

45. PHAEONYCHIUM O. E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 9: 1092. 1927.

藏芥属 zang jie shu

Parryopsis Botschantzev; *Wakilia* Gilli; *Vvedenskyella* Botschantzev.

Herbs perennial, with well-developed caudex. Trichomes dendritic, forked, submalpighiaceae, or almost exclusively simple. Stems erect or ascending, simple or branched. Basal leaves petiolate, rosulate, simple, entire, coarsely dentate, or lyrate, with persistent petioles. Cauline leaves absent, if present sessile or shortly petiolate, entire. Racemes few to many flowered, ebracteate or rarely lowermost flowers bracteate, elongated in fruit. Fruiting pedicels slender, suberect or divaricate. Sepals ovate or oblong, persistent or caducous, base of lateral pair not saccate. Petals pink or violet, rarely white with purplish claws, obovate, apex obtuse or emarginate; claw subequaling sepals. Stamens 6, tetradynamous; filaments dilated at base; anthers ovate or oblong, obtuse at apex. Nectar glands confluent and subtending bases of all stamens; median glands present; lateral glands often annular. Ovules 10–18 per ovary. Fruit dehiscent siliques or silicles, linear, oblong, ovoid, lanceolate, or ellipsoid, terete or latiseptate, sessile or shortly stipitate; valves with a distinct midvein, smooth or torulose; replum rounded; septum complete, membranous, translucent; style obsolete to 2.5 mm, persistent; stigma capitate, entire or rarely 2-lobed, Seeds uniseriate, wingless, oblong, plump; seed coat reticulate, not mucilaginous when wetted; cotyledons incumbent.

Seven species: Afghanistan, Bhutan, China, Kashmir, Nepal, Tajikistan; six species (three endemic) in China.

1a. Flowering stems leafy; lowermost flowers bracteate.

2a. Leaves lyrate or coarsely dentate; trichomes on stems, pedicels, and fruit submalpighiaceae 3. *P. fengii*

2b. Leaves entire or rarely subapically 1–3-toothed; trichomes on stems, pedicels and fruit simple or dendritic.

3a. Petals white; trichomes branched; petiole of basal leaves 1–5 mm, slender, not persistent; young fruit

linear; anthers 0.5–0.6 mm 2. *P. albiflorum*

3b. Petals lavender or purple; trichomes simple; petiole of basal leaves (7–)10–30(–40) mm, broadly expanded at base, persistent; fruit ovoid or oblong; anthers 1–1.2 mm 5. *P. villosum*

1b. Flowering stems leafless; flowers ebracteate.

4a. Sepals, distal leaf margin, and petiole with subsetose simple trichomes; fruit lanceolate, 2.5–4 mm wide;

sepals soon caducous 6. *P. kashgaricum*

4b. Plants tomentose throughout with dendritic, forked, and simple nonsetose trichomes; fruit linear, to 2 mm

wide; sepals persistent.

5a. Leaves green, with simple and forked, crisped, flattened trichomes, oldest leaves (7–)10–25 mm wide; fruit straight, replum not constricted between seeds 4. *P. jafrii*

5b. Leaves canescent, exclusively with dendritic, slender trichomes, oldest leaves 1–4 mm wide; fruit subcontorted, replum constricted between seeds 1. *P. parryoides*

1. *Phaeonychium parryoides* (Kurz ex J. D. Hooker & T. Anderson) O. E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 9: 1092. 1927.

藏芥 zang jie

Cheiranthus parryoides Kurz ex J. D. Hooker & T. Anderson in J. D. Hooker, Fl. Brit. India 1: 132. 1872. Plants 9–25 cm tall; caudex often stout, woody, few branched, covered with petiolar bases of previous years. Trichomes short-stalked, dendritic. Stems erect, simple from caudex, tomentose. Basal leaves rosulate; petiole (0.5–)0.8–2(–4) cm, basally ciliate, becoming thickened and often subcorky, to 4 mm wide at base; leaf blade narrowly oblanceolate or linear, (0.5–)1–2.5(–4) cm × 1–4 mm, canescent, finely tomentose, base attenuate, margin entire, apex obtuse. Cauline leaves absent. Racemes (15–)20–35-flowered, ebracteate. Fruiting pedicels divaricate-ascending, straight, 0.8–2.5 cm, tomentose. Sepals oblong, 3–3.5 × 1–1.5 mm, tomentose, persistent, margin membranous. Petals lavender or purplish, obovate, 7–9 × 3–4 mm, apex

obtuse; claw 3–4 mm. Filaments purple, median pairs 2.5–4 mm, lateral pair ca. 2 mm; anthers oblong, 0.7–0.9 mm. Immature fruit linear, ca. 2 cm × 2 mm, flattened, sessile, subcontorted, constricted between seeds; valves finely tomentose; style 1–1.5 mm; stigma capitate, entire. Mature seeds not seen. Fl. Jun–Aug.

Dry hillsides; 3300–4200 m. Xizang [Kashmir].

The illustration of *Phaeonychium parryoides* in FRPS is based on a plant of *P. jafrii*, but the trichomes were erroneously drawn.

2. *Phaeonychium albiflorum* (T. Anderson) Jafri, Fl. West Pakistan 55: 162. 1973.

白花藏芥 bai hua zang jie

Cheiranthus albiflorus T. Anderson in J. D. Hooker, Fl. Brit. India 1: 133. 1872; *Christolea albiflora* (T. Anderson) Jafri; *Ermania albiflora* (T. Anderson) O. E. Schulz.

Plants 2–8 cm tall; caudex slender, few branched, usually without leaf remains of previous years. Trichomes short-stalked, dendritic or few forked, appressed. Stems erect, often simple from caudex, pubescent. Basal leaves rosulate; petiole 1–5 mm, not ciliate, slender; leaf blade oblanceolate or narrowly spatulate, 2–10(–17) × 1–4 mm, uniformly tomentose on both surfaces, base attenuate or cuneate, margin entire or distally 1–3-toothed, apex obtuse to subacute. Cauline leaves similar to basal, smaller upward, narrowly oblanceolate or sublinear, middle and upper ones always entire. Racemes 8–15-flowered, basally bracteate. Pedicel slender, suberect or ascending, straight, 2–5 mm in flower, tomentose. Sepals 2–2.7 × 1–1.5 mm, sparsely pubescent, margin broadly membranous. Petals white, fading lavender on claw, broadly spatulate, 6–8 × 3–4 mm, apex rounded; claw 3–4 mm. Filaments white, median pairs 2.7–3.5 mm, lateral pair 1.5–2 mm; anthers oblong, 0.5–0.6 mm. Immature fruit linear, densely tomentose; style ca. 0.5 mm; stigma capitate, entire. Seeds unknown. Xizang [Kashmir].

3. *Phaeonychium fengii* Al-Shehbaz, Novon 10: 335. 2000.
冯氏藏芥 feng shi zang jie

Herbs perennial, 3–9 cm tall, caespitose; caudex stout, woody, few branched, to 8 mm in diam., covered with petiolar remains of previous years. Trichomes submalpighiaceous on stems, pedicels, and fruit, these mixed with simple ones especially on leaves and sepals. Stems erect, simple from caudex. Basal leaves rosulate; petiole 0.5–1.5 cm, ciliate with simple trichomes to 1 mm, becoming papery at base; leaf blade oblong or oblanceolate, 3–15 × 1.5–6 mm, sparsely pilose, base attenuate, margin coarsely dentate and with 3–7 teeth on each side, or lyrate, rarely earliest ones subentire, apex subacute. Upper cauline leaves similar to basal, subsessile. Racemes corymbose, ebracteate or lowermost 1 or 2 flowers bracteate. Young fruiting pedicel divaricate-ascending, straight, 5–10 mm. Sepals oblong, 2.5–3.5 × 1–1.5 mm, sparsely pilose, caducous, margin membranous. Petals rose-pink, obovate, 6–7 × 3.5–4 mm, apex rounded; claw 1.5–2 mm. Filaments slender; median pairs 2.5–3.5 mm; lateral pair 2–2.5 mm; anthers oblong, 0.7–0.8 mm. Ovules 12–16 per ovary. Young fruit terete, pilose; style ca. 1 mm; stigma 2-lobed. Mature seeds unknown.

• Open moist streamside. Yunnan.

4. *Phaeonychium jafrii* Al-Shehbaz, Nordic J. Bot. 20: 160. 2000.

杰氏藏芥 jie shi zang jie

Plants 8–30 cm tall; caudex stout, woody, few to many branched, to 3 cm in diam., covered with petiolar bases of previous years. Trichomes simple mixed with stalked or subsessile ones, crisped, flattened. Stems erect, simple and to 25 from caudex, tomentose. Basal leaves rosulate; petiole 1–5(–7) cm, ciliate with simple

trichomes to 2 mm, becoming thickened and corky, to 6 mm wide at base; leaf blade broadly ovate or oblong, occasionally lanceolate or oblanceolate, 1–5.5(–7) × (0.7–)1–2.5 cm, green, subtomentose, base cuneate or attenuate, margin entire, apex obtuse or acute. Cauline leaves absent. Racemes (8–)12–35-flowered, ebracteate. Fruiting pedicels suberect or ascending, straight, (0.3–)0.6–1.5(–2.5) cm, tomentose. Sepals oblong, 3–4 × 1.5–2 mm, tomentose, persistent, margin membranous. Petals lavender or white flushed basally with purplish, obovate, 6.5–10 × 4–5 mm, apex obtuse; claw 3–4 mm. Filaments purple; median pairs 3–4 mm; lateral pair 2–2.5 mm; anthers oblong, 0.9–1.1 mm. Ovules 5–8 per ovary. Fruit linear, (0.9–)1.5–2.5(–3.5) cm × 1.5–2 mm, slightly flattened, sessile, straight; valves finely tomentose, with a distinct midvein and marginal veins; style 0.3–0.7 mm; stigma capitate, entire. Seeds brown or blackish, oblong, 2–2.5 × 0.9–1.1 mm, slightly flattened, distally margined; funicles often filiform and to 3 mm. Fl. Jul–Sep.

Scrub, cliff ledges, steep rocky hillsides; 4000–4900 m. Xizang [Bhutan, Nepal].

5. *Phaeonychium villosum* (Maximowicz) Al-Shehbaz, Nordic J. Bot. 20: 161. 2000.

柔毛藏芥 rou mao zang jie

Parrya villosa Maximowicz, Fl. Tangut. 55. 1889; *Braya kokonorica* O. E. Schulz; *Christolea villosa* (Maximowicz) Jafri; *C. villosa* var. *platyfilamenta* K. C. Kuan & Z. X. An; *Ermania villosa* (Maximowicz) O. E. Schulz; *Parrya villosa* var. *albiflora* O. E. Schulz; *Parryopsis villosa* (Maximowicz) Botschantzev. Plants (4–)6–14(–18) cm tall; caudex slender, few branched, covered with petiolar remains of previous years. Trichomes simple, often crisped, to 1.5 mm. Stems erect, simple from caudex, villous. Basal leaves rosulate; petiole (0.7–)1–3(–4) cm, ciliate, persistent, becoming papery, strongly expanded and to 7 mm wide at base; leaf blade narrowly oblanceolate or oblong-linear, (0.8–)1.5–2.8(–3.5) cm × (1.5–)2.5–6(–8) mm, villous, base attenuate, margin entire, apex obtuse. Cauline leaves shortly petiolate; leaf blade often oblong or elliptic-lanceolate, about as large as that of basal leaves. Racemes 10–25-flowered, basally bracteate; flowers fragrant. Fruiting pedicels divaricate, straight or slightly curved, (0.5–)0.7–1.5(–2) cm, villous. Sepals oblong or ovate, 3–5 × 1.5–2 mm, sparsely villous, persistent, margin membranous. Petals lavender or purple, broadly spatulate, 8–10 × 4–6 mm, apex emarginate; claw 2.5–3.5 mm. Filaments lavender; median pairs 3–4 mm; lateral pair 1.5–2 mm; anthers oblong, 1–1.2 mm. Ovules 4–8 per ovary. Fruit oblong or ovoid, (5–)7–12 × 2.5–4 mm, terete, sessile or on gynophores to 1 mm; valves obscurely veined, shortly pubescent; style 1–1.5 mm; stigma capitate, entire or slightly 2-lobed. Seeds ovoid, 2–2.5 × 1–1.5 mm. Fl. Jun–Jul, fr. Aug–Sep.

- Slopes, alpine turf; 3500–4500 m. Gansu, Qinghai, Sichuan, Xizang.

In both FRPS (33: 292, 440. 1987) and Fl. Qinghai. (1: 469, 502. 1997), the flowering material of *Phaeonychium villosum* was recognized as *Christolea villosa* and the fruiting material as *Braya kokonorica*; the two species were placed in different tribes.

6. *Phaeonychium kashgaricum* (Botschantzev) Al-Shehbaz, Nordic J. Bot. 20: 162. 2000.

喀什藏芥 ka shi zang jie

Vvedenskyella kashgarica Botschantzev, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 17: 174. 1955; *Christolea kashgarica* (Botschantzev) Z. X. An. Plants 3–15 cm tall; caudex slender, few branched, covered with petiolar remains of previous years. Trichomes simple, rigid, subsetose, to 0.4 mm. Stems erect, simple from caudex, glabrous. Basal leaves rosulate; petiole 0.5–3 cm, ciliate, persistent base becoming papery, expanded and to 2 mm wide at base; leaf blade narrowly oblanceolate or spatulate, 1–3.5 cm × 3–10 mm, glabrous, base attenuate, margin entire, ciliate distally, apex obtuse or subacute. Cauline leaves absent. Racemes 7–18-flowered, ebracteate. Fruiting pedicels ascending, straight or slightly curved, 5–13 mm, glabrous. Sepals oblong or ovate, 3–4 × 1–1.8 mm, subapically hispid, caducous, margin membranous. Petals purple, spatulate, 6–9 × 2.5–4 mm, apex rounded; claw 2–3 mm. Filaments lavender; median pairs 3–3.5 mm; lateral pair 1.5–2.5 mm; anthers oblong, 0.8–1 mm. Ovules 6–10 per ovary. Fruit lanceolate, 2–2.5 cm × 2.5–4 mm, latiseptate, sessile or on gynophore to 1 mm; valves with a distinct midvein, glabrous; style 1–2 mm; stigma capitate, slightly 2-lobed. Mature seeds not seen. Fl. May–Jun, fr. Jun–Jul.

- Slopes; 1800–2400 m. Xinjiang.

