

27. **NOTOPTERYGIUM** H. de Boissieu, Bull. Herb. Boissier, sér. 2, 3: 838. 1903.

羌活属 qiang huo shu

She Menglan (佘孟兰 Sheh Meng-lan); Mark F. Watson

Herbs perennial. Root woody; caudex usually stout-tuberous, aromatic. Stem hollow, terete, erect, often purplish, especially at base. Leaves 2–3-ternate-pinnate or pinnatisect; petiolate, sheaths membranous, clasping; ultimate segments oblong or oblong-ovate. Umbels loose compound, terminal and lateral; bracts few, deciduous; bracteoles few to many, linear or pinnatifid. Calyx teeth minute, ovate-triangular, deciduous in fruit. Petals pale yellow to whitish, ovate or ovate-orbicular. Stylopodium conic or low-conic; styles short, reflexed. Fruit oblong-ellipsoid or subglobose, slightly flattened dorsally; ribs 5, all broadly winged, sometimes somewhat unequally; commissure constricted; vittae 3–4 in each furrow, 4–6 on commissure. Seed face concave. Carpophore 2-cleft.

• Six species.

- 1a. Caudex developed, elongate or tuberous, with clusters of rootlets, strongly aromatic; rays (7–)12–25(–40), (2–)5–12 cm.
 - 2a. Bracteoles pinnatifid 6. *N. pinnatiinvolucellum*
 - 2b. Bracteoles linear or linear-lanceolate, entire.
 - 3a. Ultimate leaf segments oblong, margin pinnatifid or variously lacinate-dentate 1. *N. incisum*
 - 3b. Ultimate leaf segments ovate to oblong-ovate, margin entire or coarsely toothed 2. *N. franchetii*
- 1b. Caudex not thickened, taproot unbranched or with slender branches, slightly aromatic; rays 5–12, 1–5 cm.
 - 4a. Leaves 3–4-pinnate/pinnatifid 5. *N. tenuifolium*
 - 4b. Leaves 2-ternate/ternatifid.
 - 5a. Ultimate leaf segments ovate-lanceolate, 2.5–8 cm; bracteoles linear, shorter than flowers 3. *N. forrestii*
 - 5b. Ultimate leaf segments ovate, 1.5–3.5 cm; bracteoles filiform, longer than flowers 4. *N. oviforme*

1. *Notopterygium incisum* C. C. Ting ex H. T. Chang, Acta Phytotax. Sin. 13(3): 86. 1975.

羌活 qiang huo

Plants 60–120 cm. Root deep brown, with clusters of rootlets; caudex elongate, often node-scarred, strongly aromatic. Leaves ternate-3-pinnate; petiole 5–12 cm; ultimate segments oblong or oblong-ovate, 2–5 × 0.5–2 cm, margins pinnatifid or lacinate-dentate, puberulous on veins and margins. Leaves reduced upwards, petioles becoming wholly sheathing. Umbels 3–13 cm across, lateral umbels frequently sterile; bracts 3–6, linear, 1.5–3 cm, deciduous; rays 7–20(–40), 2–10 cm; bracteoles 6–10, linear, 3–13 × ca. 0.5 mm, shorter or longer than flowers; umbellules many-flowered, crowded; pedicels 5–10 mm. Calyx teeth ovate-triangular, 0.3–5 mm. Petals white or greenish-white, ovate to oblong-ovate, ca. 1.5 × 1 mm, apex obtuse, inflexed. Fruit oblong-ellipsoid, 5–6 × 2.5–3.5 mm, all ribs winged, wings equal or unequal; vittae 3 in each furrow, 6 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

• Forest margins, scrub; 1600–5000 m. Gansu, Qinghai, Shaanxi, Sichuan, Xizang.

The rootstock and root are used in the important traditional medicine “qiang huo” (see also *Notopterygium franchetii*).

2. *Notopterygium franchetii* H. de Boissieu, Bull. Herb. Boissier, sér. 2, 3: 839. 1903.

宽叶羌活 kuan ye qiang huo

Angelica rubrivaginata H. Wolff; *Drymoscias forbesii* (H. de Boissieu) Koso-Poljansky; *D. franchetii* (H. de Boissieu) Koso-Poljansky; *Notopterygium forbesii* H. de Boissieu.

Plants 80–180 cm. Root stout, with clusters of rootlets;

caudex tuberous, strongly aromatic. Leaves ternate-2–3-pinnate; petiole 3–8 cm; blade to 25 × 35 cm; pinnae 2–3 pairs, proximal pinnae long-petiolate; ultimate segments oblong-ovate, 3–8 × 1–3 cm, base obtuse or cuneate, puberulous on veins and margins. Leaves reduced upwards to 3 leaflets, sheaths broadly ovate. Umbels 5–14 cm across; peduncles 5–25 cm; bracts 1–3, linear-lanceolate, 0.5–1.5 cm; rays 10–17(–23), 3–12 cm; bracteoles 4–5, linear, 3–4 mm, very short; umbellules many-flowered; pedicels 0.5–1 cm. Calyx teeth ovate-triangular, ca. 0.5 mm. Petals pale yellow or yellowish-green, obovate, apex inflexed. Fruit oblong-ellipsoid, ca. 5 × 4 mm; vittae 3–4 in each furrow, 4 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

• Forest margins, scrub; 1700–4800 m. Gansu, Hubei, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Yunnan.

The rootstock and root are used in some districts instead of *Notopterygium incisum* for the important traditional medicine “qiang huo.”

3. *Notopterygium forrestii* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 325. 1930.

澜沧羌活 lan cang qiang huo

Plants 50–100 cm. Taproot slightly aromatic. Stem little-branched above. Lower leaves 2-ternately dissected; petioles 4–6 cm; blade broadly triangular, 8–15 × 8–15 cm; ultimate segments ovate-lanceolate to oblong-lanceolate, 2.5–8 × 1–3 cm, puberulous along veins, margins glabrous, abaxially glaucous, base cuneate or truncate, sometimes oblique, margins irregular or sharply serrate. Leaves reduced upwards becoming 2–3-lobed; segments linear. Umbels 4–10 cm across; bracts absent, or 1, linear, 0.5–1.5 cm; rays 5–9, 1–3.5 cm, unequal, spreading; bracteoles 2–4, linear, shorter than flowers; umbellules 9–14-flowered, open; pedicels 4–8 mm, unequal. Calyx teeth ovate-

lanceolate, 0.3–0.6 mm. Fruit subglobose, ca. 3–3.5 × 2.5–3 mm; all ribs broadly winged; vittae 2(–3) in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Sep–Oct.

• Forest margins, mountain slopes, gravelly river banks; 2000–3000 m. SW Sichuan (Muli), NW Yunnan.

4. *Notopterygium oviforme* R. H. Shan, *Sinensia* 14: 112. 1943.

卵叶羌活 luan ye qiang huo

Notopterygium forbesii H. de Boissieu var. *oviforme* (R. H. Shan) H. T. Chang.

Plants to 40–60 cm. Rootstock slightly aromatic. Basal leaves few, petioles ca. equal to blades; blade broadly ovate, 2-ternately dissected, 5–9 × 3–5 cm; ultimate segments ovate or elliptic, 1.5–3.5 × 0.6–3 cm, central segments obovate, base cuneate, lateral segments ovate or elliptic, base truncate, margins serrulate, apex obtuse. Stem leaves usually single, petiole wholly sheathing; blade divisions linear. Umbels 3–5 cm across; bracts 2–3, linear, 2–5 mm, or absent; rays 5–9, 1–4.5 cm, very unequal; bracteoles 2–4, ca. 3 × 0.2 mm, filiform, longer than or equaling flowers, 5–8 × ca. 0.5 mm in fruit; umbellules 6–12-flowered; pedicels short, 2–3 mm, unequal. Fruit globose, 4–5 × 2–3 mm; all ribs broadly winged, wings subequal; vittae 2–3 in each furrow, 4–6 on commissure. Fl. Jul–Aug, fr. Sep–Oct.

• Forest margins, mountain slopes; 1800–2700 m. Chongqing (Nanchuan), S Shaanxi (Shanyang, Taibai Shan, Zhenba), SC Sichuan (Emei Shan).

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

5. *Notopterygium tenuifolium* M. L. Sheh & F. T. Pu, *Acta Phytotax. Sin.* 38: 435. 2000.

细叶羌活 xi ye qiang huo

Plants 40–70 cm, glabrous throughout. Root long-conic, chocolate-brown, slightly aromatic; caudex ca. 1 cm, clothed with few remnant sheaths. Basal leaves several, petioles 16–19 cm, sheaths narrowly lanceolate; blade broad-ovate, 13–16 × 8–12 cm, 3–4-pinnate/pinnatifid; pinnae 6–8 pairs, pinnules 4–5 pairs; ultimate segments obovate to linear, 2–5 × 1.5–4 mm, 2–3-parted or entire, margin narrowly reflexed, apex apiculate, usually gray-green, thick, papery. Stem leaves 1–2, reduced and less divided, petioles wholly sheathing, sheaths oval-lanceolate.

Umbels 5–6 cm across; bracts 1–4, linear-lanceolate, 3–7 × 0.5–1 mm, unequal, apex caudate; rays 8–12, 2–5 cm, unequal; bracteoles 6–8, linear-lanceolate, ca. 3 × 1 mm, apex caudate; umbellules 6–15-flowered; pedicels 0.5–1 mm, ca. 2 mm in fruit. Fruit ellipsoid-oblong, ca. 4 × 2.5 mm; ribs all broadly winged; vittae 2 in each furrow, 5–6 on commissure. Fl. Jul–Aug, fr. Sep.

• High-altitude alpine meadows in valleys; ca. 4300 m. W Sichuan (Litang, Yajiang).

6. *Notopterygium pinnatiinvolutellum* F. T. Pu & Y. P. Wang, *J. Sichuan Univ., Nat. Sci. Ed.* 31: 386. 1994.

羽苞羌活 yu bao qiang huo

Plants 1–1.5 m high. Rootstock stout, elongate, strongly aromatic. Stem finely striped, glabrous, little-branched above. Basal leaves petiolate, petioles 1–2 cm, sheaths oblong, large, 2–5 cm across; blade ternate-3-pinnate/pinnatifid; ultimate segments lanceolate, 3–7 × 0.5–1 cm, margins incised dentate or pinnatisect. Leaves reduced upwards, less divided, petioles becoming wholly sheathing. Umbels 6–9 cm across, lateral umbels usually sterile; bracts few, linear, caducous; rays 14–24, 7–10 cm; bracteoles 7–12, oblanceolate, 15–25 cm, much longer than the umbellules in fruit, pinnate, rarely entire; pedicels ca. 0.3 mm. Fruit oblong-ovoid, 4–5 × 3–4 mm; ribs broadly winged, sometimes wings unequal; vittae 1–3 in each furrow, 2–4 on commissure. Fl. & Fr. Jul–Nov.

• Among shrubs in grassland at coniferous forest margins; ca. 3400 m. W Sichuan (Xiaojin).

Flora of China 14: 53–55. 2005.