

49. ACRONEMA Falconer ex Edgeworth, Trans. Linn. Soc. London 20: 51. 1846.

丝瓣芹属 *si ban qin shu*

Pan Zehui (潘泽惠); Mark F. Watson, Ingrid Holmes-Smith

Herbs biennial or perennial, essentially glabrous. Rhizome tuberous, globose or conic, roots fibrous. Stem erect, ribbed. Basal leaves petiolate, sheathed at base; blade broad-triangular or broad-ovate, 1–3-ternate-pinnate; ultimate segments of distal leaves often linear. Umbels compound, terminal and lateral; bracts and bracteoles often absent; rays unequal. Calyx teeth obsolete or conspicuous, triangular. Petals white or purple-red, ovate to ovate-lanceolate, apex long-linear or long-aristate, rarely acute or obtuse, stated petal lengths include the apex. Stylopodium depressed or low-conic; styles short, reflexed. Fruit ovoid, broad-ovoid, ovoid-oblong or oblong-elliptic, slightly flattened laterally, glabrous; ribs 5, filiform; vittae 1–3 in each furrow, 2–4 on commissure. Seed face plane. Carpophore usually bifid or 2-parted.

About 25 species: high-altitude Sino-Himalayan region from E Nepal to SW China; 20 species (14 endemic) in China.

This is a taxonomically complex genus with often indistinct species boundaries and problematic generic delimitation with *Sinocarum* (see the taxonomic note under that genus).

- 1a. Ultimate segments of basal and lower leaves linear or linear-lanceolate.
 - 2a. Ultimate leaf segments 2–5 mm wide; petals apex long-linear.
 - 3a. Rays (5–)8–13, (1.5–)3–5.5 cm; calyx teeth conspicuous, ovate-triangular 1. *A. schneideri*
 - 3b. Rays 3–7, 0.3–3.5 cm; calyx teeth obsolete 2. *A. graminifolium*
 - 2b. Ultimate leaf segments 1–2.5 mm wide; petals apex acute or obtuse-acute.
 - 4a. Root conic; leaf blade 2–5-pinnate 3. *A. chienii*
 - 4b. Root tuberous, ovoid-globose; leaf blade 2–3-pinnate 4. *A. yadongense*
- 1b. Ultimate segments of basal and lower leaves ovate or ovate-lanceolate.
 - 5a. Bracteoles 1–4.
 - 6a. Rays 1–2 cm; petals apex linear 5. *A. tenerum*
 - 6b. Rays less than 1 cm; petals apex short-acute, not linear 6. *A. minus*
 - 5b. Bracteoles absent.
 - 7a. Calyx teeth developed.
 - 8a. Basal leaf blade ternate, dark purple abaxially; upper leaves heteromorphic 7. *A. astrantiifolium*
 - 8b. Basal leaf blade 2–3-ternate-pinnate, not purplish abaxially; upper leaves homomorphic.
 - 9a. Leaf blade 2-ternate; petals white or pink; calyx teeth ca. 0.2 mm 8. *A. sichuanense*
 - 9b. Leaf blade 2–3-ternate-pinnate; petals purple-red; calyx teeth ca. 3 mm 9. *A. forrestii*
 - 7b. Calyx teeth obsolete.
 - 10a. Petals apex acute; fruit oblong, apex slightly separated 10. *A. chinense*
 - 10b. Petals apex linear or caudate-acute; fruit ovoid to broad-ovoid, apex not separated.
 - 11a. Plants 4–25 cm (*A. nervosum* may be taller); basal and cauline leaves homogeneous; lateral umbels 1–2.
 - 12a. Leaves 1–2-ternate.
 - 13a. Leaves ternate, leaflets crenulate 11. *A. muscicola*
 - 13b. Leaves 2-ternate, leaflets 3-toothed 12. *A. alpinum*
 - 12b. Leaves 1–2-ternate-pinnate.
 - 14a. Leaflets 2–3 mm wide, entire or 3-toothed 13. *A. nervosum*
 - 14b. Leaflets ca. 7 mm wide, irregularly pinnatifid or 3-lobed 14. *A. handelii*
 - 11b. Plants 25–80 cm; basal and cauline leaves heteromorphic; lateral umbels often numerous.
 - 15a. Rays ca. 1 cm; pedicels 1–2 mm; petals white 15. *A. brevipedicellatum*
 - 15b. Rays 1.5–6 cm; pedicels 3–15 mm; petals purple, pink or white.
 - 16a. Leaflets of basal leaves entire or apex 2-toothed; rays subequal 16. *A. xizangense*
 - 16b. Leaflets of basal leaves apex 3-lobed, irregularly coarse-toothed or serrate; rays unequal.
 - 17a. Basal leaves 1–2-ternate-pinnate; rays very unequal 17. *A. gracile*
 - 17b. Basal leaves 2–3-pinnate; rays unequal or slightly unequal.
 - 18a. Petals white (sometimes purple), apex densely papillate 18. *A. hookeri*
 - 18b. Petals purple or white with purplish-red margin, apex glabrous or papillate.
 - 19a. Leaves 2-pinnate, lower pinnae short-petiolate, leaflets ca. 6 mm wide 19. *A. commutatum*
 - 19b. Leaves 2–3-pinnate, primary and secondary pinnae all long-petiolate, leaflets 7–15 mm wide 20. *A. paniculatum*

1. *Acronema schneideri* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 301. 1929.

丽江丝瓣芹 li jiang si ban qin

Pimpinella schneideri (H. Wolff) M. Hiroe.

Plants 25–75 cm. Rhizome stout, subglobose or torulose, ca. 8 mm, thick. Stem thinly ribbed. Basal leaves few, petioles 8.5–15 cm, sheaths short, narrow; blade 7.5–11 × 6–20 cm, 2–3-pinnate; basal pinnae short-petiolate; ultimate segments linear, 4.5–9 × 2–5 mm, entire, sometimes scabrous along nerves abaxially. Terminal umbels 4–13 cm across, lateral umbels smaller; peduncles, rays and pedicels scabrous distally; bracts and bracteoles absent; rays (5–)8–13, (1.5–)3–5.5 cm, unequal, elongating to 7 cm in fruit; umbellules 10–18 mm across, 5–10-flowered; pedicels 3–6 mm, unequal, scabrous on one side, elongating to 10 mm in fruit. Calyx teeth conspicuous, ovate-triangular, ca. 0.1 mm, apex acute. Petals purple-red, rarely white-pink, ovate-lanceolate, elongate-attenuate ca. 3 × 0.5 mm; apex linear, ca. half the petal length, papillate. Young fruit ovoid, ca. 1.5 × 1.5 mm (mature fruit unknown). Fl. Jul–Aug, fr. Sep–Oct.

• Coniferous forests, dwarf scrub; 2500–4200 m. W Sichuan, NW Yunnan.

This incompletely known taxon is recorded only from a few collections. Russian authors consider this species synonymous with *Cyclo-rhiza edosmioides* (treated under *C. peucedanifolia* in this account).

2. *Acronema graminifolium* (W. W. Smith) S. L. Liou & R. H. Shan, Acta Phytotax. Sin. 18: 197. 1980.

禾叶丝瓣芹 he ye si ban qin

Pimpinella hookeri C. B. Clarke var. *graminifolia* W. W. Smith, Rec. Bot. Soc. India 4: 267. 1911; *Acronema hookeri* (C. B. Clarke) H. Wolff var. *graminifolium* (W. W. Smith) H. Wolff.

Plants 20–80 cm. Rhizome tuberous, globose, 6–8 mm thick. Stem purplish, hollow, thinly ribbed. Lower stem leaves petiolate, petioles 5–11 cm, sheaths short; blade 3–9 × 5–10 cm, 2–3-pinnate; ultimate segments linear, 2.5–7 × 2–4 mm, entire, scabrous along nerves adaxially. Umbels 3–8 cm across; bracts and bracteoles usually absent; rays 3–7, 4–35 mm, unequal; umbellules 8–15 mm across, 4–9-flowered; pedicels 0.5–1.3 cm, slender, unequal. Calyx teeth obsolete. Petals white or margin purplish, ovate, 5–5.5 × ca. 0.7 mm; apex long-linear, ca. 4 mm. Young fruit broad-ovoid, ca. 2 × 1 mm (mature fruit poorly known). Fl. Jun–Aug.

Forests, mountain slopes; 2600–4000 m. W Sichuan, S Xizang [Bhutan, Sikkim].

This is a rather poorly known taxon. In Bhutan this plant grows in mixed populations with *Acronema hookeri* and is sometimes treated as a variety of that species. Further collections are needed to resolve the taxonomy.

3. *Acronema chienii* R. H. Shan & S. L. Liou, Acta Phytotax. Sin. 18: 197. 1980.

条叶丝瓣芹 tiao ye si ban qin

Plants 50–75 cm. Rhizome stout, conic, ca. 6 × 1 cm. Stem

purplish, branched. Lower leaves petiolate, petioles 10–20 cm, sheaths ovate; blade, 8–13 × 10–15 cm, 2–5-pinnate; ultimate segments linear or linear-lanceolate, 0.3–6.5 × 1–2.5 mm. Umbels 6–8 cm across; peduncles 4–11 cm; bracts and bracteoles usually absent; rays 10–18, 1.5–6 cm, unequal, 4-angled; umbellules 8–12 mm across, 12–16-flowered; pedicels ca. 5 mm, slender. Calyx teeth obsolete or nearly so. Petals white, linear or narrowly spatulate, 1.5–3 × 0.1–0.4 mm; apex acute or obtuse-acute. Fruit broad-ovoid, ca. 1.8 × 1.5 mm, base cordate; vittae 3 in each furrow, 2 on commissure. Fl. Jun–Jul, fr. Aug–Sep.

• Forests, forest margins, river banks; 2500–4800 m. SW Sichuan, SE Xizang, NW Yunnan.

- 1a. Leaves 2–3-pinnate, ultimate segments 3–6.5 × 1–2.5 mm; rays 4–6 cm; petals narrow-spatulate, 0.2–0.4 mm wide 3a. var. *chienii*
1b. Leaves 4–5-pinnate, ultimate segments 0.3–1.8 × ca. 1 mm; rays 1.5–4 cm; petals linear, ca. 1 mm wide 3b. var. *dissectum*

3a. *Acronema chienii* var. *chienii*

条叶丝瓣芹(原变种) tiao ye si ban qin (yuan bian zhong)

Leaves 2–3-pinnate; ultimate segments 3–6.5 × 1–2.5 mm. Rays 4–6 cm. Petals narrow-spatulate, 0.2–0.4 mm wide.

• Forests, river banks; 3000–4800 m. SW Sichuan, SE Xizang.

3b. *Acronema chienii* var. *dissectum* R. H. Shan & S. L. Liou, Acta Phytotax. Sin. 18: 198. 1980.

细裂丝瓣芹 xi lie si ban qin

Leaves 4–5-pinnate; ultimate segments 0.3–1.8 × ca. 1 mm. Rays 1.5–4 cm. Petals linear, ca. 1 mm wide.

• Forest margins; 2500–4200 m. SW Sichuan, NW Yunnan.

4. *Acronema yadongense* S. L. Liou, Acta Phytotax. Sin. 28: 147. 1990.

亚东丝瓣芹 ya dong si ban qin

Plants 35–45 cm. Rhizome tuberous, ovoid-globose, 5–6 mm across. Stem thinly ribbed, little-branched. Lower stem leaves petiolate, petioles 5–13 cm, sheaths small; leaf blade broad-triangular, 5–6 × 4–5 cm, 2–3-pinnate; ultimate segments linear, 0.5–2.5 × 1–1.5 mm. Umbels 3–5 cm across; peduncles 1.2–3 cm; bracts absent; rays 9–12, 1.5–3 cm, scabrous distally; bracteoles absent or 1–2, linear, small; umbellules ca. 5 mm across, 8–17-flowered; pedicels 2–3 mm, unequal, slender. Calyx teeth obsolete. Petals white, obovate or elliptic, 1–1.2 × ca. 1 mm; apex acute. Stylopodium purple-black. Young fruit, oblong-elliptic ca. 1.8 × 1.2 mm (mature fruit unknown). Fl. Sep.

• Forests, grassy slopes; ca. 3700 m. S Xizang (Yadong).

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

5. *Acronema tenerum* (de Candolle) Edgeworth, Trans. Linn. Soc. London 20: 51. 1846.

丝瓣芹 si ban qin

Helosciadium tenerum de Candolle, Prodr. 4: 105. 1830;

Carum tenerum (de Candolle) Franchet; *Pimpinella tenera* (de Candolle) C. B. Clarke.

Plants 5–30 cm. Rhizome narrowly conic, or elongate-globose, ca. 5 mm across. Stem solitary, slender. Basal leaves petiolate, petioles 2–5 cm, sheaths narrowly lanceolate; blade triangular, 1.5–2.5 × 1.5–3 cm, 2–3-ternate-pinnate; ultimate segments cuneate-obovate or obovate, ca. 5 × 5 mm, apex often 3-toothed. Umbels 2–3 cm across; peduncles 2–5 cm, slender; bracts usually absent; rays 3–4, 1–2 cm, unequal; bracteoles 1–3, 2–3 mm; umbellules 6–14 mm across, 3–5-flowered; pedicels 2–7 mm, unequal. Calyx teeth obsolete. Petals purple-red, ovate, ca. 2 mm; apex linear, ca. 1 mm. Fruit broad-ovoid, ca. 1–1.5 × 1–1.5 mm; vittae minute, 2 in each furrow, 2 on commissure. Fl. Aug.

Damp shady crevices; 3400–3500 m. E Xizang, NW Yunnan [Bhutan, NE India, E Nepal, Sikkim, N Thailand].

Despite this species being the most widespread in the genus, fruiting material is still lacking for many areas (including China). This species is similar and closely related to *Acronema hookeri*, with which larger specimens of *A. tenerum* can be confused. The presence of bracteoles and shorter petal apices are useful in recognizing such specimens of *A. tenerum*.

6. *Acronema minus* (M. F. Watson) M. F. Watson & Z. H. Pan, Acta Phytotax. Sin. 42: 561. 2004.

矮小丝瓣芹 ai xiao si ban qin

Sinocarum minus M. F. Watson, Edinburgh J. Bot. 53: 140. 1996.

Plants 3–5 cm. Rhizome tuberous ovoid, 3–5 mm across. Stem solitary, thinly ribbed. Lower stem leaves petiolate, petioles 2–5.5 cm, sheaths short; blade broad-triangular, 4–7 × 5–8 mm, 2-ternate-pinnate; pinnae short-petiolulate, second pinnae broad-ovate, 3-lobed; ultimate segments, 1.2–1.5 × 0.7–1 mm, entire or middle ones 2–3-toothed, teeth 1–2 mm. Upper stem leaves none. Umbels 0.5–1 cm across; peduncles, 2.5–3 cm, slender; bracts 1–3, linear, 2–3 mm; rays 3–7, 1.5–5 mm; bracteoles 2–4, ca. 1 mm, shorter than pedicels; pedicels 3–5, ca. 2 mm. Calyx teeth obsolete. Petals white, ovate, ca. 1 mm; apex short-acute, not linear. Young fruit, oblong-ellipsoid, ca. 1 mm (mature fruit not known). Fl. Jun–Jul.

Mountain slopes; 3000–4600 m. S Xizang, NW Yunnan [Bhutan].

This species was misidentified in FRPS (55(2): 119–121. 1985) as *Acronema wolffianum* Fedde ex H. Wolff (*Sinocarum wolffianum* (Fedde ex H. Wolff) P. K. Mukherjee & Constance, 1991, not (Fedde ex H. Wolff) R. H. Shan & F. T. Pu, 1993), which is endemic to Bhutan and Sikkim.

7. *Acronema astrantiifolium* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 192. 1929.

星叶丝瓣芹 xing ye si ban qin

Pimpinella astrantiifolia (H. Wolff) M. Hiroe.

Plants 8–50 cm. Rhizome tuberous to long conic, 1–3 × 0.5–1 cm. Stem solitary, thinly ribbed, little-branched. Basal leaves petiolate, petioles 4–8 cm, sheaths short, narrow; blade semi-orbicular or broad-triangular in outline, 1.5–3.5 × 2–5 cm, 3-lobed or 3-foliolate; ultimate segments ovate to obovate, 1–2.5 × 0.8–2 cm, base cuneate, incised-serrate distally, adaxially

purple-green, abaxially dark purple. Upper stem leaves conspicuously heteromorphic; ultimate segments becoming linear, 15–75 × 0.5–5 mm, entire. Umbels 4–9 cm across in flower (to 12 in fruit); peduncles (2–)4.5–10 cm; bracts and bracteoles absent; rays 5–12, (0.8–)1.5–6 cm, unequal; umbellules 9–18 mm across, 7–12-flowered; pedicels 5–15 mm, unequal, slender, scabrous along one side; rays and pedicels elongating and spreading in fruit. Calyx teeth conspicuous, narrow-triangular, ca. 0.3 mm. Petals white, greenish-white or purple, ovate or ovate-lanceolate, 2–3 × ca. 0.5 mm; apex linear, ca. 1 mm, papillate-hairy abaxially. Fruit subovoid, ca. 2 × 2 mm. Fl. Aug–Oct, fr. Sep–Nov.

• Forests, grassy slopes; 2800–4000 m. W Sichuan, NW Yunnan.

8. *Acronema sichuanense* S. L. Liou & R. H. Shan, Acta Phytotax. Sin. 18: 199. 1980.

四川丝瓣芹 si chuan si ban qin

Plants 15–30 cm, slender. Rhizome tuberous, ovoid, 3–25 × 4–7 mm. Stem thinly ribbed. Lower stem leaves petiolate, petioles 2–5.5 cm, sheaths short, small; blade broad-triangular, 3.5–10 × 6–12 cm, 2-ternate-pinnate; pinnae remote, petiolules 2–5 cm, pinnae petiolules 0.2–2.5 cm, semi-orbicular, 0.5–1.5 × 0.6–1.7 cm, apex 3-lobed, lobes obovate, 2–3-toothed. Uppermost leaves reduced, segments linear, entire or sparsely incised-serrate. Umbels 2–5 cm across; peduncle 3–6 cm, slender; bracts absent or 1; rays 3–6, 1.5–4.5 cm, very unequal; bracteoles absent; umbellules 5–10 mm across, 3–10-flowered; pedicels 2–9 mm, unequal, spreading in fruit. Calyx teeth triangular, minute, ca. 0.2 mm. Petals white or pink, ovate-lanceolate, ca. 3 × 0.6 mm; apex linear, ca. 2 mm. Fruit broad-ovoid, ca. 2 × 3 mm, base cordate; vittae 2–3 in each furrow, 2–4 on commissure. Fl. Jun–Jul, fr. Aug–Sep.

• Forests, damp shady crevices; 3200–4000 m. S Qinghai, SW Sichuan, S Xizang, NW Yunnan [?Bhutan, ?Sikkim].

Plants from the E Himalayas are smaller (2.5–6.5 cm), with almost sessile, lax umbels. They may represent a different, as yet undescribed species, but further work and new collections are needed to confirm this.

9. *Acronema forrestii* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 316. 1930.

疏齿丝瓣芹 shu chi si ban qin

Pimpinella forrestii (H. Wolff) M. Hiroe.

Plants ca. 40 cm high. Root tuberous, elongate, ca. 12 × 7 mm. Stem ribbed, little-branched above. Lower leaves petiolate, petioles 7–13 cm, slender, sheaths narrowly lanceolate; blade triangular-ovate, 4–6 × 3.5–5 cm, 2–3-ternate-pinnate; pinnae 3 pairs, petiolules of proximal pinnae ca. 5 cm; ultimate segments oblong or cuneate-oblong, 3–8 × 0.5–2 mm, entire or apex sparsely obtuse-toothed. Umbels 5–7 cm across; peduncles 2.5–4 cm; bracts and bracteoles absent; rays 8–12, up to 4 cm, very unequal, slender, scabrous on inner surface; umbellules 6–11 mm across, 10–15-flowered; pedicels 3–5 mm, scabrid. Calyx teeth narrowly triangular, ca. 3 mm. Petals purple-red, narrowly lanceolate, 2–3 × 0.5–0.75 mm; apex long-linear, ca. 1 mm. Ovary broad-ovoid. Stylopodium depressed. Fruit unknown. Fl. Sep.

- Open stony pastures; 3600–4000 m. NW Yunnan.

This incompletely known taxon is recorded only from the type gathering.

10. *Acronema chinense* H. Wolff, Acta Horti Gothob. 2: 309. 1926.

尖瓣芹 jian ban qin

Plants 5–75 cm. Root tuberous, globose, 3–4 mm across. Stem slender, thinly ribbed. Basal leaves petiolate, petioles 2–5 cm, sheaths short; blade broad-triangular, 2–5 × 3–6 cm, 2-ternate-pinnate; pinnae petiolules ca. 7 mm; ultimate segments cuneate-obovate, ca. 4 × 3 mm, sessile, apex 3-toothed. Stem leaves long-petiolate, petioles 1–4 cm; ultimate segments rhombic-ovate, ca. 2 × 1 mm, apex incised-serrate. Umbels 2–5 cm across; peduncles 0.5–13 cm; bracts absent or 1, linear; rays 3–7, 2–5 cm, distinctly unequal; bracteoles absent; umbellules 7–10 mm across, 3–8-flowered; pedicels 2–10 mm, distinctly unequal. Calyx teeth obsolete. Petals white, ovate, ca. 1 × 0.5 mm; apex acute. Fruit oblong, ca. 2 × 1.2 mm, apex slightly separated; ribs filiform; vittae 1 in each furrow, 2 on commissure. Fl. Jul, fr. Aug–Sep.

- Shrubby thickets, ravines, damp crevices on rocky slopes; 3200–4900 m. Gansu, Qinghai, Sichuan, Xizang.

- 1a. Plants 30–75 cm; peduncles (4–)6–13 cm
 10a. var. *chinense*
 1b. Plants 5–10 cm; peduncles 0.5–1.5 cm 10b. var. *humile*

10a. *Acronema chinense* var. *chinense*

尖瓣芹(原变种) jian ban qin (yuan bian zhong)

Pimpinella chinensis (H. Wolff) M. Hiroe.

Plants (15–)30–75 cm. Peduncles 10–13 cm.

- Shrubby thickets, ravines; 3200–4900 m. Gansu, Qinghai, Sichuan, Xizang.

10b. *Acronema chinense* var. *humile* S. L. Liou & R. H. Shan, Acta Phytotax. Sin. 18: 200. 1980.

矮尖瓣芹 ai jian ban qin

Plants small, 5–10 cm. Peduncles short, 0.5–1.5(–3) cm.

- Damp crevices on rocky slopes; 3300–4400 m. Gansu, Qinghai, Sichuan.

11. *Acronema muscicola* (Handel-Mazzetti) Handel-Mazzetti, Symb. Sin. 7: 715. 1933 [*“muscicolum”*].

苔间丝瓣芹 tai jian si ban qin

Pimpinella muscicola Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 226. 1925.

Plants 5–20 cm. Root tuberous, short-cylindric, 5–10 × 3–5 mm. Stem solitary. Basal leaves petiolate, petioles 5–10 mm, sheaths small; blade broad-cordate, 0.5–1.6 × 1–2 cm, 3-foliate; ultimate segments obovate, 4–8 × 4–12 mm, apex 3–5-crenate-dentate. Umbels 3.5–5 cm across; peduncles 2–5 cm; bracts and bracteoles absent; rays 3–6, 0.5–2.5 cm, unequal; umbellules 4–7 mm across, 3–7-flowered; pedicels 2–4 mm.

Calyx teeth obsolete. Petals white or dark purple, ovate or rhombic-ovate, 1.5–2 × ca. 0.4 mm; base clawed; apex linear, 1.2–1.5 mm, glandular-pubescent. Young fruit ovoid or ovoid-orbicular, base slight-cordate, ca. 1 mm (mature fruit unknown). Fl. Aug–Sep, fr. Sep–Oct.

- Damp forests; 3200–4100 m. Sichuan, Xizang, Yunnan.

Records in the literature of this species occurring further west in the Himalayas remain unconfirmed and are here considered dubious.

12. *Acronema alpinum* S. L. Liou & R. H. Shan, Acta Phytotax. Sin. 18: 200. 1980.

高山丝瓣芹 gao shan si ban qin

Plants 4–10 cm. Root tuberous, ovoid, 7–9 × 4–5 mm, thick. Stem purplish, branched. Basal leaves petiolate, petioles 1–1.5 cm, sheaths ovate-oblong; blade ovate or broad-ovate, 0.8–1.1 × 1.1–1.3 cm, 2-ternate; leaflets sessile, ovate to obovate, ca. 2 × 1.5 mm, apex 3-toothed. Umbels ca. 2 cm across; peduncles ribbed, 1–2 cm; bracts and bracteoles absent; rays 5–7, 1–2 cm, unequal, 4-angled; umbellules 0.5–0.6 mm across, 6–13-flowered; pedicels 3–5 mm. Calyx teeth obsolete. Petals color unknown, ovate, ca. 1.8 × 0.7 mm; apex linear. Stylopodium depressed, purple-black. Fruit ovoid, ca. 1.8 × 1.5 mm, base cordate; vittae unknown. Fl. Jul, fr. Aug.

- Rock crevices on alpine slopes; 4700–4800 m. Xizang.

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

13. *Acronema nervosum* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 315. 1929.

羽轴丝瓣芹 yu zhou si ban qin

Plants 10–25(–40) cm. Root tuberous, ovoid, ca. 5 mm across. Stem solitary, slender, little-branched. Basal leaves petiolate, petioles ca. 5 cm, slender, sheaths small; blade broad-triangular, 2.2–3 × 1.5–2.5 cm, 2-ternate-pinnate; pinnae petiolulate; ultimate segments obovate to linear-lanceolate, 5–8 × 2–3 mm, entire or 3-toothed, margins and adaxial veins minutely pubescent. Umbels 1.5–3 cm across; peduncles short; bracts and bracteoles absent (bracts occasionally 1); rays 3–6, 1.5–2.7 cm, slender; umbellules 5–12 mm, 3–9-flowered; pedicels 2–9 mm, unequal, spreading and elongating in fruit. Calyx teeth obsolete. Petals white, yellowish-white, or purple, ovate-lanceolate, 2–3 × ca. 0.5 mm; apex linear, ca. 1.5 mm. Stylopodium depressed. Fruit ovoid, ca. 1.5 × 1.5 (mature fruit unknown). Fl. Aug–Sep, fr. Sep–Oct.

- Alpine forests; 4100–4500 m. SW Sichuan, S Xizang [Bhutan, NE India, Nepal, Sikkim].

This species has reputed medicinal value (in Xizang).

14. *Acronema handelii* H. Wolff in Engler, Pflanzenr. 90(IV. 228): 322. 1927.

中甸丝瓣芹 zhong dian si ban qin

Pimpinella handelii (H. Wolff) M. Hiroe.

Plants 15–20 cm. Root tuberous, oblong, ca. 10 × 3–5 mm. Stem solitary, slender and ribbed. Basal leaves petiolate, peti-

oles 2.5–3.5 cm, slender, sheaths short; blade broad-ovate, 1.5–2.5 × 1.5–2.5 cm, 1–2-ternate-pinnate; pinnae petiolulate; ultimate segments obovate or ovate, ca. 1 × 0.7 cm, base cuneate, margin irregularly pinnate or apex 3-lobed. Umbels 2.5–5 cm across; peduncles 2.5–4 cm, slender; bracts and bracteoles absent; rays 4–6, 1–3 cm, unequal; umbellules 5–10 mm across, 3–9-flowered; pedicels ca. 5 mm. Calyx teeth obsolete. Petals white, ovate or ovate-lanceolate, 2–2.5 × ca. 0.5 mm; apex linear, 1–1.5 mm. Young fruit broad-ovoid, base cordate, ca. 1.5 mm (mature fruit unknown). Fl. and fr. Jul–Aug.

Damp forests, open pastures; 3400–4000 m. NW Yunnan [NE India, Myanmar].

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

15. *Acronema brevipedicellatum* Z. H. Pan & M. F. Watson, Acta Phytotax. Sin. 42: 562. 2004.

短柄丝瓣芹 duan bing si ban qin

Plants 10–40 cm. Root tuberous, subglobose, ca. 0.7 mm thick. Stem branched. Lower leaves petiolate, petioles 4.5–9 cm, sheaths very small; blade triangular or broad-triangular, 2.5–5.5 × 2.6–4 cm, ternate-pinnate; pinnae 2–3 pairs, proximal pinnae short-petiolulate, broad-ovate, 1.3–2 × ca. 1.5 cm, apex 3–5-toothed. Leaflets of upper leaves ovate to linear. Umbels 2.5–3.5 cm across; peduncles ca. 3 cm; bracts and bracteoles absent; rays 5–7, ca. 1 cm, unequal; umbellules 2.3–3 mm across, 6–9-flowered; pedicels very short, 1–2 mm or subsessile. Calyx teeth obsolete. Petals white, ovate-lanceolate, ca. 2 × 0.5 mm; apex long-acuminate. Young fruit ovoid, ribs filiform (mature fruit unknown). Fl. Aug.

• Damp forests; 3300–3800 m. Xizang, Yunnan.

This incompletely known taxon is recorded only from a few collections. It was misidentified in FRPS (55(2): 128, fig. 51(part 10). 1985) as the E Himalayan *Acronema radiatum* (W. W. Smith) H. Wolff (*Pimpinella radiata* W. W. Smith; currently accepted as *Pternopetalum radiatum* (W. W. Smith) P. K. Mukherjee & Constance).

16. *Acronema xizangense* S. L. Liou & R. H. Shan, Acta Phytotax. Sin. 18: 202. 1980.

西藏丝瓣芹 xi zang si ban qin

Plants 30–40 cm. Root slender, cylindric, ca. 3 cm. Stem solitary, thin-ribbed. Basal leaves petiolate, petioles 7–11 cm, slender, sheaths short; blade broad-ovate or broad-triangular, 1–2-pinnate; pinnae 1.5–2 cm, 3-lobed, petiolules 0.5–1.2 cm; ultimate segments ovate to long-elliptic, 7–10 × 0.3–0.4 mm, entire or 2-toothed distally, margin and nerves scabrous adaxially. Umbels 2.5–3 cm across; bracts and bracteoles absent; rays 6–9, ca. 3 cm, subequal; umbellules 5–7 mm across, 7–13-flowered; pedicels 2.5–4 mm, slender. Calyx teeth obsolete. Petals white, ovate-lanceolate, 1.8–2.2 × ca. 0.6 mm; apex linear, 0.6–0.8 mm. Fruit broad-ovoid, ca. 1.8 × 2 mm, base subtruncate to slightly cordate; vittae unknown. Fl. Sep, fr. Oct.

• Valley sides; ca. 3400 m. Sichuan, Xizang.

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

17. *Acronema gracile* S. L. Liou & R. H. Shan, Acta Phytotax. Sin. 18: 202. 1980.

细梗丝瓣芹 xi geng si ban qin

Plants 18–40 cm. Root tuberous, ovoid, 5–7 mm across. Stem ribbed, slightly branched. Basal leaves petiolate, petioles 7–13 cm, sheaths small; blade triangular, 4–5.5 × 5–6 cm, 1–2-ternate-pinnate; pinnae broad-triangular, 2–4 × 1.5–3.5 cm, 3-lobed or entire, petiolules 1–1.8 cm; ultimate segments obovate, base cuneate, cuspidate-serrate distally, scabrous along nerves adaxially. Umbels 2.2–3.4 cm across; peduncles slender; bracts and bracteoles absent; rays 5–6, 1–1.5 cm, very unequal; umbellules 6–7 mm across, 4–7-flowered; pedicels 1.6–3.5 mm, slender, unequal. Calyx teeth obsolete. Petals purple-red, broad-ovate, 3–3.5 × ca. 1 mm; apex linear, 2–2.5 mm, glandular-pubescent. Mature fruit unknown. Fl. Jul.

• Forested ravines; 3300–3800 m. Xizang.

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

18. *Acronema hookeri* (C. B. Clarke) H. Wolff in Engler, Pflanzenr. 90(IV. 228): 323. 1927.

锡金丝瓣芹 xi jin si ban qin

Pimpinella hookeri C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 686. 1879; *Carum hookeri* (C. B. Clarke) Franchet.

Plants 30–80 cm. Root tuberous, globose, 8–10 × 5–8 mm across. Stem ribbed and branched, branches elongating. Basal petioles 4–8 cm, sheaths narrow; blade ovate-triangular to long-ovate-triangular, 2-pinnate; proximal pinnae short-petiolulate; ultimate segments ovate, obliquely ovate to broad-ovate, 1–2 × 7–13 mm, 3-lobed or irregularly sparsely serrulate. Umbels 2–5 cm across, many in a lax, raceme-like inflorescence; peduncles 4.5–8 cm; bracts and bracteoles absent; rays 3–6, 2.5–6 cm, slightly unequal; umbellules 8–15 mm across, 3–7-flowered; pedicels 5–15 mm, slender; rays and pedicels elongating and spreading in fruit. Calyx teeth obsolete. Petals white, pink or dark red, lanceolate or oblong-lanceolate, ca. 4 × 0.6 mm; apex filiform, 2–3 mm, densely papillate. Fruit ovoid globose, ca. 2 × 2 mm, base subcordate; vittae 2–3 in the furrows, 3–4 on commissure. Fl. Aug, fr. Sep–Oct.

Forests, riversides, streamsides; 2100–3200 m. S Xizang, NW Yunnan [Bhutan, NE India, E Nepal, Sikkim].

This widespread, quite variable species often grows in mixed populations with *Acronema graminifolium*, which some authors consider to be a variety of *A. hookeri* (as originally described as *Pimpinella hookeri* var. *graminifolia*).

19. *Acronema commutatum* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 192. 1929.

多变丝瓣芹 duo bian si ban qin

Plants 16–60 cm. Root tuberous, globose, 2–10 mm across. Stem slender, thinly ribbed. Basal leaves petiolate, petioles 2.5–5 cm, sheaths short, narrow; blade broad-triangular, 3–5 × 3–6 cm, 2-pinnate; pinnae 2–3 pairs, proximal pinnae short-petiolulate; ultimate segments broad-ovate to obovate, 5–12 × ca. 6 mm, apex 3-lobed or sparsely obtuse-serrate. Leaflets of the upper leaves linear. Umbels 5.5–7.5 cm across; peduncles 2.5–7 cm; bracts and bracteoles absent; rays 2–6, 1–3(–4.5) cm, unequal; umbellules 4–20 mm across, 2–5-flowered; pedicels 4–10 mm, slender, unequal. Calyx teeth obsolete. Petals purplish-red, narrow-lanceolate, ca. 4 × 0.2–0.3 mm; apex linear,

ca. 2 mm, finely papillate or glabrous. Fruit broad-ovoid, ca. 2 × 2 mm, base rounded or slightly cordate; ribs filiform; vittae 3 in each furrow, 4–6 on commissure. Fl. Aug, fr. Sep–Oct.

- Forests; 2700–3500 m. SW Sichuan, SE Xizang, NW Yunnan.

20. *Acronema paniculatum* (Franchet) H. Wolff in Engler, *Pflanzenr.* 90(IV. 228): 323. 1927.

圆锥丝瓣芹 *yuan zhui si ban qin*

Carum paniculatum Franchet, *Bull. Soc. Philom. Paris*, sér. 8, 6: 122. 1894; *Pimpinella paniculata* (Franchet) M. Hiroe.

Plants 30–80 cm. Root tuberous, oblong, 8–12 × ca. 5 mm. Stem purplish at base, ribbed. Basal leaves petiolate, petioles

3.5–6 cm, sheaths short, narrow; blade broad-ovate to broad-triangular, 2–3-pinnate; pinnae petiolules 1.5–3.5 cm, pinnule petiolules 0.5–1 cm; ultimate segments broad-ovate, 1.5–2.2 × 0.7–1.5 cm, margin irregularly coarse-toothed. Leaflets of the upper leaves linear. Umbels 2–3.5 cm across; peduncles 2–8 cm; bracts and bracteoles absent; rays 3–5, 1–2.5 cm., unequal, extending to 5 cm in fruit; umbellules 4–7 mm across, 3–7-flowered; pedicels 2–3.5 mm, unequal. Calyx teeth obsolete. Petals white or margin purplish-red, ovate-lanceolate or narrow-lanceolate, 3–4 × ca. 0.5 mm; apex linear, 1–1.4 mm. Fruit broad-ovoid, ca. 1.8 × 2.1 mm, base cordate; vittae 3 in each furrow. Fl. Aug–Sep, fr. Oct.

- Forests, grasslands; 2000–3800 m. SW Sichuan, NW Yunnan.

