

20. TONGOLOA H. Wolff, Notizbl. Bot. Gart. Berlin-Dahlem. 9: 279. 1925.

东俄芹属 dong e qin shu

Pan Zehui (潘泽惠); Mark F. Watson

Herbs perennial, essentially glabrous, often scabrous at nodes and base of umbel. Taproot long-conic. Stem slender, thinly ribbed or striate, usually branched, petiole remnants not persistent. Leaves petiolate; petioles sheaths inflated, membranous; blade triangular to broadly lanceolate, 3-ternate/pinnate or 2–3-pinnate; ultimate segments narrow. Umbels terminal or lateral; bracts and bracteoles often absent, sometimes several. Calyx teeth minute. Petals obovate to elliptic-ovate, white, pink or dark purple (often variable within a species), base claw-like, apex obtuse or notched with incurved tips. Stylopodium short-conic or depressed. Fruit broadly ovoid, base cordate or obtuse, apex slightly constricted, slightly laterally compressed, glabrous; ribs 5, filiform; vittae (2–)3 in each furrow, (2–)4 on commissure. Seed face concave. Carpophore divided half its length or more.

About 15 species: high-altitude Sino-Himalayan region, mainly in SW China, extending west to C Nepal; 15 species (13 endemic) in China.

This is a poorly defined genus in need of revision based on new, comprehensive material. Many of the Chinese species are incompletely known with no specimens bearing mature fruit. Specific boundaries are often unclear, and this treatment should be considered provisional. Generic delimitation between *Meeboldia*, *Sinodielsia*, *Tongolooa*, and *Vicatia* continues to be problematic and controversial. Some authors accept the genus *Sinodielsia* to contain five species (*S. bipinnata*, *S. digitata*, *S. microloba*, *S. thibetica*, and *S. yunnanensis*), whereas others include *S. bipinnata* and *S. thibetica* in *Vicatia* and the remainder in *Meeboldia*. The latter classification is adopted for the *Flora of China* pending detailed revision including all Chinese taxa in these genera.

Tongolooa souliei (H. de Boissieu) H. Wolff (Pflanzenr. 90(IV. 228): 319. 1927; *Pimpinella souliei* H. de Boissieu, Bull. Herb. Boissier, sér. 2, 2:810. 1902) was described from W Sichuan ("Tongolo," *J. A. Soulié s.n.*, holotype, P). It is not treated in this account as it is imperfectly known.

- 1a. Bracts and bracteoles usually both present, (2–)3–6, linear.
 - 2a. Basal leaves 1–2-ternate or 2–3-ternate/pinnate; ultimate segments ovate to lanceolate-ovate, margin irregularly pinnate or coarsely serrate.
 - 3a. Leaves 1–2-ternate, nerves purplish-red 1. *T. rubronervis*
 - 3b. Leaves 2–3-ternate/pinnate, nerves not purplish-red 2. *T. stewardii*
 - 2b. Basal leaves 2–3-pinnate or 3–4-ternate/pinnate; ultimate segments linear, entire or 1–3-toothed.
 - 4a. Basal leaves 2–3-pinnate; bracts absent.
 - 5a. Rays up to 4 cm, equal; bracteoles entire 3. *T. pauciradiata*
 - 5b. Rays up to 6 cm, unequal; bracteoles apex pinnate 4. *T. napifera*
 - 4b. Basal leaves 3–4-ternate/pinnate; bracts usually present.
 - 6a. Plants ca. 40 cm; rays ca. 8 5. *T. zhongdianensis*
 - 6b. Plants 50–110 cm; rays 8–19 6. *T. loloensis*
- 1b. Bracts and bracteoles both absent (bracts of *T. gracilis*, *T. silaifolia*, and *T. smithii* sometimes developed).
 - 7a. Plants less than 30 cm.
 - 8a. Ultimate segments of leaves 4–6 × 2–3 mm; rays 3–5 cm 7. *T. taeniophylla*
 - 8b. Ultimate segments of leaves 1–4 × 0.5–1.5 mm; rays 1.5–3 cm.
 - 9a. Plants to 15 cm; ultimate segments of leaves 3–4 × 0.5–1.5 mm 8. *T. rockii*
 - 9b. Plants 15–30 cm; ultimate segments of leaves 1–2 × 1–1.2 mm 9. *T. filicaudicis*
 - 7b. Plants more than 30 cm.
 - 10a. Ultimate segments of leaves less than 5 mm.
 - 11a. Rays thick, 4–9 cm 10. *T. tenuifolia*
 - 11b. Rays slender, ca. 4 cm 11. *T. smithii*
 - 10b. Ultimate segments of leaves mainly more than 7 mm.
 - 12a. Leaves 3–4-ternate/pinnate or 3–4-pinnate; ultimate segments 0.5–1 mm wide 12. *T. elata*
 - 12b. Leaves 2–3-pinnate; ultimate segments (0.8–)1–3 mm wide.
 - 13a. Ultimate segments of leaves 2–4.5 cm 13. *T. dunnii*
 - 13b. Ultimate segments of leaves 0.3–1.5 cm.
 - 14a. Ultimate segments of leaves 5–18 × 1–2 mm; rays 8–22; petals usually purple 14. *T. silaifolia*
 - 14b. Ultimate segments of leaves 3–10 × ca. 1 mm; rays 5–11; petals usually white 15. *T. gracilis*

1. *Tongolooa rubronervis* S. L. Liou, Acta Phytotax. Sin. 27: 69. 1989.

红脉东俄芹 hong mai dong e qin

Plants 30–55 cm. Stem branched above. Basal petioles 8–

14 cm, slender, sheaths broadly inflated; blade broadly triangular in outline, 3–5.5 × 4–6 cm, 1–2-ternate; lower pinnae short-petiolate, subtriangular or broadly ovate, 3-lobed; ultimate segments lanceolate-ovate, margin irregularly pinnate or coarse-serrate, nerves purplish-red. Umbels ca. 7 cm across;

peduncles 14–32 cm; bracts absent or 1–2, linear, 4–10 mm, purplish-red; rays 12–18, 1.5–4 cm, unequal; bracteoles 3–5, linear; umbellules 13–21-flowered; pedicels unequal. Calyx teeth minute, triangular-ovate. Petals obovate, white. Young fruit ovoid (mature fruit not known). Fl. Oct.

- Coniferous forests; ca. 3700 m. SW Sichuan (Muli).

This poorly known species is recorded only from the type gathering.

2. *Tongoloa stewardii* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 185. 1929.

牯岭东俄芹 gu ling dong e qin

Physospermopsis wolffiana Fedde ex H. Wolff; *Pimpinella stewardii* (H. Wolff) M. Hiroe; *Pleurospermum cavaleri* M. Hiroe.

Plants 30–100 cm. Stem hollow, branched. Basal leaves petiolate; petioles 10–38 cm, sheaths narrow-oblong; blade broadly triangular, 2–3-ternate/pinnate; basal pinnae long-petiolulate, 4–5 pairs; ultimate segments ovate to ovate-lanceolate, 1.5–2 × 0.5–1 cm, margin pinnatisect, nerves prominent on both sides. Leaves reduced upwards, Umbels 3–10 cm across; peduncles 5–15 cm; bracts 1–3, linear; rays 11–15, 3–7 cm; bracteoles 3–6, linear, shorter than pedicels; umbellules 9–20-flowered; pedicels unequal. Calyx teeth small, rounded or ovate, 0.2–0.5 mm. Petals orbicular or obovate, white, 1.5–2 × 1–1.8 mm, apex obtuse-rounded. Anthers dark purple. Fruit ovoid-globose, base cordate, 2.5–3 × 2–3 mm. Fl. and fr. Jun–Nov. *n* = 11*.

- Damp grasslands in valleys; 800–3000 m. Jiangxi, NW Yunnan.

3. *Tongoloa pauciradiata* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 128. 1929.

少辐东俄芹 shao fu dong e qin

Plants 10–20 cm. Stem simple or branched above. Lower leaves few; petioles slender, nearly as long as blades; blades narrowly triangular, 2-pinnate; pinnae 5–6 pairs, petiolulate, terminal pinnae sessile; ultimate segments cuneate-obovate or rounded, 3–8 × 2–5 mm, apex 3-lobed. Umbels ca. 6 cm across, terminal with long peduncles; bracts absent; rays 3–8, to 4 cm, equal, spreading; bracteoles numerous, linear, longer than pedicels; umbellules 20–25-flowered. Young fruit oblong-ovate, truncate at base (mature fruit not known). Fl. Aug.

- Lakeshores with open sandy soils; 3200–4000 m. Qinghai, Xizang.

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

4. *Tongoloa napifera* (H. Wolff) C. Norman, J. Bot. 76: 232. 1938.

裂苞东俄芹 lie bao dong e qin

Trachydium napiferum H. Wolff, Acta Horti Gothob. 2: 300. 1926.

Plants 20–30 cm. Root short-napiform. Stem stout, ribbed and branched. Basal leaves few; petioles slender, sheaths small;

blades broad-triangular, ca. 15 × 8–10 cm, 3-pinnate; pinnae 7-paired, basal pinnae short petiolulate, broad-obovate, 0.5–1 cm, base cuneate, margin pinnate; ultimate segments 2–4 × ca. 1.5 mm. Primary umbels ca. 12 cm across; peduncles ca. 5 cm; bracts absent; rays unequal, up to 6 cm; bracteoles 3–5, linear, apex pinnate, similar to leaves; umbellules 15–20-flowered; pedicels unequal, plane-winged, up to 5 mm. Calyx teeth conspicuous, ovate-triangular. Petals broad-obovate, apex obtuse. Young fruit cordate, ca. 1.5 × 2 mm (mature fruit not known). Fl. Aug.

- About 4000 m. NW Sichuan.

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

5. *Tongoloa zhongdianensis* S. L. Liou, Acta Phytotax. Sin. 27: 68. 1989.

中甸东俄芹 zhong dian dong e qin

Plants ca. 40 cm. Stem purplish. Basal petioles 7–9 cm, sheaths narrow-ovate; blade triangular in outline, 7–7.5 × 8–9 cm, 3–4-pinnate; ultimate segments linear, 2–4 × 1–1.5 mm. Umbels ca. 7–8.5 cm across, peduncles 4.5–12 cm; bracteoles 4–5, linear-lanceolate, 4–5 mm, scarious-margined, purplish-red; rays ca. 8, 2.5–4.5 cm, unequal; bracteoles 4–5, linear-lanceolate; umbellules many-flowered, pedicels short. Calyx teeth minute, triangular. Petals white or purplish-white, obovate, base narrow, apex with incurved tips. Young fruit ovate, ca. 1.7 × 2.2 mm; ribs filiform (mature fruit unknown). Fl. Sep.

- Coniferous forests; ca. 2800 m. NW Yunnan (Zhongdian).

This incompletely known species is recorded only from the type gathering. It is possibly conspecific with *Tongoloa loloensis*.

6. *Tongoloa loloensis* (Franchet) H. Wolff in Engler, Pflanzenr. 90(IV. 228): 318. 1927.

云南东俄芹 yun nan dong e qin

Carum loloense Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 125. 1894; *Pimpinella loloensis* de Boissieu; *Trachydium loloense* (Franchet) M. Hiroe.

Plants 30–90(–110) cm. Taproot short, woody. Stem sparingly branched above. Basal and lower petioles 12–22 cm, sheaths small; blade triangular, 3–4-ternate/pinnate, proximal pinnae petiolulate; ultimate segments linear, 2–7 × 0.5–1 mm, entire or 1–3-toothed. Leaves reduced upwards, sheath prominent, larger than blade in uppermost leaves. Umbels 3–6 cm across; peduncles 4–11 cm; bracts absent or 1–2, linear; rays 8–19, 2–5 cm; bracteoles 3–10, linear, as long as pedicels; umbellules 12–21-flowered; pedicels unequal. Calyx teeth minute, ovate, ca. 0.4 mm. Petals ovate to obovate, white, sometimes flushed purple, 1.2–1.5 × 1–1.3 mm, apex obtuse-rounded. Stylopodium dark purple, margin wavy. Fruit ovoid to broadly ovoid, ca. 2.4 × 1.8 mm, ribs filiform to inconspicuous, base caudate, often asymmetric. Fl. Jul–Sep, fr. Aug–Oct.

Grassy slopes; 2500–3600 m. W Sichuan, Xizang, NW Yunnan [Bhutan, Nepal, Sikkim].

7. *Tongoloa taeniophylla* (H. de Boissieu) H. Wolff, Notizbl. Bot. Gart. Berlin-Dahlem. 9: 280. 1925.

条叶东俄芹 *tiao ye dong e qin*

Pimpinella taeniophylla H. de Boissieu, Bull. Soc. Bot. France 53: 429. 1906.

Plants 18–25 cm. Taproot short. Stem dark purple, little-branched. Basal petioles 4–5 cm, slender, sheaths oblong; blade triangular, 2.5–4 × 2–3.5 cm, 2–3-ternate/pinnate; pinnae 5–7 pairs; ultimate segments long-ovate to obovate-lanceolate, 4–6 × 2–3 mm, base cuneate, irregularly serrate distally. Umbels 5–8 cm across; peduncles 3–7 cm; bracts and bracteoles usually absent; rays 6–10, 3–5 cm, unequal, slender; pedicels unequal. Calyx teeth minute, ovate. Petals purple-red, rarely white, long-obovate, 1.2–1.5 × ca. 1 mm. Anthers dark purple. Young fruit broadly ovoid, ca. 2 × 1.5 mm (mature fruit not known). Fl. Aug–Sep, fr. Oct.

- Grassy slopes; 3200–4200 m. Qinghai, Sichuan, Yunnan.

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

8. *Tongoloa rockii* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 127. 1929.

滇西东俄芹 *dian xi dong e qin*

Plants slender, 8–15 cm. Root brown, thick. Stem usually solitary, or 1–2-branched. Basal petioles slender, sheaths broad, 5–6 mm across; blade broadly triangular in outline, 2.5–6 × 2.5–5 cm, 4-pinnate/pinnatifid; pinnae (3–)5–7 pairs, petiolulate; ultimate segments lanceolate, 3–4 × 0.5–1.5 mm. Stem leaves reduced upwards. Umbels 2–4 cm across; bracts and bracteoles absent; rays 6–8, 1.5–3 cm, subequal; umbellules 10–15-flowered; pedicels slender, up to 5 mm, subequal. Calyx teeth minute, broad-ovate. Petals long-obovate, white or tinged purplish-red, ca. 2.5 mm, base claw-like, apex obtuse. Anthers purplish-red. Ovary broad-ovate. Stylopodium depressed. Fruit oblong-ellipsoid, ca. 2 × 1.5 mm; ribs filiform. Fl. Jul–Aug, fr. Aug–Oct.

- Riversides; 3800–4700 m. NW Yunnan (Zhongdian).

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

9. *Tongoloa filicaudicis* K. T. Fu, Fl. Tsinling. 1(3): 456. 1981.

细颈东俄芹 *xi jing dong e qin*

Plants 15–30 cm. Root brown, fusiform or napiform, 1–2 × 0.4–0.5 cm. Stem branched above. Lower petioles long; blades triangular, 3–4.5 cm, 3-ternate/pinnate; pinnae short petiolulate; ultimate segments obovate or oblanceolate, 1–2 × 1–1.2 mm, sometimes 2–3-lobed, apex acute. Umbels ca. 5 cm across; peduncles 5–7 cm; bracts and bracteoles absent; rays 7–9, 1.8–2.7 cm; umbellules 9–10-flowered, ca. 1 cm across; pedicels 2–5 mm. Calyx teeth obsolete. Petals obovate, white, base clawed, apex rounded, slightly radiant, up to 1.5 mm. Mature fruit not known. Fl. Jul–Aug.

- Open slopes; 2800–3800 m. S Gansu (Qin Ling).

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

10. *Tongoloa tenuifolia* H. Wolff, Repert. Spec. Nov. Regni Veg.

27: 128. 1929.

细叶东俄芹 *xi ye dong e qin*

Plants ca. 50 cm. Stem little-branched. Basal leaves few; petiole sheaths oblong; blade broadly triangular or rhombic-triangular, 3–4-pinnate; primary and secondary pinnae petiolulate; ultimate segments linear, 3–5 × 0.5–1 mm. Umbels to 15 cm across; peduncles 8–25 cm; bracts and bracteoles absent; rays thick, 6–11, 4–9 cm, spreading-ascending; umbellules many-flowered, ca. 1.5 cm across; pedicels slender. Calyx teeth minute, ovate. Petals obovate, white, rarely pinkish, apex obtuse-acute. Anthers yellow or tinged with purplish. Young fruit broad-ovoid, 2–2.5 × ca. 2 mm (mature fruit unknown). Fl. Aug.

- Damp slopes, marshy areas; 3500–4300 m. Sichuan, Xizang, Yunnan.

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

11. *Tongoloa smithii* H. Wolff, Acta Horti Gothob. 2: 290. 1926.

短鞘东俄芹 *duan qiao dong e qin*

Plants 50–60 cm, purplish green. Stem flexuose-erect, branched from base. Basal petioles slender with short sheaths; blades broadly triangular, 4-ternate/pinnate; pinnae 5–7 pairs, remote, up to 2 cm, petiolule short; ultimate segments oblong-linear or linear, 4–7 × ca. 1 mm, ternately lobed, margin incrassate and mucronulate. Terminal umbels up to 6 cm across, peduncles long; bracts absent; rays 10, up to 4 cm, subequal; bracteoles absent or few, linear, almost as long as pedicels; umbellules ca. 20-flowered; pedicels ca. 5 mm, subequal. Petals broad-ovate, base long-clawed. Young fruit ovate, ca. 1.5 mm, base truncate (mature fruit unknown). Fl. Jul–Aug.

- Moorlands; ca. 4000 m. NW Sichuan.

This poorly known species is recorded only from the type gathering (*H. Smith 4270*, GB).

12. *Tongoloa elata* H. Wolff, Acta Horti Gothob. 2: 291. 1926.

大东俄芹 *da dong e qin*

Pimpinella elata (H. Wolff) M. Hiroe; *Tongoloa cnidifolia* K. T. Fu.

Plants 20–75 cm. Root conic. Stem purplish, little-branched. Lower petioles 5–12 cm, sheaths ovate, inflated; blade broadly triangular, 4–10 × 3–8 cm, 3–4-ternate/pinnate; primary and secondary pinnae petiolulate; ultimate segments linear (3–)5–15 × 0.5–1 mm. Umbels 4–9 cm across; peduncles 5–12 cm; bracts and bracteoles absent; rays 6–16, unequal, 2–4(–5) cm; umbellule many-flowered; pedicels 3–5 mm. Calyx teeth minute, triangular. Petals obovate to long-obovate, white, sometimes pink, 1.8–2 × 1.2–1.8 mm, apex obtuse-rounded. Fruit broadly ovoid, 2–4 × 1.5–2 mm, base cordate; ribs slender. Fl. Jul–Sep, fr. Sep–Oct. *n* = 11*.

- Grasslands, riversides, ditches; 2300–4300 m. Gansu, Qinghai, Sichuan.

13. *Tongoloa dunnii* (H. de Boissieu) H. Wolff in Engler, Pflanzenr. 90(IV. 228): 317. 1927.

宜昌东俄芹 yi chang dong e qin

Pimpinella dunnii H. de Boissieu, Bull. Herb. Boissier, sér. 2, 3: 841. 1903 [“*dunni*”]; *Peucedanum giraldii* Diels.

Plants 50–70 cm. Taproot brown, short. Stem several-branched. Lower petioles 7–18 cm, sheaths oblong, 1.3–3 cm, membranous and clasping; blade broadly triangular, 2–3-pinnate; pinnae 4–5 pairs, short-petiolate; ultimate segments elongate-linear, 2–4.5 cm × 1.5–3 mm, entire. Umbels 5–10 cm across; bracts and bracteoles absent; rays 7–17, 3–6 cm; umbellules 10–25-flowered. Calyx teeth minute, ovate or triangular-ovate. Petals long-elliptic to obovate, white or greenish, 1.2–2 × ca. 1 mm, apex obtuse-acute. Young fruit broad-ovoid to cordate, ca. 1.5 mm (mature fruit unknown). Fl. Jun.

• Forests; 2000–4000 m. Hubei, Sichuan, SE Xizang.

This distinctive but poorly known species is recorded only from a few collections. It has reputed medicinal value (in Xizang).

14. *Tongoloa silaifolia* (H. de Boissieu) H. Wolff, Notizbl. Bot. Gart. Berlin-Dahlem. 9: 280. 1925.

城口东俄芹 cheng kou dong e qin

Pimpinella silaifolia H. de Boissieu, Bull. Herb. Boissier, sér. 2, 2: 809. 1902; *Pimpinella fortunatii* H. de Boissieu; *P. peucedanifolia* H. de Boissieu; *Tongoloa fortunatii* (H. de Boissieu) Pimenov & Kljuykov; *T. peucedanifolia* (H. de Boissieu) H. Wolff.

Plants 28–60 cm. Root brown, conic. Stem purplish, branched. Basal and lower petioles 6–12 cm, sheaths oblong-inflated; blade broadly ovate, (3–)5–8 × (2–)4–6 cm, 2–3-ternate/pinnate; pinnae short petiolulate; ultimate segments linear, 5–18 × 1–2 mm, apex acute. Primary umbels 3–12 cm across; bracts absent; rays 8–22, 3–6 cm, subequal; bracteoles usually absent or 1–5, linear, shorter to longer than the flowers; umbellules 10–25-flowered, ca. 1 cm across; pedicels unequal. Calyx teeth minute, ovate or semi-orbicular. Petals long-obovate, purplish-red sometimes white, 1–1.2 × ca. 0.8 mm. Anthers purplish-red, sometimes white. Stylopodium dark purple, short-conic. Fruit broadly ovoid, ca. 1.8–2.2 × 1.2–1.5 mm; ribs filiform. Fl. Jul–Sep, Fr. Sep–Oct. *n* = 8*.

• Damp grasslands; 2200–4000 m. Chongqing, Qinghai, Shaanxi, Sichuan, Yunnan.

Some authors consider this taxon to be conspecific with *Tongoloa stewardii*. It has reputed medicinal value (in Shaanxi).

15. *Tongoloa gracilis* H. Wolff, Notizbl. Bot. Gart. Berlin-Dahlem 9: 179. 1925.

纤细东俄芹 xian xi dong e qin

Pimpinella tilia M. Hiroe.

Plants 25–75 cm. Taproot slender. Stem purplish, branched. Lower leaves long-petiolate, petioles slender, sheaths narrow-oblong; blade broadly ovate, 3–10 × 2–6 cm, 3-pinnate; lower pinnae short petiolulate; ultimate segments linear-lanceolate, 3–8(–10) × ca. 1 mm, pinnatifid. Umbels 3.5–10 cm across; peduncles 3–12 cm; bracts and bracteoles absent; rays 5–11, 2.5–6 cm; umbellules many-flowered. Calyx teeth minute, ovate-triangular or semi-orbicular. Petals obovate, white or pinkish, notched with incurved tips. Fruit oblong-ellipsoid, ca. 2 × 1.3 mm; ribs filiform. Fl. Aug–Sep, fr. Sep–Oct.

Forest margins, meadows; 2300–4500 m. Gansu, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [?Bhutan, NE India].

