

1. TRIOSTEUM Linnaeus, Sp. Pl. 1: 176. 1753.

莛子蕪屬 ting zi biao shu

Triosteospermum Miller.

Herbs, perennial, with underground rhizomes. Stem erect, with white pith becoming hollow. Leaves simple, opposite, obovate, entire, undulate to deeply pinnatifid. Inflorescence of sessile 6-flowered whorls; bracts and bracteoles lanceolate, shorter than flowers. Calyx 5-lobed, persistent. Corolla yellow-green, yellow, or purple; lobes 5, imbricate, bilabiate, upper lip 4-lobed, lower lip entire and recurved at anthesis. Nectary of compact glandular hairs, forming a bulge at base of corolla tube. Stamens 5, inserted in corolla tube; anthers introrse. Ovary 3–5-locular; ovule 1 per locule sometimes aborted, pendulous; style filiform; stigmas discoid, 3–5-lobed. Fruit a drupe, subglobose to pyriform, ± fleshy; pyrenes 2–4, black, with a thick stony endocarp, sometimes ribbed; endosperm fleshy, embryo small.

About six species: C and E Asia, North America; three species in China.

- 1a. Inflorescence in axils of leaves, terminal axis vegetative; sepals well developed to 10 mm; drupes green, pyrenes ribbed 3. *T. sinuatum*
- 1b. Inflorescence terminal, axillary buds vegetative; sepals minute to 1 mm; drupes white to red, pyrenes not ribbed.
 - 2a. Leaves broadly perfoliate, usually entire 1. *T. himalayanum*
 - 2b. Leaves not perfoliate, usually pinnatifid 2. *T. pinnatifidum*

1. *Triosteum himalayanum* Wallich in Roxburgh, Fl. Ind. 2: 180. 1824 [*“himalayanum”*].

穿心莛子蕪 chuan xin ting zi biao

Echium connatum H. Léveillé; *Triosteum erythrocarpum* Harry Smith; *T. fargesii* Franchet; *T. himalayanum* var. *chinense* Diels & Graebner.

Herbs, perennial, 40–60 cm tall, branched below terminal inflorescence after anthesis, densely hirsute, glandular hairy, faintly aromatic. Leaves obovate-elliptic to obovate-oblong, ca. 11 × 7 cm, abaxially long hirsute on veins, interspersed with glandular hairs, adaxially densely long hirsute, lower part narrowed to a broadly perfoliate base, margin entire or occasionally lobed, apex acute to acuminate. Inflorescence of 2–5 whorls, at apex of stem. Sepals to 1 mm. Corolla lobes purple-brown with paler flecks; tube yellow-green, ca. 1.5 cm, outside glandular hairy; tube curved at base and shallowly spurred, spur pointing downward to below apex of ovary. Drupe ripening from white to red, subglobose, 10–12 mm in diam., hirsute and glandular hairy, crowned with a persistent calyx. Pyrenes 3–5, without ribs. Fl. May–Jul, fr. Jul–Sep.

Mountain slopes, coniferous forests, streamsides, grasslands; 1800–4100 m. ?Henan, Hubei, Hunan, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Nepal].

The names *Triosteum hirsutum* Wallich and *T. hirsutum* Roxburgh have sometimes been applied to this species. Some confusion has arisen from different print versions of Roxburgh, Fl. Ind. 2: 180. 1824. The original descriptions of *T. himalayanum* Wallich and *T. hirsutum* Roxburgh can be found in only one of these print versions. The other print version includes the description of *T. hirsutum* Wallich, which appears to be a printing error. *Triosteum hirsutum* Roxburgh is attributed to a specimen collected in Chittagong, Bangladesh, now the basionym of *Lasianthus hirsutus* in the Rubiaceae (see p. 192).

2. *Triosteum pinnatifidum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 476. 1881.

莛子蕪 ting zi biao

Triosteum intermedium Diels & Graebner; *T. rosthornii* Diels & Graebner.

Herbs, perennial, to 60 cm tall, branched below terminal inflorescence after anthesis, hirsute and glandular hairy. Leaves subsessile; leaf blade ca. 11 × 10 cm, abaxially with domatia along main vein, adaxially sparsely hirsute, more densely so on veins and margin, base cuneate, pinnatifid to occasionally entire toward apex, deeply lobed to more than half width of leaf blade; lobes elliptic, acuminate. Inflorescence of 2 or 3 6-flowered whorls at apex of stem. Sepals ca. 2 mm. Corolla yellow-green, ca. 1 cm; lobes purple-brown with paler flecks; tube curved at base, glandular hairy. Drupe white, subglobose, ca. 12 mm, hirsute and glandular hairy, crowned with a persistent calyx. Pyrenes 3–5, without ribs. Fl. May–Jun, fr. Jul–Sep. 2n = ca. 18*, 36.

Coniferous forests, sunny places on streamsides; 1800–2900 m. Gansu, Hebei, Henan, Hubei, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan [Japan].

3. *Triosteum sinuatum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 15: 373. 1871.

腋花莛子蕪 ye hua ting zi biao

Herbs, perennial, to 90 cm tall, unbranched, densely hirsute and glandular hairy. Leaf blade orbicular-ovate or oblong, ca. 14 × 7 cm, lower third abruptly narrowed, sparsely to densely hirsute, ciliate and glandular on veins and margin, base amplexicaul to perfoliate, margin entire to sinuous or shallowly lobed, apex acuminate. Inflorescence of 2 or 3 6-flowered whorls, at apex of stem. Sepals lanceolate, 6–10 mm, subequaling ovary, outside densely glandular hairy. Corolla ca. 1 cm; lobes purple-brown with paler flecks; tube yellow-green with a shallow spur at base; spur pointing outward, not reaching apex of ovary. Stamens: 2 longer, other 3 subequal in length; anthers narrowly elliptic. Style filiform; stigmas exerted. Drupe sessile, greenish, dry, pyriform with persistent calyx, 1–1.5 cm in diam., densely glandular hairy. Pyrenes 3, with 5 or 6 promi-

nent ribs. Fl. Jun, fr. Sep–Oct. $2n = 18$.

Forests, streamsides; 800–900 m. Jilin, Liaoning, Xinjiang [Japan, Russia (Primorsky Krai)].

