

- 10b. Basal and lower cauline leaves 1–3-ternate or 1–3-ternate-pinnate.
- 21a. Leaves 1–3-ternate.
- 22a. Apex of leaves acuminate; vittae 2–3 in each furrow, 4 on commissure (Gansu, Shaanxi) 21. *A. tsinlingensis*
- 22b. Apex of leaves obtuse-rounded or acute; vittae 1 in each furrow, 2 on commissure (Xinjiang) 22. *A. ternata*
- 21b. Leaves 1–3-ternate-pinnate.
- 23a. Petals hirsute abaxially; ovary hispid 23. *A. hirsutiflora*
- 23b. Petals and ovary glabrous (ovary pubescent in *A. dahurica* var. *formosana*).
- 24a. Calyx teeth conspicuous, triangular-ovate to subulate.
- 25a. Leaves ternate to ternate-pinnate; secondary ribs of fruit 2, slightly prominent 24. *A. oncosepala*
- 25b. Leaves 1–2-ternate-pinnate; secondary ribs of fruit not developed.
- 26a. Bracteoles pinnate 25. *A. pinnatiloba*
- 26b. Bracteoles not pinnate.
- 27a. Leaflets decurrent on petioles, hispidulous adaxially 26. *A. decursiva*
- 27b. Leaflets not decurrent, glabrous 28. *A. kangdingensis*
- 24b. Calyx teeth obsolete.
- 28a. Bract and bracteole margin ciliate.
- 29a. Stem glabrous.
- 30a. Fruit narrow-oblong, 5–9 × 2.5–4 mm; vittae 3–6 on commissure 29. *A. longicaudata*
- 30b. Fruit suborbicular, 4–6 × 3–5 mm; vittae 2 on commissure 30. *A. laxifoliata*
- 29b. Stem pubescent or hispidulous.
- 31a. Leaflet margin serrulate and ciliate, rays 40–60 31. *A. maowenensis*
- 31b. Leaflet margin irregularly biserrate; rays 10–25 32. *A. biserrata*
- 28b. Bract and bracteole margin not ciliate.
- 32a. Leaflet base decurrent, rachis conspicuously winged.
- 33a. Bracts absent; petals white 33. *A. cartilaginomarginata*
- 33b. Bracts 2; petals dark purple-red 27. *A. gigas*
- 32b. Leaflets base not decurrent (*A. dahurica* slightly decurrent), rachis not winged.
- 34a. Stem and leaves glabrous.
- 35a. Bracts absent; fruit narrow-oblong 34. *A. acutiloba*
- 35b. Bracts developed; fruit ellipsoid to suborbicular.
- 36a. Rays 17–30, unequal; fruit 5–7 mm long 35. *A. paeoniifolia*
- 36b. Rays 10–20, subequal; fruit 7–12 mm long.
- 37a. Proximal pinnules of leaves 3-foliolose; dorsal ribs of fruit equally winged (Xizang) 36. *A. glauca*
- 37b. Proximal pinnules of leaves not 3-foliolose; dorsal ribs of fruit unequally winged (Xinjiang) 37. *A. multicaulis*
- 34b. Stem and leaves usually hairy.
- 38a. Rachis, peduncles, rays and pedicels all densely hispidulous 38. *A. amurensis*
- 38b. Rachis, peduncles, rays and pedicels partly hairy or glabrous.
- 39a. Leaves 1–2-ternate-pinnate; bracteoles entire to 2–3-lobed 39. *A. balangshanensis*
- 39b. Leaves 2–3-ternate-pinnate; bracteoles entire.
- 40a. Leaflets 2–3.5 × 0.8–2.5 cm.
- 41a. Bracteoles pubescent; lateral ribs of fruit narrow-winged, wings narrower than the body ... 40. *A. morii*
- 41b. Bracteoles glabrous; lateral ribs of fruit broad-winged, wings wider than the body 41. *A. sinensis*
- 40b. Leaflets 5–15 × 2–10 cm.
- 42a. Bracteoles absent; petals dark purple-red 42. *A. megaphylla*
- 42b. Bracteoles several; petals usually white.
- 43a. Leaflet margin inconspicuously serrulate; bracteole apex long-aristate 43. *A. likiangensis*
- 43b. Leaflet margin coarsely cuspidate-serrate or biserrate; bracteole apex not aristate.
- 44a. Leaflet margin ciliate; rays 16–18 44. *A. cincta*
- 44b. Leaflet margin not ciliate; rays 18–40 45. *A. dahurica*

1. *Angelica duclouxii* Fedde ex H. Wolff, Repert. Spec. Nov. Regni Veg. 28: 111. 1930.

东川当归 dong chuan dang gui

Plants perennial. Stem stout, ribbed, villous when young. Cauline leaves petiolate, petioles ca. 10 cm, winged with narrow-oblong sheaths, densely pubescent; blade broad-ovate, 30–35 cm, 3-ternate-pinnate, rachis densely pubescent; pinnae 4

pairs, long petiolulate, leaflets subsessile, oblong-ovate to suborbicular, 2.5–6 × 1.7–4.5 cm, entire or 2–3-lobed, margin serrulate, pubescent along nerves on both surfaces. Peduncles 4–6 cm, densely pubescent; bracts absent; rays 25–50, 3–10 cm, unequal, scabrous along one side; bracteoles 7–10, linear-lanceolate, 4–6 mm, sparse-ciliate, pedicels 4–10 mm. Calyx teeth obsolete. Petals white, obovate, notched. Stylopodium short-conic. Fruit young, ribs narrow-winged (mature fruit unknown).

Fl. Aug.

• Valleys, streamsides; 2800–3500 m. NE Yunnan (Loupou near Dongchuan).

This poorly known species is recorded only from the type (*Ducloux* 6499).

2. *Angelica apaensis* R. H. Shan & C. Q. Yuan, *Act. Pharmac. Sin.* 13(5): 329. 1966.

阿坝当归 a ba dang gui

Heracleum apaense (R. H. Shan & C. Q. Yuan) R. H. Shan & T. S. Wang.

Plants perennial, 1–2 m, stout. Root cylindrical, ca. 2.5 cm thick. Stem stout, ribbed, white-pubescent. Petioles 8–10 cm, sheaths ca. 7 × 3.5–4 cm, broad-ovate or saccate, pubescent; blade elliptic or triangular-ovate, 2–3-pinnate, glabrous; pinnae 3–4 pairs, subsessile, leaflets long-elliptic or lanceolate, 4–5 × 1.5–2.5 cm, margin serrate, sometimes 1–3-lobed. Umbels 10–20(–32) cm across; peduncles 16–20 cm, pubescent; bracts 5–9, long-lanceolate, puberulent; rays 28–65, 6–15 cm, purple-green, pubescent; bracteoles 4–8, 12–14 mm, linear; umbellules 25–50-flowered. Calyx teeth obsolete. Petals white, ovate. Fruit ellipsoid, broad-ovoid to suborbicular, 5–10 × 5–9 mm; dorsal ribs prominent, thick, obtuse, lateral ribs thick, broad-winged; vittae 1 in each furrow, absent on commissure. Fl. Jun–Jul, fr. Aug–Sep. *n* = 11*.

• Shrubby thickets, damp grassy slopes; 3000–4000 m. Sichuan, Xizang, Yunnan.

The roots are used in Sichuan and Yunnan as a traditional Chinese medicine. The fruit shape and structure of *Angelica apaensis* is similar to the Himalayan species *A. nubigena* (C. B. Clarke) P. K. Mukherjee and *A. cyclocarpa* (C. Norman) M. Hiroe, but differs significantly from these and other members of *Angelica*. Further research may show that this species belongs to a new genus.

3. *Angelica anomala* Avé-Lallemant in Fischer & Avé-Lallemant, *Index Sem. Hort. Petrop.* 9: 57. 1843.

狭叶当归 xia ye dang gui

Angelica jaluana Nakai.

Perennial, 80–150 cm. Root stout, yellowish brown, conic, up to 20 × 3 cm. Stem purplish, thinly ribbed, pubescent. Basal and lower petioles 5–13 cm, sheaths narrow-oblong, amplexicaule, dense-pubescent; blade triangular-ovate, 15–30 × 8–25 cm, 2–3-ternate-pinnate, pinnae 2–4 pairs, glabrous; leaflets subsessile, elliptic to lanceolate, 2–4 × 0.3–1.5 cm, sometimes 3-lobed, base slightly decurrent, margin white-cartilaginous and mucronate-serrate. Peduncles, rays and pedicels all dense hispidulous; peduncles 5–20 cm; bracts absent or 1, deciduous; rays 20–45, subequal; bracteoles 3–7, subulate, pubescent; umbellules 20–40-flowered. Calyx teeth obsolete. Petals white, obovate. Fruit ellipsoid, 4–6 × 3–4 mm; dorsal ribs filiform, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Aug–Sep. *n* = 22.

Forests, forest margins, grasslands, streamsides; 500–1000 m. Heilongjiang, Jilin, Nei Mongol [Korea, Russia (Siberia)].

The roots are used in NE China as a regional substitute for the tra-

ditional Chinese medicine “bai zhi” (see *Angelica decursiva*).

4. *Angelica valida* Diels, *Bot. Jahrb. Syst.* 29: 501. 1901.

金山当归 jin shan dang gui

Plants perennial, 30–75 cm. Root cylindrical, black-brown, 8–15 × 0.8–2 cm. Stem purplish green, thinly ribbed, densely pubescent above. Petioles 5–20 cm, sheaths narrow-oblong, spinulose; blade broad-ovate, 10–25 × 11–28 cm, 1–2-ternate-pinnate; leaflets ovate or oblong-ovate, ca. 6 × 3.5 cm, base obtuse-rounded, often 1–2-lobed, margin crenulate, apex acuminate, densely hispid along nerves on both surfaces. Umbels ca. 15 cm across; peduncles 2–6 cm; bracts 1–3, deciduous; rays 25–55; bracteoles 8–10, subulate, ciliate, 5–7 mm, longer than pedicels; umbellules 30–40-flowered. Calyx teeth obsolete. Petals white, obovate, notched. Fruit ellipsoid or narrow-ellipsoid, 4–5 × 2–3 mm, base truncate; dorsal ribs filiform, lateral ribs narrow-winged; vittae 1 in each furrow, 4 on commissure. Fl. Jul–Aug, fr. Aug–Sep. *n* = 11*.

• Damp grasslands, crevices of slopes; 1000–1800 m. Chongqing.

The roots are used in Chongqing as a regional substitute for the traditional Chinese medicine “dang gui” (see *Angelica sinensis*).

5. *Angelica setchuenensis* Diels, *Bot. Jahrb. Syst.* 29: 500. 1901.

四川当归 si chuan dang gui

Angelica henryi H. Wolff.

Herbs ca. 75 cm high. Rhizome long, creeping. Stem ribbed, setulose above. Basal and middle leaves petiolate, petioles 12–15 cm, sheaths ovate, pubescent; blade broad-triangular, 12–20 × 16–28 cm, 2-ternate-pinnate; leaflets subsessile, obliquely triangular-ovate, ca. 5 × 2.5 cm, base truncate, margin incised-serrate, teeth white-mucronulate, sparsely setulose on nerves abaxially. Upper leaves reduced, sheaths broad-inflated. Bracts few, linear-lanceolate; rays 15–40, 2–4 cm, setulose, unequal; bracteoles several, short-linear to lanceolate, reflexed. Petals white, obcordate, ca. 2 × 2 mm, 1-nerved. Fruit suborbicular or ellipsoid, 5–6 × 4–5.5 mm; dorsal ribs prominent, lateral ribs thin-winged, wings wider or as wide as the body; vittae 1 in each furrow 2 on commissure. *n* = 11*.

• Forests; 2400–3600 m. W Hubei (Yichang), E Sichuan.

This poorly known species is recorded only from a few localities.

6. *Angelica fargesii* H. de Boissieu, *Bull. Herb. Boissier* 3: 850. 1903.

曲柄当归 qu bing dang gui

Plants to 2 m. Stem purplish, ribbed, setulose-tomentose above. Basal petiole sheaths narrow-oblong; blade broad-ovate, 20–30 cm, 2-ternate-pinnate, pinnae petiolulate, rachis and petioles geniculate; leaflets narrow-lanceolate to lanceolate, 5–10 × 2.5–4.5 cm, sparsely hispidulous along nerves abaxially, margin coarsely and deeply incised-serrate, apex acuminate. Upper leaves 3-lobed, sheaths much inflated. Peduncles setulose-tomentose; bracts and bracteoles absent; rays ca. 10, unequal, tomentose; umbellules 25–30-flowered; pedicels unequal, tomentose. Petals white, oblong-ovate. Ovary sparsely puberulent. Young fruit oblong-orbicular (mature fruit unknown). Fl.

Jul.

- Thickets; 900–1100 m. Chongqing (Chengkou).

This poorly known species is recorded only from a few localities. Recent research suggests that it is conspecific with *Angelica laxifoliata*.

7. *Angelica genuflexa* Nuttall in Torrey & A. Gray, Fl. N. Amer. 1: 620. 1840.

毛珠当归 mao zhu dang gui

Angelica genuflexa subsp. *refracta* (F. Schmidt) M. Hiroe; *A. refracta* F. Schmidt.

Herbs 0.5–2 m high. Rhizome vertical, 1–1.5 cm thick. Petioles 3–8 cm, sheaths inflated; blade ovate to triangular, 10–40 cm, 1–2-ternate-pinnate, rachis and petiolules often geniculate; leaflets sessile, lanceolate to ovate-lanceolate, 5–13 × 1–6 cm, margin coarsely mucronulate-serrate, apex acuminate, hispidulous. Peduncles 20–30 cm, hispidulous; bracts absent; rays 20–40, 5–8 cm, unequal; bracteoles many, linear, 11–20 mm, hispidulous; pedicels 5–15 mm. Petals white, ovate, puberulent. Ovary hispidulous. Fruit suborbicular, 4–8 × 3.6–6 mm, pubescent or glabrous; dorsal ribs acute-prominent, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Jul–Sep.

Forests; 200–300 m. Liaoning [Japan, Russia (Siberia); North America].

8. *Angelica tianmuensis* Z. H. Pan, & T. D. Zhuang, Acta Phytotax. Sin. 33: 86. 1995.

天目当归 tian mu dang gui

Plants perennial, 1–2 m. Stem thinly ribbed, pubescent at upper nodes. Basal and lower leaves petiolate, petioles 15–25 cm, sheaths inflated; blade ovate to broad-ovate, 20–30 × 15–30 cm, 2–3-ternate-pinnate, rachis and petiolules geniculate; leaflets long-ovate, 3–6 × 1.7–2.5 cm, base cuneate, margin irregularly coarse-serrate, sometimes 1–2-lobed, spiny-hispid along nerves adaxially. Umbels 4–7 cm across; bracts 1, long-ovate, 2–2.5 cm, apex acuminate; rays 14–20, 1.5–3.5 cm, unequal, scabrous; bracteoles 5–7, linear, 5–7 mm, white-scarious-margined, pubescent; umbellules 20–25-flowered; pedicels unequal, pubescent. Calyx teeth obsolete. Petals white, ovate to broad-ovate. Fruit narrow-oblong, 6–7 × 3–3.5 mm; dorsal ribs thickly protruding, lateral ribs narrow-winged; vittae 1 in each furrow, 2–4 on commissure. Fl. and fr. Aug–Oct. *n* = 55*.

- Forests; ca. 1100 m. N Zhejiang (Tianmu Shan).

This rather poorly known species is recorded only from a few collections.

9. *Angelica polymorpha* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 19: 185. 1874.

拐芹 guai qin

Angelica sinuata H. Wolff; *Peucedanum taquetii* H. Wolff; *Romelia polymorpha* (Maximowicz) Koso-Poljansky; *Selinum coreanum* H. de Boissieu.

Plants perennial, 0.5–1 m. Root conic, gray-brown. Stem solitary, purplish around nodes, thinly ribbed, glabrous or sparsely hispidulous above. Petioles up to 15 cm, sheaths nar-

row-oblong; blade triangular-ovate, 15–30 × 15–25 cm, 2–3-ternate-pinnate, rachis and petiolules geniculate; leaflets ovate or rhombic-oblong, 3–5 × 2.5–3.5 cm, irregularly 2–3-lobed and incised-cuspidate-serrate, scabrous along nerves bifacially or glabrous abaxially. Umbels 4–10 across; peduncles, rays and pedicels densely hispidulous; bracts absent or 1–3, narrow-lanceolate and ciliate; rays 10–20, 1.5–3 cm; bracteoles 7–10, narrow-linear, purplish, ciliate. Calyx teeth obsolete. Petals white, spatulate. Fruit oblong-ellipsoid, 6–7 × 3–5 mm; dorsal ribs prominent, narrow-winged, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. Aug–Sep, fr. Sep–Oct. *n* = 11*.

Forests, damp grasslands, streamsides; 1000–1500 m. Anhui, Hebei, Heilongjiang, Hubei, Jiangsu, Jilin, Liaoning, Shaanxi, Shandong, Zhejiang [Japan, Korea].

The roots have reputed medicinal properties.

10. *Angelica nitida* H. Wolff, Acta Horti Gothob. 2: 317. 1926.

青海当归 qing hai dang gui

Angelica chinghaiensis R. H. Shan ex K. T. Fu; *A. wulsiniana* H. Wolff.

Plants perennial, 30–90 cm. Root conic, yellowish brown, 5–10 cm. Stem purplish green, ribbed, hispidulous above. Basal and lower cauline leaves petiolate, petioles 3–5 cm, sheaths ovate, 4–6.5 × ca. 2 cm; blade triangular-ovate, 1–2-pinnate; leaflets oblong to elliptic, 1.5–4 × 1–2 cm, base almost flat, margin crenate, apex obtuse, hispidulous along nerves and margin. Umbels 6–10 cm across; bracts absent; rays 9–19, 1.5–4 cm, thick, unequal and scabrous; bracteoles 6–10, linear, caudate-acuminate; umbellules 18–40-flowered; pedicels unequal. Calyx teeth obsolete. Petals white or yellowish white, rarely purple-red, long-ovate. Stylopodium dark purple. Fruit oblong to ovoid, 5–6.5 × 3.5–5 mm; dorsal ribs broad, plane, lateral ribs broad-winged, but narrower than the body; vittae 1–2 in each furrow, 2–3 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

- Shrubby thickets, mountain ravines, meadows; 2600–4000 m. Gansu, Qinghai, Sichuan.

The roots have reputed medicinal properties.

11. *Angelica dielsii* H. de Boissieu, Bull. Herb. Boissier 3: 850. 1903.

城口当归 cheng kou dang gui

Plants perennial, up to 2.5 m. Stem stout, villous below umbel. Leaves petiolate, sheaths ovate, glabrous; blade 2-pinnate, proximal pinnae 3-lobed; leaflets ovate to oblong-ovate, 5–7 × 2–4 cm, base cuneate, margin deeply and irregularly serrate-dentate, apex long-acuminate, glabrous. Peduncles long, villous; bracts absent; rays 15–25, unequal, 2–5 cm, villous; bracteoles ca. 8, lanceolate, apex long-aristate, villous. Calyx teeth obsolete. Petals pinkish-white, obcordate. Young fruit ovoid-suborbicular (mature fruit unknown); lateral ribs winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Aug–Sep.

- Thickets; 1300–1800 m. Chongqing (Chengkou), Hubei, C Sichuan (Guanxian).

This rather poorly known species is recorded only from a few collections. Recent research suggests that it is conspecific with *Angelica laxifoliata*.

12. *Angelica omeiensis* C. C. Yuan & R. H. Shan, Bull. Nanjing Bot. Gard. Mem. Sun Yat Sen 1983: 6. 1985 [“1983”].

峨眉当归 e mei dang gui

Plants perennial, 1.2–2.5 m. Root conic, brown, annular distally, aromatic. Stem purple-green, ribbed, subglabrous. Petioles 5–15 cm, sheaths purple, oblong; blade triangular-long-ovate, 10–18 × 5–12 cm, 2–3-pinnate; leaflets oblong to ovate-oblong, 1.5–5.5 × 0.7–2.5 cm, base often 2-lobed, margin incised-toothed, apex acute to caudate-acuminate. Umbels 3–6 cm across; peduncles, rays and pedicels hispidulous; peduncles 4–7 cm; bracts absent; rays 14–18(–21), 2–5 cm, ascending; bracteoles 5–12, small, subulate; pedicels 15–23(–27). Calyx teeth obsolete. Petals yellowish-green, ovate, notched. Fruit suborbicular, 4–7 × 3.5–6 mm; dorsal ribs filiform, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jun–Aug, fr. Aug–Nov. *n* = 11*.

- Forests, slopes, damp meadows; 2100–3000 m. Sichuan.

The roots have reputed medicinal properties. This poorly known species is recorded only from a few collections. Recent research suggests that it is conspecific with *Angelica wilsonii* (here recognized as *A. sinensis* var. *wilsonii*).

13. *Angelica longipedicellata* (H. Wolff) M. Hiroe, Umbell. World, 1430. 1979.

长柄当归 chang bing dang gui

Porphyroscias longipedicellata H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 306. 1930; *Ostericum longipedicellatum* (H. Wolff) Pimenov & Kljuykov.

Plants perennial, ca. 80 cm. Stem purple-green, ca. 1 cm thick at base, ribbed, branched above. Lower stem leaves petiolate, sheaths inflated; blade pinnate, pinnae 3–4 pairs; leaflets sessile, broadly rhombic-ovate, ca. 4 × 2.5 cm, apical leaflets petiolulate, 3-lobed, margin coarsely mucronate-serrate. Bracts absent; rays up to 30, very unequal, to 7 cm when in fruit, scabrid along ribs; bracteoles few, linear; umbellules ca. 40-flowered; pedicels slender, 1–2.5 cm, very unequal. Calyx teeth obsolete. Petals greenish white. Fruit ovoid, 4–5 mm; dorsal ribs filiform, the lateral winged. Fl. and fr. Aug–Sep.

- Open forests; ca. 3000 m. Yunnan (Tong Shan).

This rather poorly known species is recorded only from a few collections. Recent work suggests that it is better placed in *Ostericum*.

14. *Angelica tarokoensis* Hayata, Icon. Pl. Formosan. 10: 27. 1921.

太鲁阁当归 tai lu ge dang gui

Plants perennial, 30–50 cm, stout. Root short conic. Petioles 5–10 cm, sheaths inflated; blade ovate, up to 20 × 10–15 cm, pinnate; proximal pinnae 3-lobed, middle and distal pinnae oblong-lanceolate, 5–8 × 1–2 cm, base attenuate or broad-cuneate, margin serrate, apex acuminate. Umbels 10–12 cm across; peduncles ca. 5 cm; bracts linear-lanceolate, ca. 1 cm,

deciduous; rays 20–50, unequal, scabrous; bracteoles linear, 4–7 mm, glabrous; pedicels ca. 20, up to 7 mm. Calyx teeth minute, triangular-ovate. Petals white, oblong. Stylopodium margin sinuate. Fruit oblong, 5–8 × 3–4 mm, dorsal ribs prominent, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Aug–Oct.

- Slopes; 400–2000 m. Taiwan.

The roots have reputed medicinal properties.

15. *Angelica songpanensis* R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 33: 480. 1995.

松潘当归 song pan dang gui

Plants perennial, 30–80 cm. Root long-conic, 8–12 cm, yellowish brown, branched. Stem solitary, purplish green, ribbed, pubescent. Basal leaves petiolate, petioles up to 25 cm, sheaths oblong, purplish striate sheaths; blade 2-pinnate, pinnae 3-paired, glabrous; ultimate segments ovate or long-ovate, 3–7 × 2–3.5 cm, margin serrate. Umbels 6–7 cm across; bracts 2–3, linear, ca. 1.5 cm; rays 20–25, 1–5 cm, very unequal, hispid; bracteoles similar to bracts; pedicels 5–15, 2–7 mm, unequal. Calyx teeth minute, triangular. Petals white, obovate, notched. Fruit subovoid, 6–7 × 3–4 mm; dorsal ribs prominent, lateral ribs winged; vittae 1–2 in each furrow, 2 on commissure. Fr. Oct.

- Forests; 2900–4000 m. N Sichuan (Songpan).

This rather poorly known species is recorded only from a few collections.

16. *Angelica pseudoselinum* H. de Boissieu, Bull. Herb. Boissier 2: 848. 1903.

管鞘当归 guan qiao dang gui

Plants perennial, 0.6–1.8 m. Root cylindrical, yellowish brown, 7–15 × 0.6–1.2 cm. Stem purple-green, scabrous above. Petioles up to 22 cm, sheaths purple, 4–7 cm, narrow-oblong; blade triangular-ovate, 10–14 × 8–15 cm, 2-pinnate; leaflets oblong to oblong-lanceolate, 3–5 × 1.5–3 cm; terminal leaflet base decurrent; basal leaflets 2–3-lobed, margin brown-cuspidate-serrate, apex obtuse-acute, pubescent along nerves. Umbels 4–10 cm across; bracts 2–3, narrow-lanceolate or linear, ciliate, margin purplish; rays 20–60, 2–5.5 cm, unequal, densely pubescent; bracteoles 5–7, similar to bracts; umbellules 16–22-flowered. Calyx teeth obsolete. Petals white, ovate. Fruit suborbicular, 4–5 × 3–4 mm; dorsal ribs filiform, lateral ribs winged, wings narrower than the body; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

- Shrubby thickets, grasslands; 1500–3600 m. W Hubei, Sichuan.

17. *Angelica morrisonicola* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30: 129. 1911.

玉山当归 yu shan dang gui

Plants perennial, 1–2 m high. Root thick, short-conic. Stem stout, glabrous or pubescent. Leaves petiolate, petioles ca. 25 cm, sheaths inflated; blade triangular-ovate, up to 25 × 30 cm, 2-pinnate; pinnae petiolules ca. 6 cm; leaflets short-petiolulate, oblong, 4–7 × 1.5–3 cm, sometimes 3-lobed, margin ser-

rate, pubescent along nerves abaxially or densely hispid on both sides. Bracts linear, ca. 1.5 cm, deciduous; rays ca. 50, ca. 4 cm; bracteoles several, linear, 2–4 mm; pedicels ca. 30. Calyx teeth obsolete. Petals white, oblong. Fruit ovoid, ca. 5 × 3.5 mm, base cordate; dorsal ribs filiform, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Sep–Nov.

- Alpine grasslands; 3000–3500 m. Taiwan.

The roots have reputed medicinal properties.

- 1a. Leaves brown-pubescent along nerves abaxially 17a. var. *morrisonicola*
- 1b. Leaves densely hispid on both surfaces and rather small 17b. var. *nanhutashanensis*

17a. *Angelica morrisonicola* var. *morrisonicola*

玉山当归(原变种) yu shan dang gui (yuan bian zhong)

Peucedanum morrisonicola (Hayata) M. Hiroe.

Leaves brown-pubescent along nerves abaxially.

- Alpine grasslands; 3000–3500 m. Taiwan.

17b. *Angelica morrisonicola* var. *nanhutashanensis* S. L. Liu, C. Y. Chao & T. I. Chuang, Quart. J. Taiwan Mus. 14(1–2): 21. 1961.

南湖当归 nan hu dang gui

Peucedanum morrisonicola var. *nanhutashanense* (S. L. Liu, C. Y. Chao & T. I. Chuang) Q. X. Liu.

Leaves rather small, densely hispid on both surfaces.

- NE Taiwan (Yilan).

18. *Angelica longipes* H. Wolff, Repert. Spec. Nov. Regni Veg. 33: 75. 1933.

长序当归 chang xu dang gui

Plants perennial, 2.4–2.7 m. Stem stout, ribbed, branched above. Middle and upper cauline leaves petiolate, sheaths inflated; blade 2–3-pinnate; leaflets short petiolulate or sessile, lanceolate, 5–10 × 2–5 cm, base cuneate or decurrent, margin irregularly serrate and ciliate, apex long caudate-acuminate. Umbels up to 20 cm across; peduncles long; bracts absent; rays ca. 40, unequal, up to 8 cm in fruit; bracteoles several, linear, equaling pedicels; pedicels 25–50, up to 25 mm, subequal, slender, scabrous. Young fruit dorsal ribs prominent, lateral ribs broad-winged (mature fruit unknown); vittae 1 in each furrow. Fl. Jul–Aug.

- Open places; 1100–3000 m. Guizhou, W Yunnan (Chimili).

This rather poorly known species is recorded only from a few collections.

19. *Angelica sylvestris* Linnaeus, Sp. Pl. 1: 251. 1753.

林当归 lin dang gui

Plants perennial, 0.8–2 m. Root conic, thick, slightly aromatic. Stem 1–2.5 cm thick, ribbed, pubescent below umbel. Basal and lower leaves petiolate, petioles long, sheaths ovate to saccate-inflated; blade broadly triangular-ovate, 2–3-pinnate; leaflets sessile, lanceolate to ovate, 2.5–8 × 1–4 cm, base cuneate, margin serrulate, slightly hispidulous along nerves. Umbels

10–20 cm across; bracts absent or 1–2, linear, deciduous; rays 15–30, pubescent; bracteoles many, linear, as long as pedicels. Calyx teeth obsolete. Petals white, ovate to obovate. Fruit broad-ovoid, 5–6 × 3.5–5 mm; dorsal ribs filiform, lateral ribs winged; vittae 1 in each furrow, 2 on commissure. Fl. Jun–Jul, fr. Aug–Sep. *n* = 11*.

Forest margins, damp grasslands, marshy areas, river banks; 900–1100 m. Xinjiang [Russia (Siberia); C and N Europe].

The roots have reputed medicinal properties.

20. *Angelica dailingensis* Z. H. Pan & T. D. Zhuang, Acta Phytotax. Sin. 33: 88. 1995.

带岭当归 dai ling dang gui

Plants perennial, 1.5–2 m. Stem purple-green, ribbed, branched. Basal and lower leaves petiolate, petioles 10–30 cm, sheaths inflated; blade broad-ovate, 25–60 × 20–50 cm, 3–4-pinnate; leaflets ovate to broad-ovate, 3–7 × 2–5 cm, base oblique, margin coarse-toothed, scabrous along nerves adaxially, glaucous abaxially. Umbels 6–8 cm across; bracts 1, ovate, acuminate, deciduous; rays 20–30, 2–5 cm, unequal; bracteoles ca. 5, linear, ca. 3 mm; pedicels 25–30, unequal. Calyx teeth conspicuous, triangular-ovate. Petals green, obovate. Fruit sub-orbicular, 5–7 × 5–7 mm; dorsal ribs prominent, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Jul–Sep. *n* = 11*.

- Grassy slopes; ca. 600 m. Heilongjiang (Yichun).

This rather poorly known species is recorded only from a few collections.

21. *Angelica tsinlingensis* K. T. Fu, Fl. Tsinling. 1(3): 461. 1981.

秦岭当归 qin ling dang gui

Plants perennial, 60–130 cm. Root conic. Stem glabrous, branched. Basal and lower petioles long, sheathing at base; blade broad-ovate, 1–2-ternate; median leaflets short-petiolulate, rhombic-obovate, 7–13 × 5–9 cm, base cuneate; lateral leaflets broad-ovate, often 1–2-lobed, base truncate or slightly cordate, margin incised-serrate, apex acuminate. Peduncles 6–12 cm; bracts absent; rays 20–25, unequal, up to 8 cm in fruit; bracteoles 6–8, linear-lanceolate, 5–8 mm; pedicels 25–35, slender, up to 1 cm. Calyx teeth obsolete. Petals broad-obovate, the outer slightly enlarged. Fruit oblong to suborbicular, 3–6 × 3–4 mm; dorsal ribs narrow-winged, lateral ribs conspicuously wider than the dorsal; vittae 2–3 in each furrow, 4 on commissure. Fl. Aug–Sep, fr. Sep–Oct.

- Forests, shrubby thickets; 1200–2300 m. Gansu, Shaanxi.

Recent research indicates that this species may be conspecific with *Notopterygium franchetii*.

22. *Angelica ternata* Regel & Schmalhaus, Trudy Imp. S.-Peterburgsk. Bot. Sada 5: 590. 1878 [“*tornata*”].

三小叶当归 san xiao ye dang gui

Angelica stratoniana Aitchison & Hemsley; *Callisace ternata* (Regel & Schmalhaus) Koso-Poljansky.

Plants perennial, 40–80 cm, glabrous. Root stout, up to 50 × 2.5 cm, brown, dense annular scars, aromatic. Stem thinly ribbed, branched. Basal and lower petiole sheaths long-ovate; blade broad-triangular, 15–30 × 15–20 cm, 2–3-ternate, pinnate petiolate; leaflets broad-ovate, 3–6 × 1.5–4 cm, base cuneate to cordate, 5–6-basal-nerved, margin irregularly serrulate, apex obtuse-rounded or acute. Umbels 6–12 across; bracts absent; rays 12–23; bracteoles 6–8, lanceolate, reflexed; umbellules 15–25-flowered. Calyx teeth obsolete. Petals white or yellowish green, ovate. Fruit narrow-oblong, 7–11 × 4–6 mm; dorsal ribs obtuse-rounded, lateral ribs broad-winged, as wide as the body; vittae small, 1 in each furrow, 2 on commissure. Fl. Jun–Jul, fr. Jul–Aug. *n* = 11*.

Shrubby thickets, streamsides, damp crevices; 2800–3400 m. Xinjiang [Kyrgyzstan, Russia, Tajikistan].

23. *Angelica hirsutiflora* S. L. Liu, C. Y. Chao & T. I. Chuang, Quart. J. Taiwan Mus. 14(1–2): 19. 1961.

滨当归 bin dang gui

Angelica japonica var. *hirsutiflora* (S. L. Liu, C. Y. Chao & T. I. Chuang) T. Yamazaki.

Plants perennial, 1–2 m, stout. Root thick, tuberous. Stem 3–6 cm thick. Basal and lower petiole sheaths inflated; blade triangular-ovate, 50–100 cm, ternate-pinnate; leaflets broad-ovate, 15–20 × 10–15 cm, base cordate or rounded, margin obtuse-serrate, apex obtuse, pubescent along nerves on both surfaces. Umbels large, densely pubescent; peduncles 5–15 cm, stout; bracts 1–2 or absent; rays 20–30, 4–7 cm, subequal; bracteoles several, linear-lanceolate, apex acute, pubescent; pedicels 0.5–1 cm, ascending. Calyx teeth obsolete. Petals white, ovate, hirsute abaxially; stamens ca. 2 × petals; stylopodium short-conic. Ovary hispid. Fruit oblong, 6–8 × 4–6 mm, pubescent; dorsal ribs obtuse-prominent, the lateral thickly broad-winged; vittae 2–3 in each furrow, 7–8 on commissure. Fl. and fr. Jul–Sep.

• Coastal areas; below 100 m. Taiwan.

24. *Angelica oncosepala* Handel-Mazzetti, Symb. Sin. 7: 726. 1933.

隆萼当归 long e dang gui

Heracleum oncosepalum (Handel-Mazzetti) Pimenov & Kljuykov.

Plants perennial, 30–60 cm. Root cylindrical, brownish. Stem solitary, thinly ribbed, villous above. Petioles 8–15 cm, sheaths small, oblong; blade broad-ovate, 9–13 × 8–10 cm, ternate or ternate-pinnate; leaflets short-petiolate, broad-ovate, 2–3-lobed, base truncate to cordate, margin irregularly coarse-crenate, apex acute, whitish sparse-villous on both surfaces. Peduncles 8–20 cm, villous; bracts 2–3, linear, scabrous, deciduous; rays 13–20, 2–4.5 cm, unequal, villous; bracteoles ca. 5, linear-lanceolate, 0.3–0.5 cm, longer or as long as umbellules; umbellules 10–20-flowered; pedicels pubescent. Calyx teeth conspicuous, triangular-ovate or ovate-lanceolate. Petals white or purplish red, obovate, notched. Fruit obovoid-orbicular, 5–6 × 4–5 mm; dorsal ribs and 2 secondary ribs slightly prominent,

lateral ribs broadly thick-winged; vittae 1(–2) in each furrow, 3–4(–6) on commissure. Fl. and fr. Aug–Oct. *n* = 11*.

• Alpine meadows; 3500–4300 m. NW Yunnan.

The roots have reputed medicinal value. Recent carpological research indicates that this species may be better placed in *Heracleum*.

25. *Angelica pinnatiloba* R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 33: 481. 1995.

羽苞当归 yu bao dang gui

Plants perennial, 25–30 cm. Root long-conic, yellowish brown, 4–10 cm. Stem thinly ribbed, pubescent. Basal leaves 5–8, petioles 4–10 cm, sheaths small, ovate; blade 2-ternate-pinnate, pinnae 2–3 pairs; leaflets sessile, broad-ovate to long-ovate, 3–5.5 × 1–2.5 cm, margin serrate, apex acute. Umbels ca. 15 cm across; bracts absent or 1, entire, rays 25–30, 3–7 cm, unequal; bracteoles 5–15, lanceolate, much longer than umbellules, pinnate, rarely 3-lobed or entire; pedicels many, 2–15 mm, unequal. Calyx teeth subulate. Petals white, obovate. Fruit broad-ellipsoid, 3–4 × ca. 3 mm; dorsal ribs prominent, lateral ribs winged, nearly as wide as the body; vittae 1 in each furrow, 2 on commissure. Fr. Oct.

• Forest margins, streamsides; ca. 2700 m. N Sichuan (Songpan).

This rather poorly known species is recorded only from a few collections.

26. *Angelica decursiva* (Miquel) Franchet & Savatier, Enum. Pl. Jap. 1: 187. 1875.

紫花前胡 zi hua qian hu

Porphyroscias decursiva Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 62. 1867; *Peucedanum decursivum* (Miquel) Maximowicz; *P. grandifolioides* H. Wolff; *P. melanotilingia* (H. de Boissieu) H. de Boissieu; *P. porphyroscias* Makino, nom. illeg. superfl.; *Selinum melanotilingia* H. de Boissieu; *Ligusticum melanotilingia* (H. de Boissieu) Kitagawa; *Ostericum melanotilingia* (H. de Boissieu) Kitagawa.

Plants perennial, 1–2 m high. Root brown, conic, 1–2 cm thick, strongly aromatic. Stem often purple-green, ribbed, glabrous. Petioles 13–36 cm, sheaths purple, elliptic; blade triangular to ovate, 10–25 cm, 1–2-ternate-pinnate; leaflets ovate or oblong-lanceolate, 5–15 × 2–5 cm, base decurrent, margin white-cartilaginous and cuspidate-serrate, apex acute, midribs often purple-green, hispidulous along nerves adaxially. Peduncles 3–8 cm, pubescent; bracts 1–3, purplish, ovate, sheath-like, reflexed; rays 10–22, 2–4 cm, pubescent; bracteoles 3–8, linear to lanceolate, green or purple; pedicels pubescent. Calyx teeth triangular-subulate. Petals dark purple, obovate or ellipsoid-lanceolate, apex incurved but not notched. Anthers dark purple. Fruit oblong to ovoid-orbicular, 4–7 × 3–5 mm; dorsal ribs filiform, acute, lateral ribs thickly narrow-winged; vittae 1–3 in each furrow, 4–6 on commissure. Fl. Aug–Sep, fr. Sep–Nov. *n* = 11*.

Forest margins, shrubby thickets, slopes, streamsides; 200–800 m. Anhui, Guangdong, Guangxi, Hebei, Henan, Hubei, Jiangsu, Jiangxi, Liaoning, Taiwan, Zhejiang; also NE China [Japan, Korea, Russia (Si-

beria), Vietnam].

The roots are used in the important traditional Chinese medicine “qian hu” (see also *Peucedanum praeruptorum*), particularly in the treatment of colds, coughs, and fevers. White-flowered plants in NE China may be referred to *Angelica decursiva* f. *albiflora* (Maximowicz) Nakai (J. Coll. Sci. Imp. Univ. Tokyo 16(1): 268. 1909; *Peucedanum decursivum* var. *albiflorum* Maximowicz, Melanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 12: 473. 1886).

27. *Angelica gigas* Nakai, Bot. Mag. (Tokyo) 31: 100. 1917.

朝鲜当归 chao xian dang gui

Plants perennial, 1–2 m, stout. Root conic, gray brown, 2–5 cm thick. Stem purplish, ribbed. Basal and lower leaves petiolate, petioles 30–45 cm, sheaths broad; blade triangular-ovate in outline, 20–40 × 20–30 cm, 2–3-ternate-pinnate, basal pinnae petiolulate; leaflets oblong-lanceolate, 4–15 × 1.5–5 cm, base decurrent, margin irregularly coarse-toothed, apex acute, slightly scabrous along nerves adaxially. Upper leaves purple-green, sheaths broadly inflated, often bladeless. Umbel purple, subglobose, 5–8 cm across, up to 12 cm in fruit, peduncles, rays and pedicels all hispidulous; peduncles 2–6 cm; bracts 2, saccate, dark purple; rays many, stout, 2–3 cm; bracteoles dark purple, several, ovate-lanceolate; pedicels many, 3–8 mm. Calyx teeth obsolete. Petals dark purple-red, obovate. Anthers purple. Fruit ellipsoid, 5–8 × 3–5 mm; dorsal ribs prominent, lateral ribs broad-winged; vittae 1(–2) in each furrow, 2(–4) on commissure. Fl. Jul–Aug, fr. Aug–Sep. $n = 11^*$.

Forests, grasslands, streamsides; ca. 1000 m. Heilongjiang, Jilin, Liaoning [Japan, Korea].

The roots are used in traditional Chinese medicine.

28. *Angelica kangdingensis* R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 33: 478. 1995.

康定当归 kang ding dang gui

Plants perennial, ca. 80 cm. Root long-conic, ca. 6 × 1 cm. Stem purplish, 1-branched above. Basal and lower leaves petiolate, sheaths oblong; blade 2-ternate-pinnate, pinnae 3–4 pairs, remote; leaflets ovate or long-ovate, 1–3 × 0.5–2 cm, margin acute-serrate. Umbels ca. 10 cm across; bracts 2–3, lanceolate, 0.5–1 cm; rays 30–40, purplish, 2–5 cm, very unequal, slender; bracteoles 3–5, lanceolate; pedicels many, unequal. Calyx teeth conspicuous, triangular. Petals white, obovate, notched. Fruit suborbicular, 3–4 × ca. 3.5 mm; dorsal ribs prominent, lateral ribs winged; vittae 1 in each furrow, 2 on commissure. Fr. Sep.

• Alpine low shrubland; ca. 3000 m. W Sichuan (Zheduo Shan).

This rather poorly known species is recorded only from a few collections.

29. *Angelica longicaudata* C. Q. Yuan & R. H. Shan, Bull. Nanjing Bot. Gard. Mem. Sun Yat Sen 1983: 10. 1985 [“1983”].

长尾叶当归 chang wei ye dang gui

Plants perennial, 60–100(–150) cm. Root stout, yellow-brown, 10–20 × 1.5–2.5 cm. Stem thinly ribbed, glabrous.

Leaves petiolate, petioles 9–20 cm, sheaths 4–6 cm, narrowly oblong; blade triangular-ovate, 15–18(–25) × 13–15(–22) cm, 1–2-ternate-pinnate; leaflets sessile, lanceolate to oblong-lanceolate, 4–7 × 1.5–3 cm, base cuneate slightly decurrent, margin irregularly deep-serrate, hispid along midribs. Umbels 7–15 cm across; peduncles, rays and pedicels hispidulous; peduncles 7–15 cm; bracts 3–7, linear-lanceolate, ciliate; rays 20–32; bracteoles 6–10, linear, slightly shorter than pedicels, ciliate; umbellules 13–22-flowered. Calyx teeth obsolete. Petals white, ovate, notched. Fruit narrow-oblong, 5–9 × 2.5–4 mm; dorsal ribs protruding, acute, lateral ribs winged, wings slightly narrower than the body; vittae 1–2 in each furrow, 3–6 on commissure. Fl. May–Jul, fr. Jun–Aug.

• Grassy slopes, ditchsides, crevices of rocky ravines; ca. 1500 m. Sichuan, Yunnan.

30. *Angelica laxifoliata* Diels, Bot. Jahrb. Syst. 29: 499. 1901.

疏叶当归 shu ye dang gui

Angelica erythrocarpa H. Wolff.

Plants perennial, 30–90(–150) cm. Root cylindrical, gray-yellow, 7–18 × 1–2 cm, slightly aromatic. Stem purplish green, thinly ribbed, glabrous. Leaves petiolate, petioles 10–30 cm, sheaths 4–7 cm, narrow-ovate; blade rhombic-triangular, 12–17 × 10–12 cm, 2-ternate-pinnate, pinnae remote, 3–4 pairs; leaflets lanceolate to broad-lanceolate, 2.5–4 × 1–2 cm, base subrounded to cuneate, margin densely cuspidate-serrulate, glabrous or puberulous along nerves abaxially. Umbels 5–10 cm across; peduncles ribbed, pubescent along ribs; bracts 3–9, purplish, lanceolate, ciliate; rays 30–50, 2.5–4 cm, up to 9 cm when fruiting, unequal, ribbed, pubescent along ribs; bracteoles 6–10, long-lanceolate, ciliate; umbellules 10–35-flowered. Calyx teeth obsolete. Petals white, obovate. Fruit suborbicular, 4–6 × 3–5 mm, margin often purplish red; dorsal ribs prominent, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Sep, fr. Aug–Oct. $n = 11^*$.

• Grassy slopes; 2300–3000 m. Gansu, Shaanxi, Sichuan.

This species has reputed medicinal value.

31. *Angelica maowenensis* C. Q. Yuan & R. H. Shan, Bull. Nanjing Bot. Gard. Mem. Sun Yat Sen 1983: 11. 1985 [“1983”].

茂汶当归 mao wen dang gui

Plants perennial, 80–150 cm. Root cylindrical, brown, ca. 12 × 1–3 cm, aromatic. Stem stout, dark purple at base, ribbed, densely white-hispidulous. Leaves petiolate, petioles 15–40 cm, sheaths 2–3 cm wide membranous, inflated; blade triangular-ovate, up to 25 × 17 cm, 2-ternate-pinnate; leaflets subsessile, oblong to elliptic, 5–9 × 2–3 cm, often 2–3-lobed, terminal leaflets base decurrent, margin white-cartilaginous, serrulate and ciliate, apex acuminate, white-pubescent abaxially. Bracts several, linear-lanceolate, ciliate, villous abaxially, apex sometimes pinnate; rays 40–60(–80), densely pubescent; bracteoles 3–7, linear-lanceolate, ciliate; umbellules 40–60-flowered. Calyx teeth obsolete. Petals white. Styles pubescent. Fruit broad-ellipsoid, 4–6 × 3–4 mm; dorsal ribs acute-prominent, lateral ribs broad-winged, as wide as or slightly narrower than the body;

vittae 1 in each furrow, 3–4 on commissure. Fl. Aug, fr. Aug–Sep. *n* = 11*.

- Shrubby thickets, slopes, grasslands; 2000–3400 m. Sichuan.

32. *Angelica biserrata* (R. H. Shan & C. Q. Yuan) C. Q. Yuan & R. H. Shan, Bull. Nanjing Bot. Gard. Mem. Sun Yat Sen 1983: 9. 1985 [“1983”].

重齿当归 chong chi dang gui

Angelica pubescens Maximowicz f. *biserrata* R. H. Shan & C. Q. Yuan, Acta Pharm. Sin. 13: 366. 1966.

Plants perennial, 1–2 m, stout. Root cylindric, brown, up to 15 × 1–2.5 cm, aromatic. Stem purplish green, up to 1.5 cm thick, thinly ribbed, hispid above. Basal and lower leaves petiolate, petioles 30–50 cm, sheaths oblong, inflated, 5–7 cm, glabrous or slightly pubescent abaxially; blade broad-ovate, 20–30(–40) × 15–25 cm, 2-ternate-pinnate; leaflets ovate-long-elliptic, 5.5–18 × 3–6.5 cm, base often decurrent along rachis, margin irregularly cuspidate-biserrate, apex acuminate, pubescent along nerves and margin. Peduncles 5–16(–20) cm, densely hispidulous; bracts 1, long-subulate, ciliate, deciduous; rays 10–25, 1.5–5 cm, densely hispidulous; bracteoles 5–10, broad-lanceolate, apex long-cuspidate, ciliate, pubescent abaxially; umbellules 17–28(–36)-flowered. Calyx teeth obsolete. Petals white, obovate. Styles conspicuously elongate, reflexed in fruit. Fruit ellipsoid, 6–8 × 3–5 mm; dorsal ribs prominent, lateral ribs broad-winged; vittae 2–3 in each furrow, 2–4(–6) on commissure. Fl. Aug–Sep, fr. Sep–Oct. *n* = 11*.

- Sparse shrubby thickets, damp slopes; 1000–1700 m. Anhui, Hubei, Jiangxi, Sichuan, Zhejiang.

The roots are widely used as the important traditional Chinese medicine “du huo,” especially as an analgesic and anti-inflammatory in the treatment of rheumatism and rheumatoid arthritis.

33. *Angelica cartilaginomarginata* (Makino ex Y. Yabe) Nakai, Fl. Kor. 1: 269. 1909.

长鞘当归 chang qiao dang gui

Plants biennial, 0.5–1.5 m. Root short-conic, branched. Stem often single, thinly ribbed, branched above. Basal and lower leaves petiolate, petioles widening into narrow-ovate sheaths, ca. 5 cm, glabrous, rarely sparse-pubescent abaxially; blade ovate to long-ovate, pinnate or 1–2-ternate-pinnate, pinnae 3–9 pairs; basal pinnae short-petiolate, 2–3-lobed, the terminal 3-lobed; ultimate segments lanceolate to oblong, 4–9 × 0.8–3 cm, base conspicuously decurrent, margin white-cartilaginous, serrate, apex acute, glabrous or scabrous along midrib. Umbels 3–8 cm across; peduncles 2–6 cm, scabrous; bracts absent; rays 7–14; bracteoles 2–4, linear, scarious-margined, glabrous; umbellules 10–25-flowered. Calyx teeth obsolete. Petals white and ovate. Fruit ellipsoid to ovoid, 2.5–4 × 2–3 mm; dorsal ribs prominent, lateral ribs narrow-winged; vittae black-brown, 1–2 in each furrow, 4 on commissure. Fl. Aug–Sep, fr. Sep–Oct.

Forest margins, shrubby thickets, slopes, grasslands; 300–1000 m. Anhui, Jiangsu, Jilin, Liaoning [Japan, Korea].

The roots have reputed medicinal value.

- 1a. Basal and lower leaves pinnate, ultimate segments lanceolate or ovate-lanceolate, 0.8–2.5 cm wide 33a. var. *cartilaginomarginata*
- 1b. Basal and lower leaves 2-ternate-pinnate, ultimate segments oblong, 2–3 cm wide 33b. var. *foliosa*

33a. *Angelica cartilaginomarginata* var. *cartilaginomarginata*

长鞘当归(原变种) chang qiao dang gui (yuan bian zhong)

Peucedanum cartilaginomarginatum Makino ex Y. Yabe, Rev. Umbell. Jap. 100. 1902; *Angelica cartilaginomarginata* var. *matsumurae* (H. de Boissieu) Kitagawa; *A. crucifolia* Komarov; *Pimpinella cartilaginomarginata* (Makino ex Y. Yabe) H. Wolff; *Sium matsumurae* H. de Boissieu.

Basal and lower leaves pinnate; ultimate segments lanceolate or ovate-lanceolate, 0.8–2.5 cm wide. *n* = 11*.

Forest margins, shrubby thickets, slopes. Jilin, Liaoning [Japan, Korea].

33b. *Angelica cartilaginomarginata* var. *foliosa* C. Q. Yuan & R. H. Shan, Bull. Nanjing Bot. Gard. Mem. Sun Yat Sen 1983: 5. 1985 [“1983”].

骨缘当归 gu yuan dang gui

Plants stout. Leaves dense, 1–2-ternate-pinnate; ultimate segments oblong, 5–6.5 × 2–3 cm, often 2–3-lobed.

- Slopes, grasslands. Anhui, Jiangsu.

34. *Angelica acutiloba* (Siebold & Zuccarini) Kitagawa, Bot. Mag. (Tokyo) 51: 658. 1937.

东当归 dong dang gui

Ligusticum acutilobum Siebold & Zuccarini, Pl. Jap. Fam. Nat. 2: 203. 1845.

Plants perennial, 30–100 cm. Root yellow-brown, 10–25 × 1–2.5 cm, strongly aromatic. Stem solid, purplish, thinly ribbed. Basal and lower leaves petiolate, petioles 10–30 cm, sheaths oblong; blade triangular-ovate, 10–25 cm, 1–2-ternate-pinnate, glabrous; pinnae short-petiolate, 2–9 × 1–3 cm, 3-lobed, segments lanceolate, margin irregularly acute-serrate, apex acuminate to acute; peduncles 5–20 cm, glabrous or pubescent; bracts absent or 1 to several, linear-lanceolate, 1–2 cm; rays 18–30, unequal, pubescent; bracteoles 5–8, linear, 5–15 mm; umbellules ca. 30-flowered; pedicels slender. Calyx teeth obsolete. Petals white, obovate to oblong. Fruit narrow-oblong, 4–5 × 1–1.5 mm; dorsal ribs filiform, lateral ribs narrow-winged; vittae 3–4 in each furrow, 4–8 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

Cultivated; ca. 400 m. Jilin [native to Japan and Korea].

The roots are used in Jilin as a regional substitute for the traditional Chinese medicine “dang gui” (see *Angelica sinensis*).

35. *Angelica paeoniifolia* C. Q. Yuan & R. H. Shan, Acta Phytotax. Sin. 18: 378. 1980.

牡丹叶当归 mu dan ye dang gui

Plants perennial, 60–150 cm. Root cylindrical, brown, 1–2 cm thick, aromatic. Stem purplish, thinly ribbed. Basal and lower leaves petiolate, petioles 5–15 cm, sheaths 1–1.5 cm wide; blade broadly triangular-ovate, 10–15 × 13–18 cm, 2–3-ternate-pinnate, glabrous; leaflets short-petiolate or sessile, ovate or rhombic-ovate, 2–4 × 1–3 cm, base cuneate, margin 3–5-coarse-toothed, apex acute. Peduncles 10–15 cm; bracts 3 to several, linear-lanceolate; rays 17–30, unequal; bracteoles 4–8, linear, scarious, nearly as long as pedicels; umbellules 14–20-flowered; pedicels glabrous or scabrous. Calyx teeth obsolete. Petals yellowish green or purplish, ovate. Fruit ellipsoid, 5–7 × 3–4 mm; dorsal ribs filiform, lateral ribs winged, wings narrower than the body; vittae 1 in each furrow, 2 on commissure. Fl. Jun–Aug, fr. Jul–Sep.

• Shrubby thickets, gravelly grasslands, river banks; 3500–4200 m. Xizang.

The roots have reputed medicinal properties.

36. *Angelica glauca* Edgeworth, Trans. Linn. Soc. London 20: 53. 1846.

灰叶当归 *hui ye dang gui*

Plants 1–2.5 m, glabrous, aromatic. Root thick, long-conic. Stem stout, ribbed. Leaves long-petiolate; blade triangular, 20–30 × 20–25 cm, 2–3-ternate-pinnate, primary pinnae long-petiolulate, proximal pinnules 3-foliolose; leaflets subsessile, ovate to oblong-ovate, 3–5 × 1.5–2.5 cm, base cuneate, margin mucronulate-serrate, glaucous abaxially. Peduncles 15–25 cm; bracts 5, linear, 1.5–2.5 cm, reflexed; rays 15–20, 2–6 cm, subequal; bracteoles 6–10, linear, ca. 6 mm, reflexed. Calyx teeth obsolete. Petals white, obovate. Fruit oblong-ellipsoid, 8–12 × 4–6 mm; dorsal ribs prominent, thick, obtuse-rounded, lateral ribs broad-winged; vittae 1 in each furrow, 2–4 on commissure. Fl. and fr. Jun–Aug.

Ditch-sides; ca. 3000 m. W Xizang [Afghanistan, NW India, Pakistan].

37. *Angelica multicaulis* Pimenov, Bjull. Moskovsk. Obšč. Isp. Prir., Otd. Biol. 77(5): 85. 1972.

多茎当归 *duo jing dang gui*

Angelica tichomirovii V. Vinogradova.

Plants perennial, up to 1 m. Root long-cylindrical, brown, distal annular scars. Stem thinly ribbed, branched, glabrous. Basal leaves petiolate, petioles 10–12 cm, sheaths small; blade ovate-orbicular or triangular-ovate, 2–3-ternate-pinnate, pinnae remote, glabrous; leaflets short-petiolulate, ovate or oblong-ovate, 3–6 × 1.8–2.3 cm, base cuneate, margin acute-crenulate. Bracts 5–7, linear-lanceolate, white-margined; rays 10–15, subequal, up to 10 cm in fruit; bracteoles 7–13, lanceolate, white-margined. Calyx teeth obsolete. Petals white or yellowish green. Fruit ellipsoid, 7–11 × 4–7 mm; dorsal ribs unequally winged, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fr. Jul–Aug.

Shrubby thickets, damp areas; 1000–1100 m. N Xinjiang [Russia].

38. *Angelica amurensis* Schischkin in Schischkin & Bobrov, Fl. URSS 17: 19. 1951.

黑水当归 *hei shui dang gui*

Plants perennial, 60–150 cm. Root conic, black-brown, 1.5–3 cm thick, pungent aromatic. Stem stout, purplish green, puberulous above. Basal and lower leaves long-petiolate, sheaths purplish oblong-ovate; blade broadly triangular-ovate, 20–40 × 20–30 cm, 2–3-ternate-pinnate, pinnae 2–3 pairs, petiolulate; leaflets subsessile, ovate to oblong-ovate, 3–8 × 1.5–4 cm, base cuneate, margin white-cartilaginous and incised-mucronate-serrate, apex acute, pubescent abaxially. Rachis, peduncles, rays and pedicels all densely hispidulous; peduncles 6–20 cm; bracts absent; rays 20–45, subequal; bracteoles 5–7, lanceolate, villous; umbellules 30–45-flowered. Calyx teeth obsolete. Petals white, broad-ovate, ca. 1 mm. Fruit ellipsoid to suborbicular, 5–7 × 3–5 mm; dorsal ribs prominent, lateral ribs broad-winged, wings equal or wider than the body; vittae 1 in each furrow, (2–3)–4 on commissure. Fl. Jul–Aug, fr. Aug–Sep. $n = 22$.

Forest margins, grassy mountain slopes, streamsides; 500–1000 m. Heilongjiang, Jilin, Liaoning, Nei Mongol [Japan, Korea, Russia (Siberia)].

The young stems are eaten as a spring vegetable, and the roots have reputed medicinal value.

39. *Angelica balangshanensis* R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 33: 476. 1995.

巴郎山当归 *ba lang shan dang gui*

Plants perennial, 1–1.2 m. Root long-conic, 10–12 × 2–2.5 cm. Stem thinly ribbed, rarely pubescent. Basal petioles 10–15 cm, puberulent, sheaths oblong; blade triangular-ovate, 20–28 × 15–18 cm, 1–2-ternate-pinnate; leaflets long-ovate, 3–9 × 3–6 cm, base cuneate or truncate, margin obtuse-serrate, 1–2-lobed, apex acuminate. Umbels 12–17 cm across in fruit; bracts absent; rays 50–60, 4–12 cm, unequal, puberulent; bracteoles 5–6, oblanceolate or lanceolate, unequal, 0.5–2 × ca. 0.5 mm, entire to 2–3-lobed; pedicels 15–35, unequal. Calyx teeth obsolete. Petals white, obovate. Fruit ovoid, ca. 5 × 3.5 mm; dorsal ribs prominent, lateral ribs broad-winged, vittae 1 in each furrow, 2 on commissure. Fr. Sep.

• Meadows, alpine low shrubland; ca. 3500 m. W Sichuan (Balangshan).

This rather poorly known species is recorded only from a few collections. Recent research suggests that it is conspecific with *Angelica duclouxii*.

40. *Angelica morii* Hayata, Icon. Pl. Formosan. 10: 24. 1921.

福参 *fu shen*

Plants perennial, 50–10 cm. Root conic, brown, ca. 10 cm. Stem ca. 1 cm thick, sparingly branched, ribbed. Leaves petiolate, petioles 5–20 cm, sheaths oblong, glabrous; blade triangular-ovate, 7–20 × 12–17 cm, 2–3-ternate-pinnate; leaflets sessile, ovate to ovate-lanceolate, often 3-lobed, 2–3 × 1–2 cm, base cuneate, margin ciliate, incised-serrate, apex acuminate, glabrous or pubescent along nerves. Umbels 8–10 cm across; peduncles 5–10 cm, pubescent; bracts absent or 1–2, deciduous; rays 10–20(–50), subequal, scabrous; bracteoles 5–8, linear-lanceolate, pubescent, longer or equaling pedicels; umbellules

15–20-flowered. Calyx teeth minute or obsolete. Petals yellowish white, long-ovate. Fruit ellipsoid-oblong, 4–5 × 3–4 mm; dorsal ribs filiform, lateral ribs winged, wings narrower than the body; vittae in each furrow, 2 on commissure. Fl. Apr–May, fr. Jun–Jul.

• Damp grasslands, streamsides; 800–1200 m. Fujian, Taiwan, Zhejiang.

The roots have reputed medicinal value.

41. *Angelica sinensis* (Oliver) Diels, Bot. Jahrb. Syst. 29: 500. 1901.

当归 dang gui

Plants perennial, 0.4–1 m. Root cylindrical, branched, rootlets many, succulent, strongly aromatic. Stem purplish green, ribbed, branched above. Basal and lower petioles 5–20 cm, sheaths purplish green, ovate, membranous-margined; blade ovate, 10–30 × 12–25 cm, 2–3-ternate-pinnate, pinnae 3–4 pairs, proximal and middle pinnae long-petiolulate; leaflets ovate or ovate-lanceolate, 2–3.5 × 0.8–2.5 cm, 2–3-lobed, margin irregularly coarse-cuspidate-serrate, sparse papillate-hairy along nerves and margin. Peduncles 8–20 cm, pubescent or subglabrous; bracts absent or 2, linear; rays 10–30, unequal, scabrous; bracteoles 2–4, linear, 3–5 mm; umbellules 13–36-flowered; pedicels slender, 1–3 cm in fruit. Calyx teeth obsolete, rarely minute, ovate. Petals white, rarely purplish red. Fruit ellipsoid or suborbicular, 4–6 × 3–4 mm; dorsal ribs filiform, prominent, lateral ribs broadly thin-winged, wings as wide as or wider than the body; vittae 1 in each furrow, 2 or absent on commissure. Fl. Jun–Jul, fr. Jul–Sep.

• Wild or cultivated in forests, shrubby thickets; 2500–3000 m. Gansu, Hubei, Shaanxi, Sichuan, Yunnan.

The roots are frequently used in the important traditional Chinese medicine “dang gui.”

- 1a. Fruit ellipsoid or ovate, vittae 1–2 on commissure 41a. var. *sinensis*
- 1b. Fruit obovoid or suborbicular, vittae absent on commissure 41b. var. *wilsonii*

41a. *Angelica sinensis* var. *sinensis*

当归(原变种) dang gui (yuan bian zhong)

Angelica polymorpha Maximowicz var. *sinensis* Oliver, Hooker’s Icon. Pl. 20: t. 1999. 1891.

Fruit ellipsoid or ovate, vittae 1–2 on commissure. *n* = 11*.

• Wild or cultivated in forests; 2500–3000 m. Gansu, Hubei, Shaanxi, Sichuan, Yunnan.

41b. *Angelica sinensis* var. *wilsonii* (H. Wolff) Z. H. Pan & M. F. Watson, Acta Phytotax. Sin. 42: 562. 2004.

川西当归 chuan xi dang gui

Angelica wilsonii H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 335. 1930.

Fruit obovoid or suborbicular, vittae absent on commissure.

• Shrubby thickets; ca. 2500 m. W Sichuan.

42. *Angelica megaphylla* Diels, Bot. Jahrb. Syst. 29: 500. 1901.

大叶当归 da ye dang gui

Peucedanum megaphyllum (Diels) H. de Boissieu.

Plants perennial, 0.7–2.5 m. Root conic, brown. Stem ca. 2 cm thick, thinly ribbed, glabrous or sparsely hispidulous. Petioles ca. 20 cm, sheaths ovate, 2.5–4 cm; blade triangular-ovate, 20–40 × 20–35 cm, 2-ternate-pinnate, pinnae 1–3 pairs, long-petiolulate, the terminal pinnae unequally 2-lobed; leaflets oblong to elliptic, 5–12 × 2–6 cm, irregularly 2–3-lobed, margin acute-serrate, apex acuminate or caudate-acuminate, hispidulous along nerves on both surfaces. Umbels up to 10 cm across; peduncles 4–10 cm, densely brown-hispidulous; bracts absent or 1; rays 20–40, very unequal, densely brown-hispidulous; bracteoles absent; umbellules 16–32-flowered; pedicels glabrous or pubescent. Calyx teeth obsolete. Petals dark purple-red, oblong-ovate. Fruit ovoid to suborbicular, 4.5–7 × 4–6 mm; dorsal ribs prominent, lateral ribs broad-winged, wings wider than the body; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Sep, fr. Sep–Oct.

• Forests, grasslands, streamsides; 1500–2000 m. Sichuan.

The roots are used in Sichuan as a regional substitute for the traditional Chinese medicines “dang gui” (see *Angelica sinensis*) and “du huo” (see *A. biserrata*).

43. *Angelica likiangensis* H. Wolff, Repert. Spec. Nov. Regni Veg. 28: 110. 1930.

丽江当归 li jiang dang gui

Plants perennial, 80–100 cm. Root brown, conic, branched. Stem thinly ribbed, puberulent. Basal and lower leaves petiolate, petioles 7–12 cm, sheaths small; blade broad-ovate, 10–20 cm, 3-ternate-pinnate, pinnae long-petiolulate; leaflets subsessile, ovate to ovate-lanceolate, 1.5–4 × 0.7–2 cm, base broad-cuneate, margin inconspicuously serrulate, apex acuminate, hispid along nerves adaxially. Peduncles 10–15 cm, pubescent; bracts absent; rays 40–60, 3–6 cm, up to 12 cm in fruit, unequal, scabrous; bracteoles 6–8, linear-lanceolate, apex long-aristate; pedicels 20–30, 3–6 mm, puberulent. Calyx teeth obsolete. Petals white, obovate, notched. Fruit ellipsoid or suborbicular, 5–7 mm; dorsal ribs prominent, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Aug–Nov.

• Forests, grassy slopes; 3100–4000 m. Guizhou, Yunnan.

44. *Angelica cincta* H. de Boissieu, Bull. Soc. Bot. France 53: 436. 1906.

湖北当归 hu bei dang gui

Plants stout. Stem thinly ribbed, pubescent. Leaves petiolate, sheaths inflated; leaf blade 2-ternate-pinnate; leaflets subrhombic or ovate, occasionally 3-lobed, 8–14 × 6–10 cm, margin cuspidate-serrate or biserrate, ciliate, apex acute to caudate-acute, pubescent along nerves abaxially. Bracts absent; rays 16–18, 4–12 cm, unequal, densely yellowish pubescent; bracteoles

many, lanceolate, apex caudate-acuminate, ca. $0.5 \times$ pedicels; pedicels numerous, flat, unequal, pubescent. Calyx teeth obsolete. Petals ovate or obovate. Anthers purple-red. Fruit narrow-ellipsoid, $5-6 \times 3-3.5$ mm; dorsal ribs filiform, lateral ribs narrow-winged, wings about half as broad as the body; vittae 1 in each furrow, 4 on commissure. Fl. Aug.

- Forests; 1000–1600 m. W Hubei.

This incompletely known taxon is recorded only from a few collections.

45. *Angelica dahurica* (Fischer ex Hoffmann) Bentham & J. D. Hooker ex Franchet & Savatier, Enum. Pl. Jap. 1: 187. 1875.

白芷 bai zhi

Plants perennial 1–2.5 m, stout. Root cylindrical, brown, 3–5 cm thick, strongly aromatic. Stem purplish green, 2–5(–7–8) cm thick, ribbed, pubescent above. Basal and lower leaves long-petiolate, sheaths oblong-inflated, glabrous; blade triangular-ovate, $30-50 \times 25-40$ cm, 2–3-ternate-pinnate; leaflets sessile, oblong-elliptic to oblong-lanceolate, $4-10 \times 1-4$ cm, base

slightly decurrent, margin white-cartilaginous and coarse-cuspidate-serrate, apex acute, pubescent along nerves adaxially. Upper leaves reduced, sheaths saccate-inflated, bladeless. Umbels 10–30 cm across; peduncles 5–20 cm, scabrous; bracts absent or 1–2, like uppermost leaves; rays 18–40(–70), short-hairy; bracteoles many, linear-lanceolate, scarious; pedicels many, scabrous. Calyx teeth obsolete. Petals white, obovate and notched. Ovary glabrous or pubescent. Fruit suborbicular, $4-7 \times 4-6$ mm; dorsal ribs prominent, obtusely thick-rounded, much wider than furrows, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

Forest margins, valley grasslands, streamsides; 500–1000 m. Hebei, Heilongjiang, Jilin, Liaoning, Shaanxi, N Taiwan [Japan, Korea, Russia (Siberia)].

This species is widely cultivated in N China, where the roots are used as the important traditional Chinese medicine “bai zhi” and as a substitute, known as “dong bei da huo,” for the traditional Chinese medicine “du huo” (see *Angelica biserrata*). Two cultivars are common: *A. dahurica* ‘Hangbaizhi’ and *A. dahurica* ‘Qibaizhi.’

- 1a. Ovary and fruit glabrous (NE China) 45a. var. *dahurica*
- 1b. Ovary and fruit pubescent (Taiwan) ... 45b. var. *formosana*

45a. *Angelica dahurica* var. *dahurica*

白芷(原变种) bai zhi (yuan bian zhong)

Callisace dahurica Fischer ex Hoffmann, Gen. Pl. Umbell., ed. 2, 170. 1816; *Angelica macrocarpa* H. Wolff; *A. porphyrocaulis* Nakai & Kitagawa; *A. porphyrocaulis* var. *albiflora* (Maximowicz) Makino; *A. tschiliensis* H. Wolff

Ovary and fruit glabrous. $n = 11^*$.

Forest margins, valley grasslands, streamsides; 500–1000 m. Hebei, Heilongjiang, Jilin, Liaoning, Shaanxi [Japan, Korea, Russia (Siberia)].

45b. *Angelica dahurica* var. *formosana* (H. de Boissieu) Yen, J. Taiwan Pharm. Assoc. 17(2): 68. 1963.

台湾当归 tai wan dang gui

Angelica formosana H. de Boissieu, Bull. Soc. Bot. France 56: 354. 1909.

Plants stout. Upper umbels densely pubescent, lower umbels glabrous or sparsely pubescent. Ovary and fruit pubescent.

- Forest margins; 600–800 m. N Taiwan.

