales yellowish brown stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 6–15 mm, yellow-brown or rusty stellate-pubescent; leaf blade green when young, orbicular-ovate, suborbicular, or elliptic, sometimes obovate, 4–8 × 2.5–5.5 cm, papery, both surfaces yellow-brown stellate-pubescent, midvein raised abaxially, lateral veins 5–7(–9)-jugate, pinnate, arched, branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly conspicuous abaxially, slightly impressed adaxially, not lobed, base rounded, broadly

cuneate, or cordate, without glands, margin serrate, apex rounded or slightly mucronate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 5–7 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, gradually glabrescent upward from peduncle, with 2–5 large sterile radiant flowers; peduncles 2–4 cm; bracts caducous, leaflike, green, lanceolate, sparsely hairy; bracteoles scalelike. Flowers on rays of 2nd and 3rd orders, not fragrant, sessile or shortly pedicellate. Sterile flowers: calyx like fertile flowers; corolla white, 2–3 cm in diam., irregularly 4- or 5-lobed; lobes obovate; stamens and pistils not developed. Fertile flowers: calyx green; tube obconical, ca. 1.5 mm, glabrous; lobes ovate, ca. 0.5 mm, glabrous, apex obtuse; corolla yellow-white, rotate, ca. 3 mm in diam., glabrous; tube ca. 2 mm; lobes spreading, ovate, ca. 1/2 as long as tube, apex obtuse, margin entire; stamens subequaling corolla, inserted near base of corolla; filaments ca. 1.5 mm; anthers yellow, oblong, ca. 1 mm; styles slightly exceeding calyx lobes; stigmas 3-lobed. Fruit maturing red, ovoid-orbicular, 5–6 × ca. 4 mm, base rounded,

apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 4 × 3.5 mm, with a broad ventral groove, both ends rounded. Fl. Mar–May, fr. Aug–Sep.

• Scrub; 200–800 m. Fujian, Guangdong, Guangxi, ?Guizhou, Hunan, S Jiangxi.

40. *Viburnum plicatum* Thunberg, Trans. Linn. Soc. London 2: 332. 1794.

粉团 fen tuan

Shrubs, deciduous, to 3 m tall. Bark light brown. Branchlets of current year densely or sparsely yellowish brown stellate-pubescent; branchlets of previous year gray-brownish or gray-blackish, terete, sparsely pubescent or subglabrous, with dispersed, small, rounded lenticels. Winter buds lanceolate-triangular, with a pair of adnate scales; scales sparsely yellowish brown stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–2 cm, thinly stellate-pubescent; leaf blade green when young, broadly ovate, orbicular-obovate, or obovate, rarely suborbicular, 4–12 × (2–)3–7 cm, papery, abaxially densely tomentose or sometimes only hairy on lateral veins, adaxially sparsely adpressed pubescent, more densely so on midvein, midvein raised abaxially, lateral veins 6–12(–17)-jugate, pinnate, slightly arched, branched, ending in teeth, conspicuously raised abaxially, often deeply impressed adaxially, veinlets transverse, slightly raised abaxially, slightly impressed adaxially, not lobed, base rounded or broadly cuneate, very slightly cordate, without glands, margin irregularly serrate, apex rounded or abruptly narrowed and slightly mucronate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, globose or flattened, at apices of short lateral branchlets with 1 pair of leaves, 5–10 cm in diam.; rays whorled; first node of inflorescence with 3–8 rays, dense, minutely or densely yellowish brown stellate-pubescent, totally composed of large sterile flowers, or of fertile flowers yet with 6–8 large sterile radiant flowers; peduncles 1.5–4 cm; bracts caducous, leaflike, green, lanceolate, 1.5–6 mm, sparsely hairy; bracteoles scalelike. Flowers on rays of 4th order, not fragrant, sessile or shortly pedicellate. Sterile flowers: calyx like fertile flowers; corolla white, rotate, 1.5–4 cm in diam.; lobes obovate or suborbicular, sometimes only 4, often unequal in size with 1 very small lobe, apex rounded; stamens and pistils not developed. Fertile flowers: calyx green or reddish; tube obconical, ca. 1.5 mm, glabrous or stellate-hairy; lobes triangular, ca. 0.5 mm, glabrous, apex ± acute; corolla yellow-white, rotate, 2–3 mm in diam., glabrous; tube 1–1.5 mm; lobes spreading or slightly recurved, broadly ovate, ca. as long as wide, apex rounded, margin entire; stamens exceeding corolla, inserted near base of corolla; filaments 3–4.5 mm; anthers yellow, oblong or suborbicular, ca. 1 mm; styles slightly exceeding calyx lobes; stigmas 3-lobed. Fruit initially turning red, maturing black, broadly ovoid-orbicular or obovoid-orbicular, 5–6.5 × 3–4 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, 4–5.5 × 2.5–3 mm, with a broad ventral groove, both ends obtuse. Fl. Apr–

May, fr. Aug–Sep. $2n = 18, 72$.

Mixed forests, thickets; also cultivated; 200–3000 m. Anhui, Fujian, N Guangdong, NE Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

- 1a. Lateral veins 10–12(–17)-jugate; inflorescence with 6–8 rays, minutely yellowish brown stellate-pubescent; calyx tube glabrous 40a. var. *plicatum*
- 1b. Lateral veins 6–9-jugate; inflorescence with 3–5 rays, densely yellowish brown stellate-pubescent; calyx tube stellate-hairy 40b. var. *formosanum*

40a. *Viburnum plicatum* var. *plicatum*

粉团(原变种) fen tuan (yuan bian zhong)

Viburnum plicatum var. *dilatatum* Lindley; *V. plicatum* var. *plenum* Miquel; *V. plicatum* f. *rotundifolium* (Rehder) Rehder; *V. tomentosum* Thunberg f. *plenum* (Miquel) Rehder; *V. tomentosum* var. *plenum* (Miquel) Rehder; *V. tomentosum* var. *plicatum* (Thunberg) Maximowicz; *V. tomentosum* f. *rotundifolium* (Rehder) Rehder; *V. tomentosum* var. *rotundifolium* Rehder; *V. tomentosum* f. *sterile* (K. Koch) Zabel; *V. tomentosum* var. *sterile* K. Koch.

Lateral veins 10–12(–17)-jugate. Inflorescence with 6–8 rays, minutely yellowish brown stellate-pubescent, consisting of totally large sterile radiant flowers. Calyx tube glabrous.

Mixed forests, thickets; also cultivated; 200–1800 m. Anhui, Fujian, N Guangdong, NE Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

Two forms may be recognized as follows. The typical form (f. *plicatum*) has its inflorescence composed totally of large sterile radiant flowers and is known from cultivation only, while f. *tomentosum* Rehder (J. Arnold Arbor. 26: 77. 1945; *Viburnum tomentosum* Thunberg in Murray, Syst. Veg., ed. 14, 295. 1784, not Lamarck (1779); *V. plicatum* f. *lanceatum* (Rehder) Rehder; *V. plicatum* var. *lanceatum* (Rehder) Rehder; *V. plicatum* f. *latifolium* Miquel; *V. plicatum* var. *tomentosum* Miquel; *V. tomentosum* var. *lanceatum* Rehder), the wild-related taxon, has its inflorescence composed of fertile flowers yet with 4–6 large sterile radiant flowers. The latter occurs in mixed forests and thickets at 200–1800 m in Anhui, Fujian, N Guangdong, NE Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, and Zhejiang.

40b. *Viburnum plicatum* var. *formosanum* Y. C. Liu & C. H. Ou, Quart. J. Chin. Forest. 12(1): 136. 1979.

台湾蝴蝶戏珠花 tai wan hu die xi zhu hua

Lateral veins 6–9-jugate. Inflorescence with 3–5 rays, densely yellowish brown stellate-pubescent, composed of fertile flowers yet with 3–5 large sterile radiant flowers. Calyx tube stellate-hairy.

• Mixed forests; 1800–3000 m. N Taiwan.

6. *Viburnum* sect. *Megalotinus* (Maximowicz) Rehder in Sargent, Trees & Shrubs 2: 112. 1908.

大叶组 da ye zu

Viburnum subser. *Megalotinus* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 476. 1880.

Winter buds with 1 or 2 pairs of separate scales, rarely naked. Inflorescence a compound umbel-like cyme, pedicellate, with large sterile radiant flowers. Corolla rotate, campanulate, or tubular. Fruit maturing red or black; pyrenes with 1 or 2 shallow dorsal grooves and 1–3 shallow ventral grooves; albumen solid.

About 18 species: subtropical Asia; nine species (four endemic) in China.

Kern (Reinwardtia 1. 112. 1951) and H. Hara (Ginkgoana 5: 181–182. 1983) recognized four subsections on the basis of corolla shape, stamen aestivation, pubescence, and leaf margin indentation. In recent phylogenetic work, this section is represented by a single species, *Viburnum cylindricum*, which is sister to Old World members of *V.* sect. *Odontotinus*.

41. *Viburnum amplifolium* Rehder in Sargent, *Trees & Shrubs* 2: 112. 1908.

广叶荚蒾 *guang ye jia mi*

Shrubs, deciduous, to 4 m tall. Bark gray-brownish. Branchlets of current year yellowish green or yellowish brown stellate-pubescent; branchlets of previous year yellowish brown, terete, glabrous, with sparse, dispersed, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales yellowish green or yellowish brown stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1.2–2 cm, yellowish green or yellowish brown stellate-pubescent; leaf blade yellowish green when young, becoming intense yellow-green adaxially when dry, ovate to elliptic-ovate, (4–)6–12(–14) × (2–)4–7(–8.5) cm, papery, both surfaces verrucose, abaxially stellate-pubescent only on veins, adaxially forklike pubescent, more densely so on midvein, immediately glabrescent, midvein raised abaxially, lateral veins 7–9-jugate, pinnate, slightly arched, branched, mostly ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, parallel, conspicuous abaxially, inconspicuous adaxially, not lobed, base rounded to cuneate, without glands, margin serrate, apex acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of lateral short branchlets with 1-jugate leaves, 3–6 cm in diam.; rays whorled; first node of inflorescence with 6 or 7 rays, dense, yellowish green or yellowish brown stellate-pubescent, without large sterile radiant flowers; peduncles 3–5.5 cm, slender; bracts caducous, leaflike, yellowish green, linear-lanceolate, stellate pubescent; bracteoles scalelike. Flowers on rays of 2nd order, not fragrant, sessile. Calyx yellowish green; tube tubular, ca. 0.5 mm, glabrous; lobes narrowly ovate, ca. 2/3 as long as tube, sparsely stellate-pubescent, ciliolate, apex rounded or obtuse. Corolla white, rotate, ca. 3 mm in diam., glabrous; tube less than 1 mm; lobes spreading, orbicular-ovate, ca. 1 mm, apex obtuse, margin entire. Stamens subequaling corolla, inserted near base of corolla; filaments ca. 2 mm, ca. 1.5 × as long as anthers; anthers yellow, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, obovoid-oblong, ca. 8 × 5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, ca. 7 × 4 mm, with 1 shallow dorsal groove and 2 shallow ventral grooves, apex rounded. Fl. May–Jun, fr. Sep–Oct.

• Mixed forests, scrub; 1000–1700(–2000) m. SE Yunnan.

42. *Viburnum cylindricum* Buchanan-Hamilton ex D. Don, *Prodr. Fl. Nepal*. 142. 1825.

水红木 *shui hong mu*

Viburnum coriaceum Blume; *V. crassifolium* Rehder; *V. cylindricum* Buchanan-Hamilton ex D. Don var. *crassifolium* (Rehder) C. K. Schneider.

Shrubs or small trees, evergreen, to 8(–15) m tall. Bark light brown. Branchlets of current year greenish, glabrous, or initially sparsely stellate-pubescent; branchlets of previous year gray-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds lanceolate-triangular, with a pair of separate scales; scales glabrous or stellate pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–3.5(–5) cm, glabrous or stellate-pubescent; leaf blade green when young, elliptic to oblong or ovate-oblong, 8–16(–24) × 3–10 cm, leathery, abaxially usually glabrous, with dispersed reddish or yellow tiny glandular dots (sometimes compressed to appear like lepidote scales), adaxially glabrous, midvein raised abaxially, lateral veins 3–5(–8)-jugate, pinnate, arched, rarely branched, anastomosing near margin, or some ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuous abaxially, inconspicuous adaxially, not lobed, base gradually angustate to rounded, with 1 to several glands on both sides of midvein near base, margin entire or irregularly shallowly dentate, apex acuminate or acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 4–10(–18) cm in diam.; rays whorled; first node of inflorescence usually with 7 rays, lax, glabrous or stellate-pubescent, sometimes with tiny glands, without large sterile radiant flowers; peduncles 1–6 cm; bracts usually caducous, leaflike, whitish green, linear-lanceolate, ca. 3 × < 1 mm, glabrous; bracteoles scalelike. Flowers usually on rays of 3rd order, not fragrant, sessile or shortly pedicellate. Calyx greenish; tube ovoid-orbicular or obconical, ca. 1.5 mm, sometimes with tiny glandular dots; lobes very small and inconspicuous, glabrous, apex rounded. Corolla white or reddish, campanulate, 4–6 mm, with tiny lepidote glands; tube 3–5 mm; lobes erect, orbicular-ovate, ca. 1 mm, apex rounded, margin entire. Stamens longer than corolla, inserted near base of corolla; filaments 3–4 mm; anthers purple, oblong, 1–1.8 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit initially turning red, maturing blue-black, ovoid, ca. 5 mm, base rounded, apex rounded, glabrous; pyrenes compressed ovoid, ca. 4 × 3.5–4 mm, with 2 shallow dorsal grooves and 1 shallow ventral groove, apex rounded. Fl. Jun–Jul, fr. Aug–Oct. *2n* = 18.

Sparse forests, scrub; 500–3300 m. Gansu (Wenxian), N Guangdong, Guangxi, Guizhou, W Hubei, W Hunan, Sichuan, SE Xizang, Yunnan [Bhutan, India, Indonesia, N Myanmar, Nepal, Pakistan, Thailand, Vietnam].

43. *Viburnum inopinatum* Craib, *Bull. Misc. Inform. Kew* 1911: 385. 1911.

厚绒荚蒾 *hou rong jia mi*

Shrubs or small trees, evergreen, to 10 m tall. Bark gray-brownish. Branchlets of current year yellow-white or yellow-brown stellate-tomentose; branchlets of previous year gray-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds lanceolate, with a pair of separate scales; scales densely yellowish brown stellate pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules 2, caducous; petiole green, slender, 2–5 cm, yellow-white or yellow-brown stellate-tomentose; leaf blade yellowish green when young, elliptic-oblong to oblong-lanceolate, (12–)15–20(–25) × (4–)5–10(–11.5) cm, leathery, abaxially thickly tomentose and mixed with glandular dots, adaxially yellow-brown stellate-tomentose, later only hairy on midvein, with 1 to several large impressed glands on both sides of midvein near base, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, raised abaxially, slightly impressed adaxially, not lobed, base cuneate to obtuse, with 0–2 circular glands on both sides of midvein near base, margin entire or sometimes slightly dentate at apex, apex acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 12–20 cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, to 6.5 cm, lax, densely yellowish brown stellate-pubescent, without large sterile radiant flowers; peduncles robust, (1–)1.5–2 cm, rarely absent; bracts caducous, leaflike, yellowish green, linear-lanceolate, stellate pubescent; bracteoles scale-like. Flowers on rays from 3rd to 6th orders, not fragrant, sessile. Calyx yellowish green; tube obconical, ca. 1 mm, stellate-tomentose; lobes ovate-triangular, very small, ca. 0.25 mm, ciliate, apex obtuse. Corolla white, rotate, orbicular in bud, ca. 3.5 mm in diam., glabrous; tube 1–1.5 mm; lobes spreading, ovate, ca. 1 mm, slightly shorter than tube, apex rounded, margin entire. Stamens obviously exceeding corolla, inserted at base of corolla; filaments filiform, folded in bud, ca. 5 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid-globose to ellipsoid, 4–5 × 3–4 mm, base rounded, apex acute, yellow-brown forklike pubescent or stellate-pubescent; pyrenes compressed, ellipsoid, ca. 4 × 3 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. Apr–May, fr. Jun–Oct.

Dense forests; 700–1400 m. SW Guangxi, S Yunnan [Laos, Myanmar, Thailand, N Vietnam].

44. *Viburnum laterale* Rehder in Sargent, Pl. Wilson. 1: 311. 1912.

侧花荚蒾 *ce hua jia mi*

Shrubs, deciduous, total size unknown. Bark gray-brownish. Branchlets of current year brownish, glabrous; branchlets of previous year gray-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1–2 cm, glabrous; leaf blade green when young, ovate, elliptic, ovate-oblong, or narrowly elliptic-oblong, 7–12 × 4–7 cm, papery, abaxially glabrous,

adaxially lustrous, midvein raised abaxially, lateral veins 6–9-jugate, pinnate, arched, rarely branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base rounded or broadly cuneate, without glands, margin serrate, apex acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of lateral short branchlets with 1-jugate leaves, 4–5 cm in diam.; rays whorled; first node of inflorescence with 4 or 5 rays, dense, glabrous, without large sterile radiant flowers; peduncles 5–6 cm, slender; bracts and bracteoles late deciduous or persistent, leaflike, green, linear-lanceolate, ca. 3 × < 1 mm, glabrous. Flowers on rays of 2nd and 3rd orders, not fragrant, sessile or shortly pedicellate. Calyx greenish; tube oblong-ovoid, ca. 1 mm, glabrous; lobes triangular-ovate, very small, glabrous, apex ± acute or obtuse. Corolla white, rotate, ca. 3 mm in diam., glabrous; tube ca. 4 mm; lobes spreading, ovate, ca. as long as tube, apex rounded, margin entire. Stamens exceeding corolla, inserted at apex of corolla tube; filaments ca. 3 × as long as anthers; anthers yellow, ellipsoid, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit unknown. Fl. Jun.

• ?Forests; 800–900 m. Fujian.

This species is known only from the type collection.

45. *Viburnum leiocarpum* P. S. Hsu, Acta Phytotax. Sin. 11: 76. 1966.

光果荚蒾 *guang guo jia mi*

Shrubs or small trees, evergreen, to 10(–15) m tall. Bark gray-brownish. Branchlets of current year sparsely yellow-brownish stellate-pubescent or glabrescent; branchlets of previous year black-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds lanceolate-triangular, with a pair of separate scales; scales sparsely yellow-brownish stellate pubescent or glabrescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 2.5–5 cm, sparsely pubescent; leaf blade yellowish green when young, elliptic-oblong to obovate-oblong, 10–18(–25) cm, thickly papery, abaxially sparsely pubescent on midvein and lateral veins, with or without glandular spots, adaxially lustrous, sparsely pubescent only on midvein, or stellate-pubescent or forklike pubescent throughout, with or without raised dots, midvein raised abaxially, lateral veins 5–7-jugate, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuously raised abaxially, slightly impressed adaxially, not lobed, base cuneate to obtuse, with 0 or 1 circular gland on both sides of midvein near base, margin entire, slightly involute when dry, apex abruptly and shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, ca. 9 cm in diam.; rays whorled; first node of inflorescence with 4 or 5 rays, 2–3 cm, lax, sparsely yellow-brown stellate-pubescent, without large sterile radiant flowers; peduncles 1.5–3 cm; bracts caducous, leaflike, yellowish green, linear-lanceolate, stellate pubescent; bracteoles scalelike. Flowers on rays from 3rd to 6th orders, not fragrant, sessile or shortly pedicellate. Calyx yellowish green; tube tubular-obconic-

cal, ca. 1 mm, glabrous; lobes broadly triangular, very small, glabrous, apex rounded. Corolla white, rotate, ca. 3.5 mm in diam., glabrous; tube 1–1.5 mm; lobes spreading, orbicular-ovate, ca. 1 mm, slightly shorter than tube, apex rounded, margin entire. Stamens obviously exceeding corolla, inserted at base of corolla; filaments slightly compressed, folded in bud, ca. 5 mm; anthers yellow-whitish, oblong, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid-globose, 5–7 × ca. 5 mm, base rounded, apex acute, glabrous; pyrenes broadly ellipsoid, ca. 6 × 5 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. May–Jul, fr. Aug–Oct.

- Forests; 1000–2200 m. Hainan, SE Yunnan.

- 1a. Leaves adaxially sparsely pubescent only on midvein, and without raised dots, abaxially without glandular dots 45a. var. *leiocarpum*
- 1b. Leaves adaxially stellate-pubescent or forklike pubescent throughout, and with raised dots, abaxially with glandular dots 45b. var. *punctatum*

45a. *Viburnum leiocarpum* var. *leiocarpum*

光果荚蒾(原变种) *guang guo jia mi* (yuan bian zhong)

Leaves abaxially without glandular dots, adaxially sparsely pubescent only on midvein, and without raised dots.

- Forests; 1000–1600 m. Hainan, SE Yunnan.

45b. *Viburnum leiocarpum* var. *punctatum* P. S. Hsu, Acta Phytotax. Sin. 11: 77. 1966.

斑点光果荚蒾 *ban dian guang guo jia mi*

Leaves abaxially with glandular dots, adaxially stellate-pubescent or forklike pubescent throughout, and with raised dots.

- Dense forests; 1500–2200 m. SE Yunnan.

46. *Viburnum lutescens* Blume, Bijdr. 655. 1826.

淡黄荚蒾 *dan huang jia mi*

Viburnum monogynum Blume; *V. sundaicum* Miquel.

Shrubs, evergreen, to 8(–11) m tall. Bark gray-brownish. Branchlets of current year sparsely yellow-brownish stellate-pubescent, glabrescent; branchlets of previous year gray-whitish or brown, terete, glabrous, with sparse, small, rounded lenticels. Winter buds ovoid-lanceolate, with a pair of separate scales; scales stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1–2 cm, glabrous; leaf blade green when young, broadly elliptic to oblong or oblong-obovate, 7–15 × 3–4.5 cm, subleathery, abaxially very sparsely stellate-pubescent, glabrescent, adaxially glabrous, midvein raised abaxially, lateral veins 5- or 6-jugate, pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised abaxially, inconspicuous adaxially, not lobed, base narrowed and ± decurrent, without glands,

margin serrate except at base, apex shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like or panicle-like cyme, terminal, 4–7 cm in diam.; rays whorled; first node of inflorescence with 4–6 rays, unequal in length, lax, stellate-pubescent, without large sterile radiant flowers; peduncles 2–5 cm; bracts caducous, leaflike, green, linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays of 2nd and 3rd orders, fragrant, shortly pedicellate. Calyx greenish; tube obconical, ca. 1.5 mm, glabrous; lobes triangular-ovate, slightly shorter than calyx tube, glabrous, apex obtuse. Corolla white, rotate, ca. 5 mm in diam., glabrous; tube ca. 1.5 mm; lobes spreading, broadly ovate, subequaling tube, apex obtuse, margin entire. Stamens slightly exceeding corolla, inserted at base of corolla; filaments ca. 3 mm; anthers yellow, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit initially turning red, maturing black, broadly ellipsoid, 6–8(–10) × 3–4 mm, base rounded, apex acute, glabrous; pyrenes broadly ellipsoid or oblong-obovoid, ca. 6 × 3 mm, with 2 dorsal grooves and 1 broad, deep ventral groove, apex rounded. Fl. Feb–Apr, fr. Aug–Dec.

Forests, thickets, sandy places along riversides; 200–1000 m. ?Fujian, Guangdong, Guangxi, ?Hainan [India, Indonesia, Malaysia, Myanmar, Vietnam].

47. *Viburnum punctatum* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 142. 1825.

鳞斑荚蒾 *lin ban jia mi*

Shrubs or small trees, evergreen, to 9 m tall. Bark light brown. Branchlets of current year with dense brown lenticels, initially with lepidote scales, glabrescent; branchlets of previous year gray-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds naked, lanceolate, with lepidote scales. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–1.5 cm, with lepidote scales; leaf blade green when young, becoming olive-green and lustrous adaxially, oblong-elliptic or oblong-ovate, rarely oblong-obovate, (5–)8–14(–18) × 3.5–5.5(–7.5) cm, leathery, abaxially with lepidote scales, midvein raised abaxially, lateral veins 5–7-jugate, pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base broadly cuspidate, without glands, margin entire or sometimes irregularly dentate in upper part, apex acute, sometimes caudate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 7–10 cm in diam.; rays whorled; first node of inflorescence with 4 or 5 rays, lax, with lepidote scales, without large sterile radiant flowers; peduncles absent or very short; bracts persistent, greenish, linear-lanceolate, with sparse lepidote scales; bracteoles scalelike. Flowers on rays of 3rd and 4th orders, not fragrant, shortly pedicellate. Calyx greenish; tube obconical, ca. 1.5 mm, with sparse lepidote scales; lobes broadly ovate, short, glabrous, apex rounded or obtuse. Corolla white, rotate, 6–8 mm in diam., glabrous; tube ca. 4 mm; lobes spreading, broadly ovate, 2–3 mm, apex rounded, margin entire. Stamens subequaling corolla, inserted near base of corolla; filaments 3–4 mm; anthers yellow, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stig-

mas capitate. Fruit initially turning red, maturing black, broadly ellipsoid, compressed, 8–15(–18) × 6–10 mm, base rounded, apex rounded, glabrous; pyrenes compressed, with 2 dorsal grooves and 3 shallow ventral grooves, both ends rounded. Fl. Mar–Apr, fr. May–Oct. $2n = 18$.

Dense forests, forest margins; 200–1900 m. Guangdong, Guangxi, Guizhou, Hainan, SW Sichuan, Yunnan [?Bhutan, Cambodia, India, Indonesia, N Myanmar, Nepal, Thailand, Vietnam].

- 1a. Corolla ca. 6 mm in diam.;
fruit 8–10 × 6–8 mm 47a. var. *punctatum*
1b. Corolla ca. 8 mm in diam.;
fruit 14–15(–18) × ca. 10 mm 47b. var. *lepidotulum*

47a. *Viburnum punctatum* var. *punctatum*

鳞斑荚蒾(原变种) lin ban jia mi (yuan bian zhong)

Viburnum acuminatum Wallich ex Candolle.

Corolla ca. 6 mm in diam. Fruit 8–10 × 6–8 mm.

Dense forests, forest margins; 700–1900 m. Guizhou, SW Sichuan, Yunnan [?Bhutan, Cambodia, India, Indonesia, N Myanmar, Nepal, Thailand, Vietnam].

47b. *Viburnum punctatum* var. *lepidotulum* (Merrill & Chun) P. S. Hsu, Acta Phytotax. Sin. 13(1): 121. 1975.

大果鳞斑荚蒾 da guo lin ban jia mi

Viburnum lepidotulum Merrill & Chun, Sunyatsenia 2: 22. 1934.

Corolla ca. 8 mm in diam. Fruit 1.4–1.5(–1.8) × ca. 1 cm.

- Mixed forests; 200–900 m. W Guangdong, Guangxi, Hainan.

48. *Viburnum pyramidatum* Rehder in Sargent, Trees & Shrubs 2: 93. 1908.

锥序荚蒾 zhui xu jia mi

Shrubs or small shrubs, evergreen, to 7 m tall. Bark gray-brownish. Branchlets of current year brownish, sparsely lenticellate; branchlets of previous year gray-yellowish, terete, subglabrous, with sparse, small, rounded lenticels. Winter buds ovoid-lanceolate, with a pair of separate scales; scales yellow-brown stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1.5–3 cm, yellow-brown stellate-tomentose; leaf blade yellowish green when young, ovate-oblong to oblong or broadly elliptic, 8–16(–20) × 4–8 cm, thickly papery, abaxially yellow-brown stellate-tomentose, adaxially lustrous, glabrous throughout except on midvein sparsely stellate-pubescent, midvein raised abaxially, lateral veins 6- or 7-jugate, pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous or slightly conspicuous abaxially, inconspicuous adaxially, not lobed, base narrowed or subrounded, without glands, margin serrate, apex acuminate. Flowers appearing after leaves; inflorescence a pyramidal panicle, terminal, 5–10 × 5–10 cm; rays whorled; first node of inflorescence with 4–6 rays, dense, densely yellowish brown stellate-pubescent, without large ster-

ile radiant flowers; peduncles 2–4 cm; bracts caducous, leaflike, green, linear-lanceolate, stellate pubescent; bracteoles scalelike. Flowers on rays of 3rd order, not fragrant, sessile or shortly pedicellate. Calyx yellowish green; tube obconical, ca. 1.5 mm, glabrous; lobes triangular, ca. 1/3 as long as calyx tube, sparsely ciliate, apex obtuse. Corolla white, rotate, ca. 4 mm in diam., sparsely stellate-pubescent; tube ca. 1 mm; lobes spreading, ovate, ca. 2 × as long as tube, apex rounded, margin entire. Stamens slightly shorter than corolla, inserted at base of corolla; filaments ca. 2 mm; anthers yellow, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing intense red, oblong or broadly ellipsoid to obovoid-oblong, 7–10 × 4–5 mm, base rounded, apex acute, glabrous; pyrenes slightly compressed, oblong, ca. 7 × 4 mm, with 2 deep dorsal grooves and 1 shallow ventral groove, apex rounded. Fl. Nov–Dec, fr. Mar–Oct.

Sparse forests, scrub; 100–1400 m. SW Guangxi, SE Yunnan [N Vietnam].

49. *Viburnum ternatum* Rehder in Sargent, Trees & Shrubs 2: 37. 1907.

三叶荚蒾 san ye jia mi

Viburnum chaffanjonii H. Léveillé.

Shrubs or small trees, deciduous, to 6 m tall. Bark gray-brownish. Branchlets of current year brownish, yellow stellate-pubescent; branchlets of previous year black-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds lanceolate-triangular, with a pair of separate scales; scales yellow stellate-pubescent. Leaves in whorls of 3, or opposite on relatively slender branchlets; stipules 2, persistent, lanceolate, 4–5 mm, pubescent; petiole green, slender, 2–6 cm, stellate-pubescent; leaf blade green when young, ovate-elliptic or elliptic to oblong-obovate, sometimes obovate-lanceolate, 8–24 × 4–7(–9.5) cm, papery, abaxially stellate-pubescent and mixed with forklike or simple hairs only on midvein and lateral veins, adaxially usually sparsely forklike pubescent, more densely so on midvein, glabrescent, with large glandular spots on both sides of midvein at base, midvein raised abaxially, lateral veins 6- or 7-jugate, pinnate, arched, rarely branched, anastomosing near margin, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuously raised abaxially, slightly impressed adaxially, not lobed, base cuneate, with 0 or 1 circular gland on both sides of midvein near base, margin entire or dentate at apex, apex acute or shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 12–14(–18) cm in diam.; rays whorled; first node of inflorescence with 5–7(–10) rays, lax, sparsely stellate-pubescent, without large sterile radiant flowers; peduncles nearly absent; bracts caducous, greenish, linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays from 2nd to 6th orders, not fragrant, sessile or shortly pedicellate. Calyx greenish; tube obconical, ca. 1.8 mm, glabrous; lobes very small and inconspicuous, ciliate, apex rounded. Corolla white, rotate, ca. 3 mm in diam., glabrous; tube 1–1.5 mm; lobes spreading, suborbicular, ca. 1.3 mm, slightly shorter than tube, apex rounded, margin entire. Stamens much exceeding corol-

la, inserted near base of corolla; filaments folded in bud, ca. 6 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, broadly ellipsoid-oblong, ca. 7 × 5 mm, base rounded, apex acute, glabrous; pyrenes compressed, broadly ellipsoid-oblong

or ovoid, 5–6 × 3–4 mm, with 2 shallow dorsal grooves and 1 ventral groove, apex rounded. Fl. Jun–Jul, fr. Sep.

• Forests; 600–1400 m. Guizhou, SW Hubei, NW Hunan, Sichuan, Yunnan.

7. *Viburnum* sect. *Odontotinus* Rehder in Sargent, Trees & Shrubs 2: 113. 1908.

齿叶组 chi ye zu

Winter buds with 2 or 3 pairs of separate scales. Inflorescence a compound umbel-like cyme, usually pedicellate, without large sterile radiant flowers. Corolla rotate or campanulate-rotate. Fruit maturing red, rarely maturing black; pyrenes with 1 or 2 deep or shallow dorsal grooves, and 1–3 ventral grooves, endocarp solid.

About 30 species: temperate Asia and North America, only one species in the European Caucasus; 22 species (15 endemic) in China.

H. Hara (Ginkgoana 5: 229–267. 1983) recognized three subsections: *Viburnum* subsect. *Odontotinus* for Asiatic species with entire leaves, *V.* subsect. *Dentata* (Maximowicz) H. Hara for North American species, and *V.* subsect. *Lobata* (Oersted) H. Hara for species with 3–5-lobed leaf blades. Recent phylogenetic work shows that this section is polyphyletic, with two distinct clades. The first one consists of New World species together with South American species from *V.* sect. *Oreinothymus* (Oersted) Benth. & J. D. Hooker and a second clade for Old World species. This Old World clade can be further split into species with 3–5-lobed leaf blades (“*Lobata*” clade) and the remaining species (“*Succodontotinus*” clade). Old World *V.* sect. *Odontotinus* are sister to *V. cylindricum* (i.e., *V.* sect. *Megalotinus*).

50. *Viburnum betulifolium* Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 13: 371. 1894.

桦叶荚蒾 hua ye jia mi

Viburnum adenophorum W. W. Smith; *V. betulifolium* var. *flocculosum* (Rehder) P. S. Hsu; *V. dasyanthum* Rehder; *V. flavescens* W. W. Smith; *V. formosanum* (Hance) Hayata f. *morrisonense* (Hayata) Nakai; *V. formosanum* var. *taihasense* (Hayata) Nakai [“*taishanense*”]; *V. hupehense* Rehder; *V. hupehense* subsp. *septentrionale* P. S. Hsu; *V. lobophyllum* Graebner; *V. lobophyllum* var. *flocculosum* Rehder; *V. lobophyllum* var. *silvestrii* Pampanini; *V. luzonicum* Rolfe var. *morrisonense* (Hayata) S. S. Ying; *V. morrisonense* Hayata; *V. ovatifolium* Rehder; *V. taihasense* Hayata; *V. willeamum* Graebner; *V. wilsonii* Rehder; *V. wilsonii* var. *adenophorum* (W. W. Smith) Handel-Mazzetti.

Shrubs or small trees, deciduous, to 5(–7) m tall. Bark light brown. Branchlets of current year purple-brownish, glabrous or yellow-brownish stellate-pubescent; branchlets of previous year purple-brown or black-brown, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales ± hairy outside. Leaves always opposite, not clustered at apices of branchlets; stipules 2, persistent, subulate, small; petiole green, slender, 1–2(–3.5) cm, sparsely long hairy or glabrous; leaf blade green when young, broadly ovate to rhombic-ovate or broadly obovate, rarely elliptic-oblong, 3.5–8.5(–12) × 3–5.5(–9) cm, thickly papery or slightly leathery, abaxially pubescent on midvein and lateral veins and stellate-pubescent in vein axils, or stellate-pubescent throughout, with or without glandular dots, adaxially glabrous or pubescent on midvein, midvein raised abaxially, lateral veins (4 or)5 or 6(or 7)-jugate, pinnate, straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base broadly cuneate to rounded, rarely truncate, with 0–3 circular glands on both sides of midvein near base, margin crenate above 1/3–1/2 from

base, apex abruptly and shortly acuminate to acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal or at apices of lateral short branchlets with 1 pair of leaves, 5–12 cm in diam.; rays whorled; first node of inflorescence usually with 7 rays, dense, usually densely or sparsely yellow-brown stellate-pubescent, without large sterile radiant flowers; peduncles usually less than 1 cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, sparsely hairy. Flowers on rays from 3rd to 5th orders, not fragrant, shortly pedicellate or sessile. Calyx green; tube tubular-obconical, ca. 1.5 mm, with yellow-brown glandular dots and sparsely or densely stellate-pubescent; lobes broadly ovate-triangular, ca. 1.5 mm, ciliate, apex obtuse. Corolla white, rotate, ca. 4 mm in diam., glabrous or stellate-pubescent; tube 1–2 mm; lobes spreading, orbicular-ovate, exceeding tube, apex rounded, margin entire. Stamens usually exceeding corolla, inserted at base of corolla; filaments 4–5 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, subglobose, ca. 6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, 3.5–5 × 3–4 mm, with 2 deep dorsal grooves, and 1–3 ventral grooves, apex acute. Fl. Jun–Jul, fr. Sep–Oct. $2n = 18^*$, 20^* , 22^* .

• Forests, scrub; 1300–3500 m. Anhui, Gansu, Guangxi, Guizhou, W Henan, W Hubei, S Ningxia, S Shaanxi, Sichuan, Taiwan, SE Xizang, Yunnan, NW Zhejiang.

This is a most polymorphic species, perhaps including many geographic races. There exists a very complicated variation pattern among the different geographic races in the absence or presence and density of the pubescence on the winter bud, calyx tube, and corolla, and in the size of the corolla and fruit, in the texture and shape of the leaf, in the presence or absence of pubescence on the adaxial leaf surface, and in the presence or absence of glandular dots and of stellate pubescence on the abaxial leaf surface. Thus, it is very difficult to identify the different geographic races. These features may be used to recognize *Viburnum hupehense*, *V. lobophyllum*, or *V. wilsonii* among others.

Viburnum betulifolium f. *aurantiacum* Rehder (J. Arnold Arbor. 9: 116. 1928) is a yellow/orange-fruited variant described from Chinese material.

51. *Viburnum chunii* P. S. Hsu, Acta Phytotax. Sin. 11: 82. 1966.

金腺荚蒾 jin xian jia mi

Viburnum chunii subsp. *chengii* P. S. Hsu; *V. chunii* var. *piliferum* P. S. Hsu.

Shrubs, evergreen, to 2 m tall. Bark gray-brownish. Branchlets of current year quadrangular, glabrous or yellow-brown adpressed pubescent; branchlets of previous year gray-brownish, slightly quadrangular, glabrous, with dispersed, small, rounded lenticels. Winter buds lanceolate, with 2 pairs of separate scales; scales yellow-brown adpressed pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole reddish purple, slender, 4–8 mm, sparsely or densely yellow-brown adpressed pubescent; leaf blade yellowish green when young, ovate-rhombic to rhombic or elliptic-oblong, 5–7(–11) × 2–4 cm, thickly papery to thinly leathery, abaxially glabrous or stellate-pubescent in vein axils, with denser glandular dots, adaxially often with dispersed golden or dark glandular dots, midvein raised abaxially, lateral veins 3–5-jugate, lowest pair sometimes elongating to upper part of blade, thus appearing ± triplinerved, pinnate, arched, rarely branched, anastomosing near margin, slightly raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous or slightly conspicuous abaxially, inconspicuous adaxially, not lobed, base cuneate, without glands, margin entire, usually remotely serrate above middle part, apex caudate-acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 1.5–2 cm in diam.; rays whorled; first node of inflorescence with 4 or 5 rays, dense, sparsely or densely yellow-brown adpressed hairy and with glandular dots, without large sterile radiant flowers; peduncles 5–18 mm; bracts and bracteoles persistent, leaflike, green, linear to linear-lanceolate, glabrous. Flowers on rays of 1st order, not fragrant, shortly pedicellate. Calyx green; tube campanulate, ca. 1 mm, glabrous; lobes ovate-triangular, very short, glabrous, apex obtuse. Corolla reddish in bud, later white, campanulate, ca. 4 mm in diam., glabrous; tube ca. 2.5 mm; lobes spreading, broadly obovate, 1–2 mm, apex rounded, margin entire. Stamens slightly shorter than corolla, inserted at base of corolla; filaments ca. 2 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, globose, (7–) 8–9(–10) mm in diam., base rounded, apex acute, glabrous; pyrenes compressed, ovoid, 5–8(–9) × 5–6 mm, without conspicuous grooves, apex acute. Fl. May, fr. Nov–Dec.

• Dense or sparse forests, scrub; 100–1900 m. S Anhui, Fujian, Guangdong, Guangxi, SE Guizhou, N Hunan, Jiangxi, SE Sichuan, Zhejiang.

52. *Viburnum corylifolium* J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 174. 1858.

榛叶荚蒾 zhen ye jia mi

Viburnum barbigerrum H. Léveillé; *V. dunnianum* H. Léveillé.

Shrubs, deciduous, to 2 m tall. Bark light brown. Branchlets of current year yellowish brown, densely bristlelike hairy; branchlets of previous year brown, terete, sparsely hairy or sub-

glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, with 2 pairs of separate scales; scales densely bristlelike hairy. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 0.5–1 cm, densely yellowish brown bristlelike hairy; leaf blade yellowish green when young, ovate or broadly obovate, 3.5–6 × 2–4.5 cm, papery, abaxially yellowish brown bristlelike hairy, usually with dispersed yellowish transparent glandular dots, adaxially sparingly simple hairy, midvein raised abaxially, lateral veins 6–8-jugate, pinnate, straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base rounded to obtuse or slightly cordate, with 0–2 circular glands on both sides of midvein near base, margin serrate, apex abruptly narrowed, acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short branchlets with a pair of leaves, 5–7 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, densely yellowish brown bristlelike hairy, without large sterile radiant flowers; peduncles 1.5–2 cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate or sessile. Calyx green; tube tubular, ca. 1.2 mm, with simple hairs; lobes ovate, ca. 0.5 mm, ciliate, apex obtuse. Corolla white, rotate, 5–8 mm in diam., stellate-pubescent; tube ca. 1 mm; lobes spreading, orbicular-ovate, exceeding tube, apex rounded, margin entire. Stamens exceeding corolla, inserted at base of corolla; filaments 4–5 mm; anthers yellow-whitish, broadly elliptic, small, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid, ca. 8 × 6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, ca. 6 × 5 mm, with 2 shallow dorsal grooves, and 3 shallow ventral grooves, apex rounded. Fl. Mar–Apr, fr. May–Sep.

Forests, scrub; ca. 2100 m. Guangxi, NE Guizhou, Hubei, S and W Shaanxi, Sichuan, Xizang, Yunnan [NE India].

53. *Viburnum dalzielii* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 137. 1916.

粤赣荚蒾 yue gan jia mi

Shrubs, deciduous, to 3 m tall. Bark light brown. Branchlets of current year with dense yellow-brown stellate bristlelike hairs; branchlets of previous year gray-brown, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, with 2 pairs of separate scales; scales with dense yellow-brown stellate bristlelike hairs. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1(–2) cm, with dense yellow-brown stellate bristlelike hairs; leaf blade yellowish green when young, ovate-lanceolate or ovate-elliptic, 8–17 × 4–7 cm, papery to thickly papery, both surfaces glabrous throughout except midvein and lateral veins yellow-brown bristlelike hairy, midvein raised abaxially, lateral veins 8–12-jugate, pinnate, straight or slightly arched, rarely branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base shallowly cordate or subrounded, with 0–2 circular glands on both sides of midvein near base, margin remotely denticulate, entire or slightly crenate at base, apex long acuminate or abruptly caudate. Flow-

ers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 5–6 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, lax, with dense yellow-brown stellate bristlelike hairs, without large sterile radiant flowers; peduncle 1–4 cm; bracts and bracteoles deciduous, leaflike, green, linear-lanceolate, hairy. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate or sessile. Calyx yellowish green; tube obconical, ca. 1.5 mm, with yellow-brown stellate bristlelike hairs; lobes triangular-ovate, very short, ca. 0.5 mm, ciliate, apex obtuse. Corolla white, rotate, ca. 4 mm in diam., outside with few yellow-brown stellate bristlelike hairs; tube ca. 1.5 mm; lobes spreading, suborbicular, slightly exceeding tube, apex rounded, margin entire. Stamens slightly exceeding corolla, inserted at base of corolla; filaments ca. 3 mm; anthers yellow-whitish, elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid-ellipsoid, compressed, 8–10 × 6–7 mm, base rounded, apex rounded, glabrous; pyrenes ovoid, 7–8 × 5–6 mm, with 2 dorsal grooves and 3 ventral grooves, apex rounded. Fl. May, fr. Aug–Nov.

- Thickets, forests; 400–1100 m. Guangdong, Jiangxi.

54. *Viburnum dilatatum* Thunberg in Murray, Syst. Veg., ed. 14, 295. 1784.

莢蒾 jia mi

Viburnum brevipes Rehder; *V. dilatatum* var. *fulvotomentosum* (P. S. Hsu) P. S. Hsu; *V. dilatatum* var. *macrophyllum* P. S. Hsu; *V. fulvotomentosum* P. S. Hsu.

Shrubs, deciduous, to 5 m tall. Bark light brown. Branchlets of current year grayish brown, densely bristlelike hairy and stellate-pubescent; branchlets of previous year dark purple-brown, terete, sparsely hairy or subglabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, 3–5 mm, acute, with 2 pairs of separate scales; scales densely bristlelike hairy and stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, (2–) 10–30 mm, stellate pubescent or simple hairs less than 1 mm; leaf blade green when young, broadly obovate, obovate, or broadly ovate, 3–10(–13) × 2–7(–11) cm, papery, abaxially yellowish forklike pubescent and stellate-pubescent, usually with dispersed yellowish or nearly colorless transparent glandular dots, adaxially adpressed hairy, midvein raised abaxially, lateral veins 6–8-jugate, pinnate, straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base rounded to obtuse or slightly cordate, sometimes cuneate, with 1–3 circular glands on both sides of midvein near base, margin serrate, apex acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short branchlets with a pair of leaves, 4–10 cm in diam.; rays whorled; first node of inflorescence with 5 rays, dense, densely bristlelike hairy and stellate-pubescent, without large sterile radiant flowers; peduncles 1–2(–4) cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays of 3rd and 4th orders, fragrant, shortly pedicellate or sessile. Calyx green; tube narrowly tubular, ca. 1 mm, stellate-pubescent; lobes ovate, ca. 0.5 mm, ciliate, apex

obtuse. Corolla white, rotate, 5–8 mm in diam., stellate-pubescent; tube ca. 1.5 mm; lobes spreading, orbicular-ovate, 1.5–2.5 mm, ca. as long as wide, apex rounded, margin entire. Stamens conspicuously exceeding corolla, inserted at base of corolla; filaments 4–6 mm; anthers yellow-whitish, broadly elliptic, small, ca. 1 mm. Styles exceeding calyx lobes; stigmas 3-lobed. Fruit maturing red, ellipsoid-ovoid, 6–8 × 4.5–6.5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, 5–6 × 4–5 mm, with 2 shallow dorsal grooves, and 3 shallow ventral grooves, apex rounded. Fl. May–Jul, fr. Sep–Nov. $2n = 18^*$.

Sparse forests, forest margins, scrub; 100–1000 m. Anhui, Fujian, N Guangdong, N Guangxi, Guizhou, S Hebei, S Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea].

55. *Viburnum erosum* Thunberg in Murray, Syst. Veg., ed. 14, 295. 1784.

宜昌莢蒾 yi chang jia mi

Shrubs, deciduous, to 3 m tall. Bark light brown. Branchlets of current year densely stellate-pubescent and mixed with simple long hairs; branchlets of previous year gray-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales densely yellowish brown stellate-pubescent and mixed with simple long hairs. Leaves always opposite, not clustered at apices of branchlets; stipules 2, subulate, small, persistent, or absent; petiole green, robust, 3–5 mm, with coarse short hairs; leaf blade yellowish green when young, ovate-lanceolate, ovate-oblong, narrowly ovate, elliptic, or oblong-lanceolate, 3.5–6 × 1.5–3.5 cm, papery, abaxially densely stellate-pubescent, adaxially glabrous or sparsely stellate-pubescent, midvein raised abaxially, lateral veins 7–10(–14)-jugate, pinnate, straight or slightly arched, rarely branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed or sometimes almost 3-lobed, base rounded, broadly cuneate, or slightly cordate, or sometimes shallowly 2-lobed, with 0 or 1 circular gland on both sides of midvein near base, margin serrate, apex acute or acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short lateral branchlets with a pair of leaves, 2–4 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, densely stellate-pubescent and mixed with simple long hairs, without large sterile radiant flowers; peduncle 1–2.5 cm; bracts and bracteoles deciduous, leaflike, green, linear-lanceolate, hairy. Flowers on rays of 2nd and 3rd orders, not fragrant, often long pedicellate. Calyx yellowish green; tube tubular, ca. 1.5 mm, stellate-pubescent; lobes ovate-triangular, ca. 0.5 mm, ciliate, apex obtuse. Corolla white, rotate, ca. 6 mm in diam., glabrous or subglabrous; tube ca. 2 mm; lobes spreading, orbicular-ovate, ca. 2 mm, apex rounded, margin entire. Stamens slightly shorter to longer than corolla, inserted at base of corolla; filaments ca. 2.5 mm; anthers yellow-whitish, suborbicular, ca. 0.7 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, broadly ovoid, 6–7(–9) mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, ca. 6 × 5 mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. Apr–May, fr. Aug–Oct.

Forests, scrub; 300–1800(–2300) m. Anhui, Fujian, N Guangdong, N Guangxi, Guizhou, Henan, Hubei, Hunan, S Jiangsu, Jiangxi, S Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea].

- 1a. Leaves undivided, margin serrate 55a. var. *erosum*
 1b. Leaves often shallowly 2-lobed at base, margin large dentate 55b. var. *taquetii*

55a. *Viburnum erosum* var. *erosum*

宜昌荚蒾(原变种) yi chang jia mi (yuan bian zhong)

Viburnum erosum var. *atratacarpum* P. S. Hsu; *V. erosum* var. *hirsutum* Pampanini; *V. erosum* subsp. *ichangense* (Hemsley) P. S. Hsu; *V. erosum* var. *ichangense* Hemsley; *V. erosum* var. *laeve* Franchet & Savatier; *V. erosum* var. *setchuenense* Graebner; *V. ichangense* (Hemsley) Rehder; *V. ichangense* var. *atratacarpum* (P. S. Hsu) T. R. Dudley & S. C. Sun; *V. luzonicum* Rolfe var. *matsudae* (Hayata) Liu & Liao; *V. matsudae* Hayata; *V. villosifolium* Hayata.

Leaves undivided, margin serrate.

Forests, scrub; 300–1800(–2300) m. Anhui, Fujian, N Guangdong, N Guangxi, Guizhou, Henan, Hubei, Hunan, S Jiangsu, Jiangxi, S Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Korea].

55b. *Viburnum erosum* var. *taquetii* (H. Léveillé) Rehder in Sargent, Pl. Wilson. 1: 311. 1912.

裂叶宜昌荚蒾 lie ye yi chang jia mi

Viburnum taquetii H. Léveillé, Repert. Spec. Nov. Regni Veg. 9: 443. 1911; *V. erosum* var. *punctatum* Franchet & Savatier; *V. erosum* f. *taquetii* (H. Léveillé) Sugimoto; *V. erosum* var. *taquetii* (H. Léveillé) P. S. Hsu; *V. meyer-waldeckii* Loesener.

Leaves often shallowly 2-lobed at base, margin large dentate.

Forests, scrub; 600–700 m. Shandong (Qingdao) [Japan, Korea].

56. *Viburnum foetidum* Wallich, Pl. Asiat. Rar. 1: 49. 1830.

臭荚蒾 chou jia mi

Shrubs, deciduous, erect or climbing, to 4 m tall. Bark light brown. Branchlets of current year yellow-brownish stellate-pubescent; branchlets of previous year purple-brown, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds oblong-ovoid, with 2 pairs of separate scales; scales ovate-lanceolate, stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules often absent; petiole reddish purple, robust, 5–10 mm, stellate-pubescent; leaf blade brownish green when young, ovate or elliptic to oblong-rhombic or obovate, 4–10 × 1.5–2.5 cm, papery to thickly papery, abaxially stellate-pubescent on midvein and lateral veins, rarely densely stellate-tomentose, adaxially densely pubescent on midvein but glabrous elsewhere, midvein raised abaxially, lateral veins 2–4-jugate, lowest pair often elongating to upper part of blade, thus appearing triplinerved, pinnate, arched, branched, ending in teeth, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, conspicuously raised abaxially, slightly impressed adaxially, not lobed or sometimes almost 3-lobed, base cuneate to rounded, with 0 or 1 circular gland on both sides of midvein near base, margin subentire

or large dentate, apex acute to shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of lateral branchlets, 5–8 cm in diam.; rays whorled; first node of inflorescence with 4–8 rays, dense, stellate-pubescent and with red-brown glandular dots, without large sterile radiant flowers; peduncles (0.5–)2–5 cm; bracts and bracteoles late deciduous or persistent, leaflike, green, linear-lanceolate, sparsely hairy. Flowers usually on rays of 2nd order, not fragrant, shortly pedicellate or sessile. Calyx green; tube tubular, ca. 1.5 mm, stellate-pubescent; lobes ovate-triangular, very short, ca. 0.3 mm, stellate-pubescent, apex acute. Corolla white, rotate, ca. 5 mm in diam., sparsely pubescent; tube 2–2.5 mm; lobes spreading, orbicular-ovate, ca. 1.5 mm, exceeding tube, apex rounded, margin very minutely glandular ciliate. Stamens equaling or slightly exceeding corolla, inserted at base of corolla; filaments ca. 3 mm; anthers yellow-whitish, elliptic, less than 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid-ellipsoid, compressed, 6–8 × 4–5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, ca. 6 × 4 mm, with 2 shallow dorsal grooves, and 3 shallow ventral grooves, apex rounded. Fl. May–Aug, fr. Aug–Oct. 2n = 16.

Forests, scrub; 600–3100 m. N Guangdong, N Guangxi, Guizhou, ?Henan, W Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang, Yunnan [Bangladesh, Bhutan, NE India, Laos, Myanmar, N Thailand].

- 1a. Leaves obovate, margin large dentate in upper part 56c. var. *ceanothoides*
 1b. Leaves ovate or elliptic to oblong-rhombic, margin shallowly dentate or subentire.
 2a. Branchlets not obviously elongated; peduncles (0.5–)2–5 cm 56a. var. *foetidum*
 2b. Branchlets elongated; peduncles very short to 2 cm at most, or absent 56b. var. *rectangulatum*

56a. *Viburnum foetidum* var. *foetidum*

臭荚蒾(原变种) chou jia mi (yuan bian zhong)

Branchlets not obviously elongated. Leaves ovate or elliptic to oblong-rhombic, margin shallowly dentate or subentire. Peduncles (0.5–)2–5 cm.

Scrub at forest margins; 1200–3100 m. S and SE Xizang [Bangladesh, Bhutan, NE India, Laos, Myanmar, N Thailand].

56b. *Viburnum foetidum* var. *rectangulatum* (Graebner) Rehder in Sargent, Trees & Shrubs 2: 114. 1908.

直角荚蒾 zhi jiao jia mi

Viburnum rectangulatum Graebner, Bot. Jahrb. Syst. 29: 588. 1901; *Hedyotis yunnanensis* H. Léveillé; *Oldenlandia yunnanensis* (H. Léveillé) Chun; *V. foetidum* var. *malacotrichum* Handel-Mazzetti; *V. foetidum* var. *penninervium* Handel-Mazzetti; *V. foetidum* var. *premnaceum* (Wallich ex Candolle) Hooker & Thomson; *V. pallidum* Franchet; *V. parvilimbium* Merrill; *V. premnaceum* Wallich ex Candolle; *V. rectangulare* Graebner ex Hayata; *V. touchanense* H. Léveillé.

Branchlets elongated. Leaves ovate or elliptic to oblong-rhombic, margin shallowly dentate or subentire. Peduncles very short to 2 cm at most, or absent. $2n = 18^*$.

• Forests, scrub; 600–2400 m. N Guangdong, N Guangxi, Guizhou, ?Henan, W Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang, Yunnan.

56c. *Viburnum foetidum* var. *ceanothoides* (C. H. Wright) Handel-Mazzetti, Symb. Sin. 7: 1038. 1936.

珍珠荚蒾 zhen zhu jia mi

Viburnum ceanothoides C. H. Wright, Bull. Misc. Inform. Kew 1896: 23. 1896; *Premna valbrayi* H. Léveillé; *V. ajugifolium* H. Léveillé.

Branchlets ± elongated. Leaves obovate, margin large dentate in upper part. Peduncles 1–2.5(–8) cm.

• Dense forests, scrub; 900–2600 m. W Guizhou, SW Sichuan, Yunnan.

57. *Viburnum fordiae* Hance, J. Bot. 21: 321. 1883.

南方荚蒾 nan fang jia mi

Viburnum hirtulum Rehder.

Shrubs or small trees, deciduous, to 5 m tall. Bark light brown. Branchlets gray-brown or black-brown, yellow or yellow-brown stellate-tomentose; branchlets of previous year purple-brownish, terete, glabrous or with yellowish brown hairs, with dispersed, small, rounded lenticels. Winter buds ovoid, with 2 pairs of separate scales; scales dark yellow or yellow-brown stellate-tomentose. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 5–15 mm, dark yellow or yellow-brown stellate-tomentose; leaf blade yellowish green when young, broadly ovate or rhombic-ovate, 4–7(–9) × 2.5–5 cm, papery to thickly papery, abaxially densely stellate-pubescent, adaxially with dispersed red-brown glandular dots, stellate-pubescent or forklike pubescent, midvein raised abaxially, lateral veins 5–7(–9)-jugate, pinnate, straight or slightly arched, branched, ending in teeth, raised abaxially, slightly impressed adaxially, veinlets transverse, inconspicuous on both surfaces, not lobed, base rounded to obtuse or broadly cuneate, rarely cuneate, with 0 or 1 circular gland on both sides of midvein near base, margin often denticulate except at base, apex obtuse or shortly acute to shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal or at apices of lateral branchlets, with a pair of leaves, 3–8 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, lax, densely dark yellow or yellow-brown stellate-tomentose, without large sterile radiant flowers; peduncle 1–3.5 cm or very rarely nearly absent; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays of 3rd and 4th orders, not fragrant, sessile or shortly pedicellate. Calyx yellowish green; tube obconical, ca. 1.5 mm, dark yellow or yellow-brown stellate-tomentose; lobes triangular, ca. 0.5 mm, stellate-pubescent, apex obtuse. Corolla white, rotate, (3.5–)4–5 mm in diam., outside stellate pubescent; tube ca. 1 mm; lobes spreading, ovate, ca. 1.5 mm, exceeding tube, apex rounded, margin entire. Stamens equaling or slightly exceeding corolla, inserted at base of corolla; filaments

ca. 2 mm; anthers yellow-whitish, suborbicular, small, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid, 6–7 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, ca. 6 × 4 mm, with 1 dorsal groove and 2 ventral grooves, apex rounded. Fl. Apr–May, fr. Oct–Nov.

• Sparse forests, scrub; 100–1000 m. S Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan, S Zhejiang.

In Fl. Yunnan. (5: 391. 1991), “*Viburnum hirsutum* Rehder” was inadvertently written instead of *Viburnum hirtulum* Rehder as a synonym.

58. *Viburnum formosanum* (Hance) Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 132. 1911.

台中荚蒾 tai zhong jia mi

Shrubs or small trees, deciduous, to 4 m tall. Bark light brown. Branchlets of current year densely yellow-brown stellate-pubescent or glabrous; branchlets of previous year gray-black, terete, glabrous, with sparse, small, rounded lenticels. Winter buds ovoid, with 2 pairs of separate scales; scales yellow-brown stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 5–15 mm, sparsely or densely stellate-pubescent; leaf blade green when young, ovate, 5–10 × 3–5 cm, thickly papery, abaxially sparsely adpressed hairy on midvein and lateral veins, sparsely stellate-pubescent in vein axils, adaxially shiny, sparsely adpressed hairy only on midvein, midvein raised abaxially, lateral veins 7- or 8-jugate, pinnate, straight or slightly arched, rarely branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base rounded or slightly cordate, with 0 or 1 circular gland on both sides of midvein near base, margin serrate except at base, apex abruptly caudate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short lateral branchlets, with a pair of leaves, 3–4 cm in diam.; rays whorled; first node of inflorescence with 4 or 5 rays, dense, sparsely or densely stellate-pubescent, without large sterile radiant flowers; peduncle 1–1.5 cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays of 2nd order, not fragrant, shortly pedicellate. Calyx yellowish green; tube tubular, ca. 1.5 mm, stellate-pubescent or glabrous; lobes broadly ovate, ca. 0.5 mm, ciliolate, apex obtuse. Corolla white, rotate, ca. 4.5 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, obovate, ca. 1.5 mm, exceeding tube, apex rounded, margin slightly erose. Stamens equaling or slightly longer than corolla, inserted at base of corolla; filaments ca. 2.5 mm; anthers yellow-whitish, elliptic-ovoid, ca. 0.7 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid, ca. 8 mm, base rounded, apex rounded, glabrous; pyrenes compressed, oblong-ovoid, ca. 6 mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. Apr–May, fr. Aug–Oct.

• Forests, scrub; 100–1100 m. N Fujian, N Guangdong, Guangxi, S Hunan, Jiangxi, Sichuan, Taiwan, S Zhejiang.

- 1a. Calyx tube glabrous 58c. subsp. *leiogynum*
1b. Calyx tube stellate-pubescent.

- 2a. Young branchlets glabrous; petioles sparsely simple hairy; inflorescence sparsely stellate-pubescent 58a. subsp. *formosanum*
- 2b. Young branchlets, petioles, and inflorescences densely yellow-brown stellate pubescent 58b. var. *pubigerum*

58a. *Viburnum formosanum* subsp. *formosanum*

台中莢蒾(原亞種) tai zhong jia mi (yuan ya zhong)

Viburnum erosum Thunberg var. *formosanum* Hance, Ann. Sci. Nat., Bot., sér. 5, 5: 216. 1866; *V. dilatatum* Thunberg var. *formosanum* (Hance) Maximowicz; *V. formosanum* f. *subglabrum* (Hayata) Nakai; *V. luzonicum* Rolfe var. *formosanum* (Hance) Rehder; *V. luzonicum* f. *oblongum* Kanehira & Sasaki; *V. luzonicum* var. *oblongum* (Kanehira & Sasaki) Li; *V. luzonicum* f. *subglabrum* (Hayata) Kanehira & Sasaki; *V. subglabrum* Hayata.

Young branchlets glabrous. Petiole sparsely simple hairy. Inflorescence sparsely stellate-pubescent. Calyx tube stellate-pubescent.

- Forests. Taiwan.

58b. *Viburnum formosanum* var. *pubigerum* P. S. Hsu, Ann. Bot. Fenn. 44: 154. 2007.

毛枝台中莢蒾 mao zhi tai zhong jia mi

Young branchlets, petioles, and inflorescences densely yellow-brown stellate pubescent. Calyx tube stellate-pubescent.

- Sparse or dense forests, scrub; 100–1000 m. N Guangdong, S Hunan, Jiangxi.

58c. *Viburnum formosanum* subsp. *leiogynum* P. S. Hsu, Acta Phytotax. Sin. 11: 81. 1966.

光萼莢蒾 guang e jia mi

Young branchlets and petioles glabrous or stellate-pubescent. Inflorescence stellate-pubescent. Calyx tube glabrous.

- Forests; 700–1100 m. N Fujian, Guangxi, Sichuan, S Zhejiang.

59. *Viburnum hainanense* Merrill & Chun, Sunyatsenia 5: 193. 1940.

海南莢蒾 hai nan jia mi

Viburnum tsangii Rehder; *V. tsangii* f. *xanthocarpum* Rehder.

Shrubs, evergreen, to 3 m tall. Bark gray-brownish. Branchlets of current year quadrangular, yellow-brown stellate-pubescent; branchlets of previous year purple-brownish or gray-brownish, slightly quadrangular, glabrous, with dispersed, small, rounded lenticels. Winter buds lanceolate, with 2 pairs of separate scales; scales yellow-brown stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole reddish purple, slender, 3–6(–10) mm, yellow-brown stellate-pubescent; leaf blade yellowish green when young, oblong, broadly oblong-lanceolate, or elliptic, 3.5–

7(–10) × 1.5–4 cm, subleathery, adaxially slightly shiny, both surfaces glabrous or stellate-pubescent on midvein and lateral veins, with black or castaneous-brown glandular dots, midvein raised abaxially, lateral veins 4- or 5-jugate, lowest pair elongating to upper part of blade, thus appearing triplinerved, pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, impressed adaxially, veinlets subtransverse, conspicuous adaxially, inconspicuous adaxially, not lobed, base broadly cuneate or sometimes rounded, without glands, margin entire or remotely dentate above middle part, apex shortly acuminate or acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 2–4 cm in diam.; rays whorled; first node of inflorescence with (3 or)4 or 5 rays, ca. 1 cm, dense, yellow-brown stellate-pubescent, or mixed with forklike or simple hairs, without large sterile radiant flowers; peduncles 4–10 mm or nearly absent; bracts caducous, leaflike, green, linear-lanceolate, stellate pubescent; bracteoles scalelike. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate. Calyx green; tube obconical, ca. 1 mm, sparsely stellate-pubescent; lobes broadly ovate, very short, sparsely ciliate, apex obtuse, ciliate. Corolla white, rotate, ca. 4 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, suborbicular, subequaling tube, apex rounded, margin entire. Stamens erect, exceeding corolla, inserted at base of corolla; filaments ca. 2 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, compressed ovoid, ca. 6 mm in diam., base rounded, apex acute, glabrous; pyrenes compressed, orbicular, raised on dorsal side, deeply impressed on ventral side, apex rounded. Fl. Apr–Jul, fr. Aug–Dec.

Forests, scrub; 600–1400 m. S Guangdong, S Guangxi, Hainan [N Vietnam].

60. *Viburnum hengshanicum* Tsiang ex P. S. Hsu in Chen et al., Observ. Fl. Hwangshan. 178. 1965.

衡山莢蒾 heng shan jia mi

Shrubs, deciduous, to 2.5 m tall. Bark light brown. Branchlets of current year grayish brown, glabrous; branchlets of previous year gray-white, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, 8–10 mm, acute, with 2 pairs of separate scales; scales outer ones ca. 1/2 as long as inner ones. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, (1–)2–4.5 cm, glabrous; leaf blade green when young, broadly ovate or orbicular-ovate, rarely obovate, 9–14(–18) × 5–13 cm, papery, abaxially sparsely adpressed hairy on midvein and lateral veins or glabrous and stellate-pubescent in vein axils, adaxially glabrous, midvein raised abaxially, lateral veins 5–7-jugate, lowest pair elongating to upper part of blade, thus appearing ± triplinerved, pinnate, straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base rounded or shallowly cordate, sometimes truncate, without glands, margin remotely irregularly dentate, apex abruptly and shortly acuminate or abruptly narrowed and long mucronate, sometimes (2 or)3-lobed. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 5(–9) cm in diam.; rays

whorled; first node of inflorescence with (6 or)7 rays, dense, pubescent, without large sterile radiant flowers; peduncles (5–)6–10(–12.5) cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, sparsely hairy. Flowers on rays of 3rd and 4th orders, not fragrant, shortly pedicellate or sessile. Calyx green; tube cylindric, ca. 1 mm, glabrous; lobes broadly ovate, ca. 1.5 mm, ciliate, apex obtuse. Corolla white, rotate, ca. 5 mm in diam., glabrous; tube ca. 1.2 mm; lobes spreading, suborbicular, ca. 1 mm, apex rounded, margin entire. Stamens obviously exceeding corolla, inserted at base of corolla; filaments 4–5 mm; anthers yellow-whitish, broadly oblong-elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit maturing red, narrowly orbicular to orbicular, ca. 9 × 6 mm, base rounded, apex rounded, glabrous; pyrenes compressed, obovoid, 6–8 × 5–6 mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. May–Jul, fr. Sep–Oct.

• Forests, thickets; 600–1300 m. Anhui, Guangxi, Guizhou, Hunan, N Jiangxi, NW Zhejiang.

61. *Viburnum integrifolium* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 132. 1911.

全叶荚蒾 *quan ye jia mi*

Viburnum foetidum Wallich f. *integrifolium* (Hayata) Nakai; *V. foetidum* var. *integrifolium* (Hayata) Kanehira & Hatusima.

Shrubs, deciduous, to 4 m tall. Bark light brown. Branchlets of current year gray-brown, quadrangular, yellowish stellate-pubescent, glabrescent, with small lenticels; branchlets of previous year gray-yellowish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds oblong-ovoid, with 2 pairs of separate scales; scales ovate-lanceolate, glabrescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 5–10 cm, stellate-pubescent; leaf blade green when young, black-brown when dry, oblong or oblong-lanceolate to linear-lanceolate, 5–11 × 1.5–2.8 cm, thickly papery, abaxially with dispersed small brown dots, both surfaces glabrous, midvein raised abaxially, lateral veins 4–6-jugate, pinnate, arched, rarely branched, anastomosing near margin, raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base cuneate, without glands, margin irregularly repand, not dentate, apex abruptly narrowed and long caudate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal or at apices of branchlets with 1 pair of leaves, 2.5–5 cm in diam.; rays whorled; first node of inflorescence with 5 rays; rays of different orders slender, dense, stellate-pubescent and with red-brown glandular dots, without large sterile radiant flowers; peduncles 2–2.5 cm; bracts and bracteoles caducous, green, linear-lanceolate, membranous, glabrous. Flowers on rays of 2nd and 3rd orders, not fragrant, long pedicellate or sessile. Calyx green; tube tubular, ca. 1 mm, with few red-brown glandular dots; lobes ovate, ca. 0.8 mm, glabrous, apex acute. Corolla white, rotate, ca. 4 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, ovate, ca. 1.2 mm, exceeding tube, apex rounded, margin entire. Stamens subequaling corolla, inserted at base of corolla; filaments ca. 3 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles not exceeding calyx

lobes; stigmas capitate. Fruit maturing red, ovoid, ca. 7.5 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, ca. 6 × 4 mm, raised on dorsal side, slightly impressed on ventral side, apex rounded. Fl. Jun, fr. Aug–Sep.

• Mountains; 1600–2000 m. Taiwan.

62. *Viburnum kansuense* Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 13: 372. 1894.

甘肃荚蒾 *gan su jia mi*

Shrubs, deciduous, to 3 m tall. Bark light brown. Branchlets of current year pale brown, glabrous; branchlets of previous year gray or gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, with 2 pairs of separate scales; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules 2, subulate, small, persistent, or absent; petiole green, slender, 1–2.5(–4.5) cm, glabrous; leaf blade green when young, broadly ovate to oblong-ovate or obovate, 3–8 × 3–7 cm, papery, abaxially adpressed long hairy, densely stellate-pubescent in vein axils, adaxially sparsely stellate-pubescent throughout or only on veins, midvein raised abaxially, 3–5-palmatinerved, veins straight or slightly arched, branched, ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, inconspicuous on both surfaces, 3–5-lobed, base truncate to subcordate or broadly cuneate, with 0 or 1 circular gland on both sides of midvein near base, middle lobe largest, margin irregularly dentate, apex acuminate or acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 2–4 cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, dense, pubescent, without large sterile radiant flowers; peduncle 2.5–3.5 cm; bracts and bracteoles deciduous, leaflike, green, linear-lanceolate, hairy. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate or sessile. Calyx purple-red; tube obconical, ca. 1 mm, glabrous; lobes ovate-triangular, ca. 0.5 mm, glabrous, apex obtuse. Corolla reddish, rotate, ca. 6 mm in diam., glabrous; tube ca. 2 mm; lobes spreading, suborbicular, ca. 2.5 × 2.5 mm, slightly exceeding tube, apex rounded, margin slightly erose. Stamens slightly longer than corolla, inserted at base of corolla; filaments ca. 2.5 mm; anthers red-brown, globose, ca. 0.8 mm. Styles slightly exceeding calyx lobes; stigmas 2-lobed. Fruit maturing red, ellipsoid or subglobose, 8–10(–12) × 7–8 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid, 7–9 × ca. 5 mm, with 2 shallow dorsal grooves and 3 shallow ventral grooves, apex rounded. Fl. Jun–Jul, fr. Sep–Oct.

• *Abies* forests, mixed forests; 2400–3600 m. Gansu, Shaanxi, Sichuan, Xizang, Yunnan.

63. *Viburnum lancifolium* P. S. Hsu, Acta Phytotax. Sin. 11: 81. 1966.

披针形荚蒾 *pi zhen xing jia mi*

Shrubs, evergreen, to 2 m tall. Bark light brown. Branchlets of current year purplish brown, yellow-brown stellate-pubescent, or mixed with forklike or simple hairs, terete; branchlets of previous year gray-brownish, terete, glabrous, with sparse, small, rounded lenticels. Winter buds ovoid-lanceolate,

with 2 pairs of separate scales; scales ovate-lanceolate, stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 8–15(–25) mm, yellow-brown stellate-pubescent, or mixed with forklike or simple hairs; leaf blade green when young, oblong-lanceolate to lanceolate, 9–19(–27) × 1–4 cm, papery, abaxially yellow-brown stellate-pubescent, or mixed with forklike or simple hairs, adaxially shiny, without glands, midvein raised abaxially, lateral veins 7–12-jugate, lowest pair sometimes elongating to upper part of blade, thus appearing nearly triplinerved, pinnate, slightly arched, rarely branched, ending in teeth or anastomosing near margin, raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, inconspicuous adaxially, not lobed, base rounded or obtuse, without glands, margin remotely serrate above 1/3 from base, apex long acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, ca. 4 cm in diam., to 5 cm at fruiting stage; rays whorled; first node of inflorescence with 5 rays, dense, yellow-brown stellate-pubescent, or mixed with forklike or simple hairs, without large sterile radiant flowers; peduncles 1.5–4 cm, slender; bracts and bracteoles caducous, green, linear-lanceolate, membranous, sparsely ciliate. Flowers on rays of 3rd and 4th orders, not fragrant, sessile or shortly pedicellate. Calyx green; tube tubular, ca. 1 mm, yellow-brown stellate-pubescent, or mixed with forklike or simple hairs; lobes broadly ovate or broadly triangular-ovate, ca. 1/2 as long as tube, glabrous, apex obtuse, slightly ciliate. Corolla white, rotate, ca. 4 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, orbicular-ovate, slightly exceeding tube, ca. 1.8 mm wide, apex obtuse, margin entire. Stamens slightly exceeding corolla, inserted at base of corolla; filaments ca. 3 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate, 3-lobed. Fruit maturing red, subglobose, 7–8 mm in diam., base rounded, apex rounded, glabrous; pyrenes compressed, often slightly rectangular, 5–6 × 5–6 mm, raised and without groove on dorsal side, impressed on ventral side, with 2 shallow grooves, apex rounded. Fl. Apr–May, fr. Jul–Oct.

• Sparse forests, forest margins, scrub, sometimes bamboo forests; 200–600 m. Fujian, ?Guangdong, Jiangxi, Zhejiang.

64. *Viburnum longiradiatum* P. S. Hsu & S. W. Fan, Acta Phytotax. Sin. 11: 78. 1966.

长伞梗荚蒾 chang san geng jia mi

Shrubs or small trees, deciduous, to 4 m tall. Bark light brown. Branchlets of current year brown, with dense, yellow-greenish, simple, long hairs; branchlets of previous year purple-brown, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, with 2 pairs of separate scales; scales with dense, yellow-green, simple, long hairs. Leaves always opposite, not clustered at apices of branchlets; stipules subulate, ca. 2 mm, caducous, or absent; petiole green, slender, 1–3 cm, with dense, yellow-green, simple, long hairs; leaf blade yellowish green when young, ovate, broadly ovate, obovate-orbicular, or oblong, 5–10 × 4–5.5 cm, papery, abaxially stellate-pubescent, adaxially with sparse, simple hairs, later only hairy on veins, midvein raised abaxially, lateral veins (6 or)7–9-jugate,

pinnate, straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base broadly obtuse to rounded, with 0–2 circular glands on both sides of midvein near base, margin crenate, apex abruptly narrowed and caudate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 4–8(–14) cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, lax, with yellow-green, simple, long hairs, without large sterile radiant flowers; peduncle 1.5–4 cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate or sessile. Calyx green; tube cylindrical, ca. 2 mm, with simple hairs; lobes triangular to orbicular, ca. 0.5 mm, ciliate, apex obtuse. Corolla white or reddish, rotate, ca. 6 mm in diam., outside with simple hairs; tube ca. 2 mm; lobes spreading, ovate, ca. 3 mm, exceeding tube, apex rounded, margin entire. Stamens exceeding corolla, inserted at base of corolla; filaments ca. 3 × as long as anthers; anthers yellow-whitish, elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, ellipsoid-ovoid, 7–10 × 6–7 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ellipsoid-ovoid, ca. 7.5 × 5 mm, with 2 dorsal grooves and 3 ventral grooves, base rounded to broadly cuneate, apex acute. Fl. May–Jun, fr. Jul–Sep.

• Forests, scrub; 900–2300 m. Sichuan, Yunnan.

65. *Viburnum luzonicum* Rolfe, J. Linn. Soc., Bot. 21: 310. 1884.

吕宋荚蒾 lü song jia mi

Viburnum fochowense W. W. Smith; *V. formosanum* (Hance) Hayata f. *mushanense* (Hayata) Nakai; *V. luzonicum* var. *mushanense* (Hayata) Kanehira & Sasaki; *V. mushanense* Hayata; *V. parvifolium* W. W. Smith (1917), not Hayata (1911); *V. smithianum* H. L. Li; *V. smithii* F. P. Metcalf.

Shrubs or small trees, deciduous, to 3 m tall. Bark light brown. Branchlets of current year yellow-brown stellate-pubescent; branchlets of previous year dark purple-brownish, terete, sparsely stellate-pubescent, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, with 2 pairs of separate scales; scales yellow-brown stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, usually 3–10(–15) mm, yellow-brown stellate-pubescent; leaf blade yellowish green when young, ovate, elliptic-ovate, or ovate-lanceolate to oblong, sometimes subrhombic, 4–9(–11) × 2–5 cm, papery to thickly papery, abaxially sparsely stellate-pubescent or forklike pubescent, adaxially with transparent glandular dots and forklike pubescent on midvein, midvein raised abaxially, lateral veins 5–9-jugate, pinnate, straight or slightly arched, rarely branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base broadly cuneate to subrounded, with 0–2 circular glands on both sides of midvein near base, margin serrate, ciliate, apex acuminate to acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, usually at apices of short lateral branchlets with a pair of leaves or terminal on

branchlets, 3–5 cm in diam.; rays whorled; first node of inflorescence with 5 rays, dense, yellow-brown stellate-pubescent, or mixed with forklike or simple hairs, without large sterile radiant flowers; peduncle usually very short or nearly absent, very rarely to 1.5 cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays of 3rd and 4th orders, not fragrant, sessile or shortly pedicellate. Calyx yellowish green; tube ovoid-orbicular, ca. 1 mm, yellow-brown stellate-pubescent; lobes ovate-lanceolate, ca. 0.5 mm, ciliate, apex obtuse. Corolla white, rotate, 4–5 mm in diam., outside stellate-pubescent; tube ca. 1.5 mm; lobes spreading, ovate, exceeding tube, apex rounded, margin entire. Stamens shorter or slightly longer than corolla, inserted at base of corolla; filaments ca. 2 mm; anthers yellow-whitish, broadly elliptic, ca. 0.8 mm. Styles slightly exceeding calyx lobes; stigmas indistinctly 3-lobed. Fruit maturing red, ovoid, 5–6 mm, base rounded, apex rounded, glabrous; pyrenes very compressed, ovoid, 4–5 × 3–4 mm, with 3 shallow dorsal grooves and 2 shallow ventral grooves, base truncate, apex acute. Fl. Apr–Jun, fr. Aug–Oct.

Sparse forests, scrub, roadsides; 100–700 m. Fujian, Guangdong, Guangxi, SE Jiangxi, Taiwan, Yunnan, S Zhejiang [?Indonesia, Malaysia, Philippines].

66. *Viburnum melanocarpum* P. S. Hsu in Chen et al., *Observ. Fl. Hwangshan*. 181. 1965.

黑果荚蒾 *hei guo jia mi*

Shrubs, deciduous, to 3.5 m tall. Bark light brown. Branchlets of current year grayish black, sparsely yellowish stellate-pubescent; branchlets of previous year red-brown, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-oblong, ca. 6 mm, with 2 pairs of separate scales; scales densely yellow-white pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules 2, subulate, ca. 3 mm, caducous, or absent; petiole green, slender, 1–2(–4) cm, sparsely yellowish stellate-pubescent; leaf blade green when young, obovate, orbicular-obovate, or broadly elliptic, rarely rhombic-elliptic, 6–10(–12) × 3–6 cm, papery, abaxially sparsely adpressed long hairy on midvein and lateral veins and sparsely stellate-pubescent in vein axils, adaxially shiny, often stiffly hairy on midvein, later subglabrous, midvein raised abaxially, lateral veins 6- or 7-jugate, pinnate, straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base rounded, shallowly cordate, or broadly cuneate, with 0 or 1 circular gland on both sides of midvein near base, margin denticulate, apex often abruptly and shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short branchlets with 1 pair of leaves, ca. 5 cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, with dispersed small glandular dots, without large sterile radiant flowers; peduncles 1.5–3 cm, slender; bracts and bracteoles deciduous, leaflike, green, lanceolate, glabrous. Flowers on rays of 2nd and 3rd orders, not fragrant, shortly pedicellate or sessile. Calyx green; tube tubular-obconical, ca. 1.5 mm, sparsely stellate-pubescent or glabrous; lobes broadly ovate, ca. 1.5 mm, glabrous, apex obtuse. Corolla white, rotate, ca. 5 mm in diam., glabrous; tube 1–2 mm; lobes spreading, broadly ovate, slightly

exceeding tube, apex rounded, margin entire. Stamens exceeding or slightly shorter than corolla, inserted at base of corolla; filaments ca. 4 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate. Fruit initially turning dark purple-red, maturing black, shiny, ellipsoid, 8–10 mm, base rounded, apex rounded, glabrous; pyrenes compressed, ovoid, ca. 8 × 6 mm, longitudinally raised on ventral side, apex rounded. Fl. Apr–May, fr. Sep–Oct.

• Forests, scrub; ca. 1000 m. Anhui, Henan, S Jiangsu, Jiangxi, Zhejiang.

67. *Viburnum mullaha* Buchanan-Hamilton ex D. Don, *Prodr. Fl. Nepal*. 141. 1825.

西域荚蒾 *xi yu jia mi*

Shrubs or small trees, deciduous, to 4 m tall. Bark light brown. Branchlets of current year densely gray-brown stellate-tomentose, mixed with long hairs, or subglabrous; branchlets of previous year purple-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, ca. 5 mm, with 2 pairs of separate scales; scales adpressed pubescent outside. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1–2.5 cm, densely stellate-pubescent; leaf blade green when young, ovate to ovate-lanceolate, 3.5–10 × 1.8–6 cm, papery, abaxially densely stellate-pubescent, or only so in vein axils, adaxially with sparse, simple, forklike, or stellate hairs, or hairy only on midvein, midvein raised abaxially, lateral veins 5- or 6(–8)-jugate, pinnate, arched, branched, ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base broadly cuneate to rounded or slightly cordate, with 0 or 1 circular gland on both sides of midvein near base, margin remotely serrate except at base, apex caudate-acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, ca. 6 cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, dense, gray-brown stellate-tomentose, mixed with long hairs, without large sterile radiant flowers; peduncle (0.4–)1.5–2.5 cm; bracts and bracteoles deciduous, leaflike, green, lanceolate, hairy. Flowers on rays from 2nd to 4th order, not fragrant, sessile or shortly pedicellate. Calyx green; tube obconical, ca. 1 mm, outside sparsely or densely stellate-pubescent and with dense glandular dots; lobes triangular-ovate, very small, stellate-pubescent, apex obtuse. Corolla white, rotate, 4–5 mm in diam., outside sparsely or densely stellate-pubescent; tube ca. 1.5 mm; lobes spreading, orbicular-ovate, subequaling tube, apex rounded, margin entire. Stamens shorter than corolla, inserted at base of corolla; filaments ca. 1.5 mm; anthers yellow-whitish, elliptic, ca. 1 mm. Styles very short, shorter than calyx lobes; stigmas capitate. Fruit maturing red, broadly ellipsoid, 5–7 mm in diam., base rounded, apex rounded, glabrous; pyrenes ovoid, 4–6 mm, with 2 shallow dorsal grooves and 1 shallow ventral groove, apex rounded. Fl. Jul, fr. Sep–Oct. $2n = 18^*$.

Needle-leaved and broad-leaved mixed forests; 2200–2700 m. Xizang, Yunnan [Bhutan, India, Kashmir, Nepal].

1a. Branchlets of current year and abaxial surfaces of young leaves stellate-

tomentose; calyx tube and corolla
outside densely stellate-pubescent 67a. var. *mullaha*

- 1b. Branchlets of current year subglabrous;
leaves abaxially stellate-pubescent only
in vein axils and hairy only on midvein;
calyx tube and corolla outside very
sparsely pubescent 67b. var. *glabrescens*

67a. *Viburnum mullaha* var. *mullaha*

西域荚蒾(原变种) xi yu jia mi (yuan bian zhong)

Viburnum involucratum Wallich ex Candolle; *V. stellulatum* Wallich ex Candolle; *V. stellulatum* var. *involucratum* (Wallich ex Candolle) C. B. Clarke; *V. thuyongense* W. W. Smith.

Branchlets of current year and abaxial surfaces of young leaves stellate-tomentose. Calyx tube and corolla densely stellate-pubescent outside.

Needle-leaved and broad-leaved mixed forests; 2300–2700 m. S and SE Xizang, NW Yunnan (Gongshan) [India, Nepal].

67b. *Viburnum mullaha* var. *glabrescens* (C. B. Clarke) Kitamura, Fauna Fl. Nepal Himal. 1: 235. 1955.

少毛西域荚蒾 shao mao xi yu jia mi

Viburnum stellulatum var. *glabrescens* C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 4. 1880.

Branchlets of current year subglabrous. Leaves stellate-pubescent only in vein axils and hairy only on midvein on abaxial surface. Calyx tube and corolla very sparsely pubescent outside.

Mixed forests; 2200–2700 m. Xizang [Bhutan, E India, Kashmir, Nepal].

68. *Viburnum parvifolium* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 134. 1911.

小叶荚蒾 xiao ye jia mi

Viburnum yamadae Bartlett & Yamamoto.

Shrubs, deciduous, to 2 m tall. Bark light brown. Branchlets of current year densely yellow-brownish stellate-pubescent, with minute brownish glandular dots; branchlets of previous year dark brown, terete, glabrous, with dispersed, bright, rounded lenticels. Winter buds oblong-ovoid, with 2 pairs of separate scales; scales ovate-lanceolate, stellate-pubescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole reddish purple, robust, 4–6 mm, densely stellate-pubescent, with minute brownish glandular dots; leaf blade green when young, oblong or orbicular, very rarely ovate, 0.8–3 × 0.7–2 cm, thickly papery, abaxially sparsely stellate-pubescent and with minute brownish glandular dots, more densely hairy on veins, adaxially stellate-pubescent only on veins, midvein raised abaxially, lateral veins 3- or 4-jugate, lowest pair elongating to upper part of blade, thus appearing ± triplinerved, pinnate, arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base broadly cuneate to rounded, without glands, margin remotely serrate except at base, apex rounded or slightly acute.

Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal or at apices of branchlets with 1 pair of leaves, ca. 2.5 cm in diam., to 6 cm at fruiting stage; rays whorled; first node of inflorescence with 5 rays, dense, densely stellate-pubescent and with minute brownish glandular dots, without large sterile radiant flowers; peduncle ca. 5 mm; bracts and bracteoles caducous, greenish brown, linear-lanceolate, membranous, sparsely ciliate. Flowers on rays of 1st and 2nd orders, not fragrant, sessile or shortly pedicellate. Calyx green; tube tubular, ca. 1 mm, with few hairs and brownish glandular dots; lobes broadly triangular, ca. 1/2 as long as tube, glabrous, with minute brownish glandular dots, apex obtuse. Corolla white, rotate, 5–6 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, orbicular, ca. 2 mm, exceeding tube, apex rounded, margin entire. Stamens subequaling corolla, inserted at base of corolla; filaments ca. 2.5 mm; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles exceeding calyx lobes; stigmas capitate, 3-lobed. Fruit maturing red, compressed, oblong or orbicular, 8–10 × 5–7 mm, base rounded, apex rounded, glabrous or with glandular dots; pyrenes compressed, ovoid, ca. 6.5 × 4 mm, ventral side slightly impressed and with 1 shallow groove, apex slightly mucronate. Fl. Jun–Jul, fr. Nov.

• Mountains; 2200–3300 m. Taiwan.

69. *Viburnum sempervirens* K. Koch, Hort. Dendrol. 300. 1853.

常绿荚蒾 chang lü jia mi

Shrubs, evergreen, to 4 m tall. Bark gray-brownish. Branchlets of current year quadrangular, yellowish or gray-yellowish sparsely or densely stellate-pubescent or subglabrous; branchlets of previous year purple-brownish or gray-brownish, slightly quadrangular, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales ovate-lanceolate, glabrescent. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole reddish purple, robust, 5–15 mm, glabrous or stellate-pubescent; leaf blade green when young, black to black-brown or gray-black when dry, elliptic to elliptic-ovate, rarely broadly ovate, sometimes oblong or oblanceolate, 4–12(–16) × 2.5–5(–6.5) cm, leathery, abaxially with tiny brown glandular dots throughout, often sparsely adpressed pubescent on midvein and lateral veins, adaxially shiny, midvein raised abaxially, lateral veins 3–6-jugate, lowest pair elongating to upper part of blade, thus appearing ± triplinerved, pinnate, slightly arched, branched, ending in teeth or anastomosing near margin, conspicuously raised abaxially, deeply impressed adaxially, veinlets transverse, inconspicuous or slightly conspicuous abaxially, inconspicuous adaxially, not lobed, base acuminate to obtuse, sometimes subrounded, without glands, margin entire or serrate in upper part, apex acute or shortly acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 3–5 cm in diam.; rays whorled; first node of inflorescence with (4 or) 5 rays, dense, glabrous, subglabrous, or densely stellate-pubescent, with red-brown glandular dots, without large sterile radiant flowers; peduncles less than 1 cm, or nearly absent; bracts caducous, leaflike, green, linear to linear-lanceolate, glabrous; bracteoles scalelike. Flowers on rays of 3rd and 4th orders, not fragrant, shortly pedicellate or sessile. Calyx green; tube tubu-

lar-obconical, ca. 1 mm, glabrous; lobes broadly ovate, shorter than tube, glabrous, apex obtuse, slightly ciliate. Corolla white, rotate, ca. 4 mm in diam., glabrous; tube ca. 1 mm; lobes spreading, suborbicular, subequalling tube, apex rounded, margin entire. Stamens slightly exceeding corolla, inserted at base of corolla; filaments ca. 3 × as long as anthers; anthers yellow-whitish, broadly elliptic, ca. 1 mm. Styles slightly exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid, ca. 8 mm, base rounded, apex rounded, glabrous; pyrenes compressed, orbicular, 3–6 mm in diam., obviously or slightly convex on dorsal side, concave or not on ventral side, apex rounded. Fl. Apr–May, fr. Jul–Dec.

• Sparse or dense forests, scrub; 100–1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, ?Hainan, S Hunan, Jiangxi, SE Sichuan, Yunnan, Zhejiang.

- 1a. Young branchlets, petioles, and inflorescences glabrous or sparsely stellate-pubescent; pyrenes dorsally convex, ventrally obviously concave, 3–5 mm in diam. 69a. var. *sempervirens*
 1b. Young branchlets, petioles, and inflorescences densely stellate-pubescent; pyrenes dorsally slightly convex, ventrally not obviously concave, ca. 6 mm in diam. 69b. var. *trichophorum*

69a. *Viburnum sempervirens* var. *sempervirens*

常绿荚蒾(原变种) chang lü jia mi (yuan bian zhong)

Viburnum nervosum Hooker & Arnott (1833), not D. Don (1825); *V. venulosum* Benth.

Young branchlets, petioles, and inflorescences glabrous or sparsely stellate-pubescent. Pyrenes convex dorsally, obviously concave ventrally, 3–5 mm in diam.

• Sparse or dense forests, scrub; 100–1800 m. Guangdong, Guangxi, Jiangxi.

69b. *Viburnum sempervirens* var. *trichophorum* Handel-Mazzetti, Beih. Bot. Centralbl., Abt. B, 56: 465. 1937.

具毛常绿荚蒾 ju mao chang lü jia mi

Viburnum pinfaense H. Léveillé.

Young branchlets, petioles, and inflorescences densely stellate-pubescent. Pyrenes slightly convex dorsally, not obviously concave ventrally, ca. 6 mm in diam.

• Forests, scrub; 100–1400 m. Anhui, Fujian, Guangdong, N Guangxi, Guizhou, S Hunan, Jiangxi, SE Sichuan, Yunnan, Zhejiang.

70. *Viburnum setigerum* Hance, J. Bot. 20: 261. 1882.

茶荚蒾 cha jia mi

Viburnum bodinieri H. Léveillé; *V. setigerum* var. *sulcatum* P. S. Hsu; *V. theiferum* Rehder.

Shrubs, deciduous, to 4 m tall. Bark light brown. Winter buds and leaves black, black-brown, or gray-black when dry. Branchlets of current year grayish yellow, glabrous; branchlets of previous year gray, gray-brown, or purple-brown, terete,

glabrous, with dispersed, small, rounded lenticels. Winter buds oblong, usually less than 5 mm, to 1 cm at most, with 2 pairs of separate scales, outer ones 1/3–1/2 as long as inner ones; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, slender, 1–1.5(–2.5) cm, sparsely adpressed long hairy or subglabrous; leaf blade green when young, ovate-oblong to ovate-lanceolate, rarely ovate to elliptic-ovate, 7–12(–15) × 3–5.5 cm, papery, abaxially yellowish adpressed long hairy only on midvein and lateral veins, adaxially long hairy, glabrescent, midvein raised abaxially, lateral veins 6–8-jugate, pinnate, straight, rarely branched, ending in teeth, conspicuously raised abaxially, slightly impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, not lobed, base rounded, with 1 or 2 circular glands on both sides of midvein near base, margin remotely serrate except at base, apex acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, often nodding, terminal, 2.5–4(–5) cm in diam.; rays whorled; first node of inflorescence usually with 5 rays, dense, glabrous or sparsely adpressed long hairy, without large sterile radiant flowers; peduncles 1–2.5(–3.5) cm; bracts and bract-oles deciduous, leaflike, green, lanceolate, glabrous. Flowers on rays of 3rd order, not fragrant, shortly pedicellate or sessile. Calyx green; tube tubular, ca. 1.5 mm, glabrous; lobes ovate, ca. 1 mm, glabrous, apex obtuse. Corolla white, rotate, 4–6 mm in diam., glabrous; tube 1–2 mm; lobes spreading, ovate, ca. 2.5 mm, exceeding tube, apex rounded, margin entire. Stamens subequalling corolla, inserted at base of corolla; filaments ca. 3 mm; anthers yellow-whitish, globose, very small, less than 1 mm. Styles not exceeding calyx lobes; stigmas capitate. Fruit maturing red, ovoid, 9–11 mm, base rounded, apex rounded, glabrous; pyrenes very compressed, ovoid, 8–10 × 5–7 mm, sometimes much smaller, occasionally ovoid-oblong, only 4–5 mm in diam., slightly impressed on ventral side, apex rounded. Fl. Apr–May, fr. Sep–Oct. $2n = 18^*$.

• Forests, scrub; (200–)800–1700 m. Anhui, N Fujian, N Guangdong, E Guangxi, Guizhou, Henan, W Hubei, Hunan, S Jiangsu, Jiangxi, S Shaanxi, E Sichuan, Taiwan, Yunnan, Zhejiang.

Viburnum setigerum f. *xanthocarpum* Rehder (J. Arnold Arbor. 12: 78. 1931) is a yellow/orange-fruited variant described from cultivated material of Chinese provenance.

71. *Viburnum squamulosum* P. S. Hsu, Acta Phytotax. Sin. 13(1): 127. 1975.

瑶山荚蒾 yao shan jia mi

Shrubs, evergreen, total size unknown. Bark unknown. Branchlets of current year brownish, quadrangular, glabrous; branchlets of previous year black-brownish, slightly quadrangular, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid-lanceolate, with 2 pairs of separate scales; scales ?glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole green, robust, 1–1.5 cm, glabrous; leaf blade green when young, linear-lanceolate, 11–17 × 1.5–2 cm, thickly papery, abaxially glabrous, with red-brown glandular dots, adaxially shiny, with red-brown glandular dots, midvein raised abaxially, lateral veins ca. 6-jugate, pinnate, slightly arched, rarely branched, ending in teeth or anastomosing near margin, raised abaxially, slightly impressed adaxially,

ally, veinlets transverse, inconspicuous on both surfaces, not lobed, base cuneate to obtuse, without glands, margin irregularly serrate or subentire, apex long acuminate. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, to 6 cm in diam. at fruiting stage; rays whorled; first node of inflorescence with 5 rays, 1–2 cm, dense, glabrous, without large sterile radiant flowers; peduncles ca. 2 cm, slender, stellate-pubescent; bracts and bracteoles unknown, caducous. Flowers on rays of 2nd and 3rd orders, not fragrant, sessile or shortly pedicellate. Calyx green; tube broadly ovoid,

ca. 1 mm, glabrous; lobes broadly triangular-ovate, ca. 1/2 as long as tube, glabrous, apex obtuse. Corolla ?rotate, unknown. Styles exceeding calyx lobes; stigmas capitate, 3-lobed. Fruit color unknown, subglobose, ?6–7 mm in diam., base rounded, apex rounded, glabrous or with glandular dots; pyrenes compressed, subquadrangular, ca. 5 × 5 mm, raised on dorsal side, impressed on ventral side, apex rounded. Fr. Aug.

- Dense forests. Guangxi (Yaoshan).

This species is known only from the type collection.

8. *Viburnum* sect. *Opulus* (Miller) Candolle, Prodr. 4: 328. 1830.

裂叶组 lie ye zu

Opulus Miller, Gard. Dict. Abr., ed. 4. 1754.

Winter buds with 2 pairs of separate scales. Inflorescence a compound umbel-like cyme, usually pedicellate, with or without large sterile radiant flowers. Corolla rotate. Fruit maturing red; pyrenes without grooves or with 2 shallow dorsal grooves and 1 broad ventral groove, albumen solid.

Three species: temperate Asia, Europe, and North America; two species in China.

Recent phylogenetic work shows that this section is monophyletic, sister to a large clade consisting of *Viburnum* sect. *Megalotinus*, *V.* sect. *Odontotinus*, *V.* sect. *Oreinoitinus* (Oersted) Bentham & J. D. Hooker, and *V.* sect. *Timus*.

72. *Viburnum koreanum* Nakai, J. Coll. Sci. Imp. Univ. Tokyo 42(2): 42. 1921.

朝鲜荚蒾 chao xian jia mi

Shrubs, deciduous, to 2 m tall. Bark light brown. Branchlets of current year green-brown, later gray-brown, glabrous; branchlets of previous year gray-brownish, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, with a pair of connate scales; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules 2, subulate; petiole green, slender, 0.5–2(–2.5) cm, sparsely pubescent, glabrescent; leaf blade green when young, suborbicular or broadly ovate, 3–13 × 2–10 cm, papery, abaxially with minute glandular dots and yellowish pubescent on veins and in vein axils, adaxially glabrous or sparsely pubescent when young, glabrescent, midvein raised abaxially, 3–5-palmatinerved, veins straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, 3(–5)-lobed, leaves at apices of branches sometimes undivided, base rounded, truncate, or shallowly cordate, with 1 gland on each side near petiole, margin irregularly dentate, apices of lobes acute. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, at apices of short branchlets, with a pair of leaves, 2–4 cm in diam.; rays whorled; first node of inflorescence with 5–7 rays, dense, 5–30-flowered, glabrous, often minutely gland-dotted, without large sterile radiant flowers; peduncle 1.5–4 cm, slender; bracts and bracteoles deciduous, leaflike, green, linear-lanceolate, glabrous. Flowers on rays of 1st order, not fragrant, very shortly pedicellate. Calyx green; tube obconical, ca. 1 mm, glabrous; lobes triangular, ca. 0.6 mm, glabrous, apex obtuse. Corolla white, rotate, 6–8 mm in diam., glabrous; tube ca. 1.2 mm; lobes spreading, ovate to elliptic, 2.5–3 mm, exceeding tube, apex rounded, margin entire. Stamens shorter than corolla, inserted near base of corolla; filaments 1–1.3 mm; anthers yellow-whitish, elliptic, 0.6–0.8

mm. Styles slightly exceeding calyx lobes; stigmas 2-lobed. Fruit maturing yellow-red or dark red, subellipsoid, 7–11 × 5–7 mm, base rounded, apex rounded, glabrous; pyrenes ovoid-oblong, ca. 7 × 5.5 mm, with 2 shallow dorsal grooves and 1 broad ventral groove, apex rounded. Fl. Jun–Jul, fr. Aug–Sep.

Needle-leaved forests, forest margins; ca. 1400 m. Jilin [Japan, Korea].

73. *Viburnum opulus* Linnaeus, Sp. Pl. 1: 268. 1753.

欧洲荚蒾 ou zhou jia mi

Shrubs, deciduous, to 6 m tall. Bark dark gray, thin or thick, corky or not. Branchlets of current year green-brownish, sometimes reddish, glabrous or pubescent, with conspicuously raised lenticels; branchlets of previous year yellowish or red-brown, terete, glabrous, with dispersed, small, rounded lenticels. Winter buds ovoid, stipitate, 4–6 mm, with 2 pairs of connate scales, inner scales membranous, base connate into a tube; scales glabrous. Leaves always opposite, not clustered at apices of branchlets; stipules 2, persistent, subulate, 1–5 mm; petiole green or reddish, robust, 1–5 cm, glabrous or pubescent, with 2–4 or more discoid glands near apex; leaf blade green when young, orbicular-ovate to broadly ovate or obovate, 6–12 × 5–10 cm, papery, abaxially spreading hairy especially on veins and vein axils, adaxially almost glabrous, midvein raised abaxially, 3-palmatinerved, veins straight or slightly arched, branched, ending in teeth, conspicuously raised abaxially, impressed adaxially, veinlets transverse, slightly raised abaxially, impressed adaxially, usually 3-lobed, leaves at apices of branches sometimes undivided, base rounded, truncate, or shallowly cordate, without glands, middle lobe often largest, margin irregularly dentate, apices of lobes acute, lateral lobes present, sometimes slightly spreading toward outside. Leaves on upper part of branchlets often narrow and longer, elliptic to oblong-lanceolate and not divided, margin sparsely crenate or shallowly 3-lobed; lobes entire or subentire, lateral lobes short,

middle lobes elongated. Flowers appearing after leaves; inflorescence a compound umbel-like cyme, terminal, 5–12 cm in diam.; rays whorled; first node of inflorescence with 6–8 rays, dense, glabrous or with simple hairs, with 5–10 large sterile radiant flowers, or totally composed of large sterile flowers; peduncle robust, 2–5 cm, glabrous or pubescent; bracts and bracteoles deciduous, leaflike, green, lanceolate, glabrous or sparsely hairy. Flowers on rays of 2nd and 3rd orders, not fragrant, very shortly pedicellate. Sterile flowers: calyx like fertile flowers, corolla white, 1.3–2.5 cm in diam., long pedicellate; lobes broadly obovate, apex rounded, unequally shaped; stamens and pistils not developed. Fertile flowers: calyx green; tube obconical, ca. 1 mm, glabrous; lobes triangular, ca. 0.6 mm, glabrous, apex obtuse; corolla white, rotate, 4–5 mm in diam., outside glabrous, inside pubescent; tube 1–2 mm; lobes spreading or reflexed, suborbicular, 1–1.5 mm, slightly unequal in size, apex rounded, margin entire; stamens conspicuously exceeding corolla, inserted near base of corolla; filaments ca. 4 mm; anthers yellow-whitish, or purple, ca. 1 mm; styles slightly exceeding calyx lobes; stigmas 2-lobed. Fruit initially turning yellow, maturing red, suborbicular, 8–10(–12) mm in diam., base rounded, apex rounded, glabrous; pyrenes compressed, subglobose, 7–9 mm in diam., without grooves, apex rounded. Fl. May–Jun, fr. Sep–Oct. $2n = 18^*$.

Forests, scrub, thickets; 1000–2200 m. Anhui, S Gansu, N Hebei, Heilongjiang, W Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, S Shaanxi, Shandong, Shanxi, Sichuan, NW Xinjiang, NW Zhejiang [Japan, Korea, Mongolia, Russia; Europe].

- 1a. Bark thin, not corky; inflorescence with 5–10 large sterile radiant flowers or totally composed of large sterile flowers, anthers yellow-white or stamens lacking (on sterile flowers) 73a. subsp. *opulus*
 1b. Bark thick, corky; inflorescence with 5–10 large sterile radiant flowers, anthers purple 73b. subsp. *calvescens*

73a. *Viburnum opulus* subsp. *opulus*

欧洲荚蒾(原亚种) ou zhou jia mi (yuan ya zhong)

Bark thin, not corky. Inflorescence with 5–10 large sterile radiant flowers or totally composed of large sterile flowers. Anthers yellow-white.

Forests; 1000–1600 m. NW Zhejiang [Russia; Europe].

A European horticultural form, *Viburnum opulus* f. *roseum* (Linnaeus) Hegi (Ill. Fl. Mitt.-Eur. 6(1): 243. 1914; *V. opulus* var. *roseum* Linnaeus, Sp. Pl. 1: 268. 1753; *V. opulus* var. *sterile* Candolle), is sometimes cultivated in China. Its bark is thin, not corky, and the inflorescence is totally composed of large sterile flowers lacking stamens.

73b. *Viburnum opulus* subsp. *calvescens* (Rehder) Sugimoto, New Key Jap. Tr. 478. 1961.

鸡树条 ji shu tiao

Viburnum sargentii Koehne var. *calvescens* Rehder, Mitt. Deutsch. Dendrol. Ges. 12: 125. 1903; *V. opulus* var. *calvescens* (Rehder) H. Hara; *V. opulus* f. *intermedium* (Nakai) Sugimoto; *V. opulus* f. *puberulum* (Komarov) Sugimoto; *V. opulus* var. *pubinerve* Makino; *V. opulus* var. *sargentii* (Koehne) Takeda; *V. pubinerve* Blume ex Nakai; *V. pubinerve* f. *calvescens* (Rehder) Nakai; *V. pubinerve* f. *intermedium* Nakai; *V. pubinerve* f. *puberulum* (Komarov) Nakai; *V. sargentii* Koehne; *V. sargentii* f. *calvescens* (Rehder) Rehder; *V. sargentii* f. *glabra* Komarov; *V. sargentii* f. *intermedium* (Nakai) H. Hara; *V. sargentii* var. *intermedium* (Nakai) Kitagawa; *V. sargentii* f. *puberulum* Komarov; *V. sargentii* var. *puberulum* (Komarov) Kitagawa.

Bark thick, corky. Inflorescence with 5–10 large sterile radiant flowers. Anthers purple. $2n = 18$.

Forests, scrub, thickets; 1000–2200 m. Anhui, S Gansu, N Hebei, Heilongjiang, W Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, S Shaanxi, Shandong, Shanxi, Sichuan, NW Zhejiang [Japan, Korea, Mongolia, Russia].

Viburnum opulus f. *flavum* (Rehder) H. Hara (Ginkgoana 5: 274. 1983; *V. sargentii* f. *flavum* Rehder, J. Arnold Arbor. 3: 224. 1922; *V. sargentii* var. *flavum* (Rehder) Rehder) is a yellow-fruited form of this taxon known from China, Korea, and Japan (rare).

2. SAMBUCUS Linnaeus, Sp. Pl. 1: 269. 1753.

接骨木属 jie gu mu shu

Yang Qiner (杨亲二); David E. Boufford

Shrubs, small trees, or perennial herbs, gynodioecious or hermaphroditic, deciduous, whole plant sometimes with extrafloral nectariferous glands. Branches smooth, striate, or warty, with stout pith. Leaves with or without stipules, imparipinnate, or incompletely bipinnate, rarely laciniate; leaflets serrate or divided, opposite or alternate. Inflorescences terminal, flat or convex corymbs or panicles, pedunculate or sessile. Flowers actinomorphic or sometimes dimorphic, sometimes with glandular nectaries, articulate with pedicel; bracts mostly absent; bracteoles 1 or absent. Calyx tube: limb 3–5-parted; corolla rotate, white, lobes 3–5. Stamens 5, inserted at base of corolla; filaments erect, filiform; anthers 2-celled, oblong, cells free, attached at middle. Ovary locules 3–5, ovules 1 per locule; style cushionlike; stigmas 3 or 5. Fruit berrylike, 3–5-seeded; seeds triquetrous or ellipsoid; embryo ca. as long as seed.

About ten species: temperate to subtropical regions and tropical mountains; four species (one endemic) in China.

See Bolli, Diss. Bot. 223: 1–227. 1994; Eriksson and Donoghue, Syst. Bot. 22: 555–573. 1997.

Sambucus nigra Linnaeus (Sp. Pl. 1: 269. 1753) is occasionally cultivated in China.

In some species, the vegetative parts of the plant when bruised and the flowers have a fetid odor.

- 1a. Perennial herbs or shrubs; lenticels absent or inconspicuous; young branches striate; inflorescences flat topped, umbellate cymes.

- 2a. All flowers hermaphroditic, rotate; lenticels inconspicuous or absent; lateral leaflets without glandular teeth; terminal leaflet narrowly cuneate, often decurrent and connected to next lower leaflet pair; pith of roots red or white; pyrenes rugose or smooth 1. *S. adnata*
- 2b. Some flowers sterile, urceolate; lenticels inconspicuous; lateral leaflets with 2–4 glandular teeth below middle and at base; terminal leaflet rounded to cuneate at base, not or only slightly decurrent; pith of roots white; pyrenes tuberculate 2. *S. javanica*
- 1b. Shrubs or small trees; lenticels conspicuous; young branches rounded; inflorescences and infructescences pyramidal paniculate cymes.
- 3a. Petiolules, foliar axis, and abaxial surface of leaflets glabrous 3. *S. williamsii*
- 3b. Petiolules, foliar axis, and veins at base of abaxial surface of leaflets hairy 4. *S. sibirica*

1. *Sambucus adnata* Wallich ex Candolle, Prodr. 4: 322. 1830.

血满草 xue man cao

Sambucus schweriniana Rehder.

Herbs, suffrutescent, or low shrubs, 1–2 m tall, rhizomatous. Pith of roots and rhizomes white or red. Stem herbaceous, obviously striate; pith white or red; lenticels absent. Leaves imparipinnate; stipules blade-like or linear; leaflets 3–5 pairs, narrowly elliptic to narrowly ovate or lanceolate, 4–15 × 1.5–2.5 cm, abaxially sparsely pubescent, more densely pubescent on veins, base obtuse and oblique, margin serrate, apex acuminate; terminal pair of leaflets often connate at base along rachis, sometimes connected also with terminal leaflet, remaining leaflets alternate or sometimes subopposite; stipules of leaflets reduced to urceolate glands. Inflorescences terminal, pedunculate, with 3–5 rays, umbellate cymes, 12–15 cm broad and tall, with dense yellow pubescence when young and ± glandular hairy. Flowers all normal, not reduced to glands, 4–5 mm in diam.; calyx urceolate, pubescent; corolla white; filaments dilated at base, anthers yellow; ovary locules 3; styles short or nearly absent; stigma 3-lobed. Fruit orange or red, becoming black on drying, globose, 3–4 mm in diam.; pyrenes ovoid, ca. 2 × 1.5 mm, rugose or smooth. Fl. May–Jul(–Sep), fr. Sep–Oct. *2n* = 36*.

Forests, thickets, streamsides, moist shaded mountain slopes, alpine grasslands; 1600–3600 m. Gansu, Guizhou, Hubei, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India (Darjeeling, Sikkim)].

2. *Sambucus javanica* Blume, Bijdr. 657. 1825.

接骨草 jie gu cao

Ebulus chinensis (Lindley) Nakai; *E. formosana* (Nakai) Nakai; *Sambucus argyi* H. Léveillé; *S. chinensis* Lindley; *S. chinensis* var. *formosana* (Nakai) H. Hara; *S. chinensis* var. *pinnatilobata* G. W. Hu; *S. formosana* Nakai; *S. formosana* var. *arborescens* Kanehira & Sasaki; *S. henriana* Samutina; *S. hookeri* Rehder; *S. javanica* var. *argyi* (H. Léveillé) Rehder; *S. javanica* subsp. *chinensis* (Lindley) Fukuoka.

Herbs, suffrutescent, or low shrubs, 1–2 m tall. Stem obviously striate; pith white; lenticels inconspicuous. Leaves imparipinnate; stipules leaflike or sometimes reduced to blue glands; lateral leaflets 2 or 3 pairs, alternate or opposite, narrowly ovate, 6–13 × 2–3 cm, adaxially sparsely pubescent when young, base obtuse and oblique, margin serrulate, often with 1 to several glandular teeth from below middle nearly to base, apex long acuminate; terminal leaflet ovate or obovate, base cuneate, sometimes connected with next lower leaflets, basal

pair of leaflets shortly petiolulate; stipules of leaflets absent. Inflorescences terminal, compound umbellate cymes, lax, pedunculate, with leaflike bracts at base of peduncle, with 3–5 slender rays, with sparse yellow pubescence. Some flowers modified into persistent urceolate nectaries. Flowers: calyx tube urceolate, lobes triangular; corolla white, connate at base; anthers yellow or purple; ovary locules 3; styles short or nearly absent; stigma 3-lobed. Fruit red, subglobose, 3–4 mm in diam.; pyrenes 3 or 4, ovoid, ca. 2.5 mm, verrucate. Fl. Apr–May(–Aug), fr. Aug–Sep.

Mountain slopes, forests, streamsides, grasslands; 300–2600 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [India, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

Sambucus javanica often has abundant extrafloral nectaries on the petioles, branchlets, young stems, peduncle, and inflorescence branches.

3. *Sambucus williamsii* Hance, Ann. Sci. Nat., Bot., sér. 5, 5: 217. 1866.

接骨木 jie gu mu

Sambucus barbinervis Nakai; *S. buergeriana* (Nakai) Blume ex Nakai; *S. buergeriana* f. *cordifoliata* Skvortsov & W. Wang; *S. foetidissima* Nakai; *S. junnanica* J. J. Vassiljev; *S. latipinna* Nakai var. *pendula* Skvortsov; *S. manshurica* Kitagawa; *S. peninsularis* Kitagawa; *S. potaninii* J. J. Vassiljev; *S. racemosa* Linnaeus subsp. *manshurica* (Kitagawa) Voroschilov; *S. sieboldiana* (Miquel) Blume ex Schwerin var. *buergeriana* Nakai.

Shrubs or small trees, 5–6 m tall. Old branches reddish brown, with conspicuous, narrowly elliptic lenticels; pith brownish. Leaves imparipinnate; leaflets (1 or)2- or 3(–5)-jugate; lateral leaflets ovate-orbicular or narrowly elliptic to oblong-obovate, 5–15 × 1.2–7 cm, base cuneate or rounded, sometimes cordate, asymmetrical, margin irregularly serrate, sometimes with 1 to several glandular teeth at base or below middle, apex acute to acuminate or caudate; lowest pair of leaflets sessile or petiole to ca. 0.5 cm; terminal leaflet ovate or obovate, adaxially sparsely pubescent when young, glabrescent, petiolule ca. 2 cm, base cuneate, apex acuminate or caudate; stipules narrowly linear or reduced to bluish protrusions. Inflorescences terminal cymose panicles, 5–11 × 4–14 cm, pedunculate, sometimes sparsely pubescent, soon glabrescent. Flowers appearing simultaneously with leaves, dense; calyx tube urceolate, ca. 1 mm, lobes triangular-lanceolate, slightly shorter than tube; corolla pinkish in bud, white or yellowish when open; tube short; lobes oblong or narrowly ovate-orbicular, ca. 2 mm; stamens spreading, ca. as long as corolla lobes; filaments

slightly dilated at base; anthers yellow; ovary 3-loculed; styles short; stigmas 3-lobed. Fruit red, rarely bluish or purplish black, ovoid or subglobose, 3–5 mm in diam.; pyrenes 2 or 3, ovoid to ellipsoid, 2.5–3.5 mm, slightly rugose. Fl. Apr–May, fr. Sep–Oct. $2n = 36^*$.

• Mountain slopes, scrub, streamsides, roadsides, beside houses; 500–1600 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang.

Sambucus williamsii was treated as a synonym of a highly variable, circumboreal *S. racemosa* Linnaeus by Bolli (Diss. Bot. 223: 187–197. 1994). The black fruit and dark green leaves (Bolli, loc. cit.) distinguish *S. williamsii* and *S. melanocarpa* A. Gray of W North America from other members of the *S. racemosa* complex. *Sambucus williamsii* also has a more pronounced fetid odor. Because of the high degree of variation and the pronouncement by Bolli (loc. cit.) that the variation within his circumscription of *S. racemosa* should be further evaluated in a geographic context through field, cytological, and biochemical methods, for the time being, we prefer to maintain *S. williamsii*, and, with less certainty, the following species, *S. sibirica*, as distinct.

4. *Sambucus sibirica* Nakai, Bot. Mag. (Tokyo) 40: 478. 1926.

西伯利亚接骨木 xi bo li ya jie gu mu

Sambucus buergeriana (Nakai) Blume ex Nakai var. *mi-*

quellii Nakai; *S. racemosa* Linnaeus subsp. *sibirica* (Nakai) H. Hara; *S. williamsii* Hance var. *miquelii* (Nakai) Y. C. Tang ex J. Q. Hu.

Shrubs, 2–4 m tall, densely branched. Bark reddish brown, longitudinally sulcate, with elliptic lenticels; pith brownish; young branches yellowish white hirsute, sometimes papillose. Leaflets 2-jugate, abaxially pale, adaxially green, ovate-lanceolate to lanceolate, 5–14 × 1.6–5.5 cm, midvein long hirsute, base cordate and oblique, margin irregularly acutely toothed, apex long acuminate; petiolule and leaf rachis yellow hirsute; stipules glandular. Inflorescence an erect cymose panicle, 3.5–5 cm; peduncle papillose. Flowers opening with leaves; calyx tube urceolate, ca. 1 mm, lobes triangular-lanceolate, slightly shorter than tube; corolla greenish or yellowish, lobes oblong; stamens yellowish brown; anthers yellow; ovary 3-loculed; styles short; stigmas 3-lobed. Fruit red, ovoid or subglobose, 3–5 mm in diam.; pyrenes 2 or 3, ovoid to ellipsoid, 2.5–3.5 mm, slightly rugose. Fr. Jul–Aug. $2n = 18, 36, 38^*$.

Rocky mountain slopes, rock crevices along rivers. Heilongjiang, Jilin, Liaoning, Xinjiang [Mongolia, Russia].

Sambucus sibirica should perhaps be included within *S. williamsii*. The differences separating them, i.e., young branches, petiolule, and leaf rachis slightly pubescent vs. glabrous in *S. williamsii*, are minor.

3. *SINADOXA* C. Y. Wu, Z. L. Wu & R. F. Huang, Acta Phytotax. Sin. 19: 207. 1981.

华福花属 hua fu hua shu

Hong Deyuan (洪德元); David E. Boufford

Herbs, perennial. Rhizomes erect. Roots fibrous. Stems 2–4, caespitose, glabrous. Basal leaves ca. 10; cauline leaves 2, opposite, both basal and cauline leaves ternate or biternate. Cymes with 3–5 flowers in an interrupted spike; lowest cymes long pedunculate, in axils of cauline leaves; flowers small. Calyx cup-shaped, fleshy, often 3-lobed; lobes saccate and closed, narrowly winged on ridge. Corolla rotate, 3- or 4-lobed; tube short. Fertile stamens equal to corolla lobes in number, inserted at throat of corolla, alternate with corolla lobes, 2-fid to base; anthers 1-celled, extrorse; staminodes equal to fertile ones in number, opposite to corolla lobes. Carpels 2; ovary ovoid-globose, semi-inferior, 1-loculed; ovules solitary, pendulous; styles absent; stigmas solitary, dotted.

• One species: China.

1. *Sinadoxa corydalifolia* C. Y. Wu, Z. L. Wu & R. F. Huang, Acta Phytotax. Sin. 19: 208. 1981.

华福花 hua fu hua

Herbs, perennial, caespitose, glabrous throughout. Stems 1–4, erect or ascending, green, 10–25 cm tall, 3–5 mm in diam. Basal leaves ca. 10, ternate-pinnate or biternate-pinnate; petiole to 10 cm; terminal leaflet ovate or ovate-oblong, 3–10 cm, irregularly lobed or pinnatifid to pinnatisect; segments 3-lobed to multi-lobed or cleft; lateral leaflets ovate, 1.5–2 cm, 3-lobed. Cauline leaves 2, opposite, ternate, 2.5–5 cm; petiole 1–2

cm; leaf blade ovate-deltoid; terminal leaflet ovate, 1.5–3.5 cm, irregularly lobed; lateral leaflets ovate-elliptic or ovate, 0.8–1.8 cm, 3- or 5–10-lobed. Spikes to 8 cm; flowers yellowish green. Calyx cup-shaped, fleshy, (2 or)3(or 4)-lobed. Corolla yellowish brown, 2–3 mm in diam., 3- or 4-lobed; lobes oblong-ovate, inside glandular-punctate near top, base with a nectary. Fertile stamens 3 or 4; filaments filiform, ca. 1.5 mm; anthers yellow, spherical, ca. 0.5 mm in diam. Stigma solitary. Fl. Jun–Jul; fruit not seen.

• Rock shelters, moist ravines, alpine debris slopes; 3900–4800 m. S Qinghai (Nangqên, Yushu).

4. *ADOXA* Linnaeus, Sp. Pl. 1: 367. 1753.

五福花属 wu fu hua shu

Hong Deyuan (洪德元); David E. Boufford

Moscatella Adanson; *Moschatellina* Miller; *Tetradoxa* C. Y. Wu.

Herbs, perennial. Rhizomes creeping, filiform, terminated by a tuber; tuber white, giving rise to following year's plant. Stems 1

or 2, glabrous. Basal leaves 1–3, ternate to biternate; cauline leaves 2, opposite, rarely alternate; all leaves petiolate, 3-cleft or compound. Inflorescences cymes, terminal, in headlike clusters, or racemelike. Flowers yellowish green, sessile, 4- or 5-merous. Calyx shallowly cup-shaped; lobes of terminal flower 2, lobes of lateral flowers 3. Corolla rotate; tube short; lobes 3–6 in terminal flower, 4–6 in lateral flowers, lobes papillate adaxially. Fertile stamens 4 or 5, inserted on corolla tube; filaments 2-fid to middle or to base; anthers 1-celled, peltate, extrorse, longitudinally dehiscent; inner stamens reduced to glandular papillae. Ovary inferior to semi-inferior; carpels 4 or 5, locules 4 or 5; styles 4 or 5, connate at base; stigmas capitate. Fruit berrylike, fleshy. $x = 9$, $2n = 36, 54, 108$.

Three or four species: circumpolar; three species (two endemic) in China.

- 1a. Inflorescence racemelike; basal leaves simple, 3-cleft; cauline leaves simple, 3-cleft; flowers 3–5, corolla of lateral flowers 4-merous, corolla of terminal flower 5-merous; pedicels 5–10 mm; filaments 2-fid to middle 1. *A. omeiensis*
 1b. Inflorescence a condensed capitate, several flowered cyme; basal leaves ternate or biternate; cauline leaves simple and 3-cleft or ternate; flowers 3–9, corolla of lateral flowers usually 5-merous, corolla of terminal flower 4-merous, subsessile or shortly pedicellate; filaments bifid to base.
 2a. Peduncle in flower and fruit straight, erect, ascending, or arching, held above leaves; corolla lobes broadly ovate to orbicular 2. *A. moschatellina*
 2b. Peduncle in flower and fruit recurved or coiled, nearly always held below leaves; corolla lobes lanceolate to ovate 3. *A. xizangensis*

1. *Adoxa omeiensis* H. Hara, J. Jap. Bot. 56: 271. 1981.

四福花 si fu hua

Tetradoxa omeiensis (H. Hara) C. Y. Wu.

Rhizomes not seen. Stems 10–20 cm tall. Basal leaves 1–3; petiole 3–12 cm; leaf blade ovate or deltoid-ovate, 1–3 × 1–3 cm, 3-cleft; segments narrowly ovate, 2–5-lobed, apex of lobes mucronate. Cauline leaves 2, opposite, similar to those of basal leaves; petiole 0.4–2 cm. Inflorescences racemelike, flowers 3–5; pedicels 0.5–1 cm; flowers yellowish green, 5–8 mm in diam. Calyx discoid, 4-lobed; lobes persistent, narrowly triangular-lanceolate, 2–3 mm. Corolla subrotate, 4- or 5-cleft; lobes narrowly ovate, 2.5–4 mm, inside densely glandular papillate, with papillate glands in center at base, apex acuminate. Outer (fertile) stamens 4, 0.4–1 mm; filaments incurved, divergent and stamens T-shaped apically; anthers ca. 0.6 mm. Styles slightly recurved; stigmas punctiform. Fl. May–Jun, fr. Aug.

• Wet places in forests, sometimes on rocks; ca. 2300 m. Sichuan (Emei Shan, Ya'an).

Donoghue et al. (Harvard Pap. Bot. 6: 459–479. 2001) recognized *Tetradoxa* as a distinct, monospecific genus.

2. *Adoxa moschatellina* Linnaeus, Sp. Pl. 1: 367. 1753.

五福花 wu fu hua

Adoxa inodora (Falconer ex C. B. Clarke) Nepomnjaszaja; *A. moschatellina* var. *inodora* Falconer ex C. B. Clarke.

Rhizomes 2.5–25 cm. Stems 8–15 cm tall, glabrous. Basal leaves 1–3; petiole 4–9 cm; leaflets broadly ovate or orbicular, 1–2 cm, 3-cleft; petiolules 0.6–1.2 cm. Cauline leaves 2, oppo-

site, 3-cleft or ternate, segments 3-lobed; petiole ca. 1 cm. Peduncle erect in flowers and fruit, inflorescence held above leaves. Inflorescences compact headlike cymes of 5–9 flowers. Flowers sessile or pedicels 0.5–1.5 mm, yellowish green, 4–7 mm in diam. Calyx lobes rectangular, broadly elliptic to ovate, 1.5–3 × ca. 1 mm, apex obtuse. Corolla lobes broadly ovate to orbicular or rectangular, 1.75–3.25 × 2–2.5 mm, apex rounded to obtuse. Ovary semi-inferior to inferior, 4- or 5-loculed. Fruit not seen. Fl. Apr–Jul, fr. Jul–Aug. $2n = 36$.

Rich soils, forests, forest margins, meadows; below 4000 m. Hebei, Heilongjiang, Liaoning, Nei Mongol, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [India, Japan, Korea, Nepal, Pakistan, Russia; NW Africa, Europe, North America].

3. *Adoxa xizangensis* G. Yao, Acta Phytotax. Sin. 30: 179. 1992.

西藏五福花 xi zang wu fu hua

Rhizomes 4–15 cm. Stems 5–10 cm tall, glabrous. Basal leaves 1–3, ternate to biternate; petiole of basal leaves 2–12 cm; leaflets elliptic, ovate, orbicular, or obovate, 1–2.5 × 1–3 cm, 3-cleft; petiolules 0.6–1.2 cm. Cauline leaves 2, opposite, ternate or rarely biternate, 3-cleft, segments 3-lobed, lobes apiculate; petiole 0.5–2 cm. Peduncle coiled in flower and fruit. Inflorescences often held at or below level of leaves, compact headlike cymes of 5–9 flowers. Flowers sessile or subsessile, yellowish green, 2.5–5 mm in diam. Calyx lobes lanceolate to narrowly rectangular, 1.2–2 × ca. 1 mm, apex obtuse. Corolla lobes lanceolate to ovate, ca. 2 × 0.9–1.2 mm. Fruit 5–8 mm in diam. Fl. Jun–Aug, fr. Jul–Sep.

• Stony or rocky limestone soils, forests, forest margins, meadows, shaded slopes; 3400–3900 m. Sichuan, Xizang, Yunnan.