

## 2. OROBANCHE Linnaeus, Sp. Pl. 2: 632. 1753.

列当属 lie dang shu

*Phelipanche* Pomel.

Herbs annual, biennial, or perennial, usually tomentose, villous, or glandular pubescent, rarely glabrous. Leaves spirally or imbricately arranged, ovate, ovate-lanceolate, or lanceolate. Flowers many, in spicate or racemose inflorescences, rarely solitary; bract 1, usually similar to leaves; bractlets 2 or absent. Pedicel short or absent. Calyx cupular or campanulate, apex 4-lobed or nearly 4- or 5-parted, occasionally 5- or 6-toothed, sometimes 2-parted to base and lobes entire or 2-toothed. Corolla bilabiate, curved; upper lip entire, emarginate, or 2-lobed; lower lip 3-lobed, shorter to longer than upper lip. Stamens 4, didynamous, included; filaments base pubescent or glandular pubescent. Ovary 1-locular; parietal placentas 4; ovules numerous. Style elongated, usually persistent; stigma inflated, peltate, or 2–4-lobed. Capsule ovoid-globose or ellipsoid, dehiscing by 2 valves. Seeds numerous, minute, ellipsoid or subglobose; testa reticulate.

About 100 species: mostly in North Temperate regions, less represented in S Central America and E and N Africa; 25 species in China.

Species 1–7 belong to subgen. *Phelipanche* (Pomel) Tzvelev (bractlets 2), whereas species 8–25 belong to subgen. *Orobanche* (bractlets absent).

### 1a. Bractlets 2.

2a. Stems usually branched; inflorescences loose; parasitic on cultivated plants.

3a. Corolla 1.8–2 cm, pale blue or pale violet; anthers glabrous or subglabrous ..... 6. *O. brassicae*

3b. Corolla 2–3.5 cm, blue-violet or blue; anthers villous ..... 7. *O. aegyptiaca*

2b. Stems unbranched; inflorescences usually dense; parasitic on wild plants.

4a. Inflorescences densely arachnoid-villous and glandular pubescent; anthers glabrous, rarely subglabrous ..... 1. *O. lanuginosa*

4b. Inflorescences glandular pubescent; anthers villous or frequently subglabrous.

5a. Folds of lower corolla lip glabrous; calyx lobes triangular-lanceolate or triangular; style glabrous; parasitic on *Kochia prostrata* ..... 4. *O. kelleri*

5b. Folds of lower corolla lip pilose; calyx lobes usually lanceolate; style sparsely glandular pubescent; parasitic on species of the Asteraceae.

6a. Anthers densely villous along sutures ..... 3. *O. mongolica*

6b. Anthers sparsely villous, often subglabrous.

7a. Calyx lobes lanceolate, subequalling tube; lower corolla lip usually shorter than upper ..... 2. *O. uralensis*

7b. Calyx lobes narrowly lanceolate, 1.5–2.5 × longer than tube; lower corolla lip usually longer than upper ..... 5. *O. coelestis*

### 1b. Bractlets absent.

8a. Calyx cupular, 4(or 5)-lobed.

9a. Corolla pale grayish blue or blue-purple, 2.5–3.5 cm; inflorescences 8–20(–30) cm, many flowered; calyx lobes narrowly lanceolate ..... 17. *O. sinensis*

9b. Corolla pale yellow, 2.5–2.8 cm; inflorescences 3–6 cm, 3–6-flowered; calyx lobes triangular-lanceolate ..... 18. *O. mupinensis*

8b. Calyx divided into 2 lateral, entire or 2-cleft segments.

10a. Inflorescences whitish arachnoid-villous.

11a. Anthers glabrous, rarely subglabrous ..... 8. *O. coerulescens*

11b. Anthers densely villous along sutures ..... 9. *O. ombrochares*

10b. Inflorescences glandular pubescent, rarely sparsely villous.

12a. Corolla tubular or tubular-campanulate, slightly constricted below middle and above attachment of filaments; upper corolla lip 2-lobed or emarginate; filaments inserted 5–8(–12) mm above corolla base.

13a. Anthers densely villous along sutures ..... 10. *O. pycnostachya*

13b. Anthers glabrous or slightly villous near base.

14a. Corolla strongly curved, becoming conspicuously inflated; anthers glabrous, rarely subglabrous.

15a. Corolla yellow or pale yellow, upper lip emarginate; bracts usually equal or longer than flowers ..... 11. *O. solmsii*

15b. Corolla pale blue or pale violet on upper part, rarely pale yellow, upper lip 2-lobed; bracts shorter than flowers ..... 12. *O. cernua*

14b. Corolla slightly curved, not inflated; anthers villous near base, rarely subglabrous.

16a. Corolla blue, blue-purple, or pale blue on upper part.

- 17a. Corolla 2–2.5 cm; calyx segments 2-toothed ..... 13. *O. amoena*  
 17b. Corolla 1.3–2 cm; calyx segments entire, rarely 2-toothed ..... 14. *O. clarkei*  
 16b. Corolla pale yellow or yellow-white.  
 18a. Inflorescences glandular pubescent; upper corolla lip 2-lobed ... 15. *O. sordida*  
 18b. Inflorescences villous and glandular pubescent; upper corolla lip  
 emarginate ..... 16. *O. kotschyi*  
 12b. Corolla campanulate or tubular-campanulate, not constricted below middle; upper corolla lip  
 entire or emarginate; filaments inserted 1.5–6(–7) mm above corolla base.  
 19a. Corolla 2–3.5(–4) cm, subcampanulate, substraight along dorsal line.  
 20a. Anthers glabrous or subglabrous, abruptly narrowed basally into a cusp  
 0.1–0.3 mm; filaments inserted 1.5–3(–4) mm above corolla base; corolla  
 pale pink or pale yellow; parasitic on species of *Galium* ..... 20. *O. caryophyllacea*  
 20b. Anthers villous, gradually narrowed basally into a cusp 0.3–0.5 mm; filaments  
 inserted 4–7 mm above corolla base; corolla pale yellow or pale blue 19. *O. megalantha*  
 19b. Corolla 1.5–2.5 cm, tubular-campanulate, curved along dorsal line.  
 21a. Inflorescences villous and glandular pubescent along axis and bracts; corolla  
 pale yellow or brown-yellow often tinged with purple; parasitic on species of  
 Apiaceae ..... 25. *O. alsatica*  
 21b. Inflorescences glandular pubescent; corolla of different colors.  
 22a. Corolla white or yellow-white, sometimes reddish, margin glandular pubescent  
 with reddish hairs; calyx segments usually entire; parasitic on species of  
 Lamiaceae ..... 21. *O. alba*  
 22b. Corolla red, yellow-brown, or pale yellow, margin glabrous or sparsely glandular,  
 hairs not reddish; calyx segments usually 2-lobed.  
 23a. Corolla usually red ..... 24. *O. yunnanensis*  
 23b. Corolla yellow-brown or pale yellow.  
 24a. Filaments pubescent along basal 1/4–1/3, glabrous or sparsely  
 glandular upward; stems and leaves glandular pubescent; parasitic  
 on species of Asteraceae ..... 22. *O. elatior*  
 24b. Filaments pubescent along basal 1/2–3/4, glandular upward; lower  
 part of stems and lower leaves glabrous; plants parasitic on species  
 of *Thalictrum* ..... 23. *O. krylowii*

**1. *Orobanche lanuginosa*** (C. A. Meyer) Beck ex Krylov,  
 Trudy Obshch. Estestvoisp. Imp. Kazansk. 9: 202. 1881.

毛列当 mao lie dang

*Phelipaea lanuginosa* C. A. Meyer in Ledebour, Fl.  
 Altaic. 2: 460. 1830; *Orobanche caesia* Reichenbach;  
*Phelipanche caesia* (Reichenbach) Soják.

Herbs perennial or biennial, 15–30 cm tall. Stems 3–5  
 mm in diam., upward densely villous and glandular  
 pubescent. Leaves broadly lanceolate, 1–1.7 cm × 3–4  
 mm. Inflorescences spicate, 5–10(–13) cm; bract ovate-  
 lanceolate, 1.2–1.5 cm, along with leaves, bractlets, and  
 calyx lobes densely white villous and glandular  
 pubescent at margin and abaxially; bractlets lanceolate  
 or linear-lanceolate, 8–10 mm. Pedicel obsolete or to 2  
 mm. Calyx campanulate-tubular, 1–1.4 cm, 4-parted;  
 segments 2-lobed. Corolla purple or pale blue-purple,  
 2–2.5 cm; upper lip 2-lobed, lobes subtriangular or  
 semirounded, 2–3 × 3–4 mm; lower lip slightly longer  
 than upper, lobes elliptic or oblong, 4–5 × 3–4 mm,  
 villous and glandular pubescent at margin and abaxially.  
 Stamens inserted near corolla base, 1–1.2 cm, glabrous;

anthers ovoid, 1.8–2 mm, glabrous, base mucronate.  
 Pistil 1.2–1.6 cm; ovary ellipsoid. Style glabrous or  
 sparsely glandular pubescent; stigma 2-lobed. Capsule  
 ellipsoid-globose, ca. 10 × 5 mm. Seeds ellipsoid, ca.  
 0.5 × 0.1 mm. Fl. Mar–Jun, fr. Jun–Sep. 2n = 24.  
 Slopes, thickets; 800–2900 m. NE Xinjiang, W Xizang [Afghanistan,  
 Kashmir, Kazakistan, Kyrgyzstan, Mongolia, Pakistan, Russia,  
 Tajikistan, Uzbekistan; SW Asia, Europe].  
 Parasitic on species of *Artemisia* Linnaeus and *Berberis* Linnaeus.

**2. *Orobanche uralensis*** Beck, Monogr. Orob. 132. 1890.

多齿列当 duo chi lie dang

*Phelipaea pallens* Bunge (1847), not *Orobanche*  
*pallens* F. Schultz (1840); *Phelipanche uralensis*  
 (Beck) Czerepanov; *P. pallens* (Bunge) Soják.  
 Herbs perennial, 15–20 cm. Stems unbranched, densely  
 yellow-white glandular pubescent. Leaves ovate-  
 lanceolate, ca. 10 × 4 mm, along with bracts, bractlets,  
 calyx, and corolla densely yellow-white glandular  
 pubescent at margin and abaxially. Inflorescences  
 spicate; bract ovate-lanceolate, shorter than calyx, 5–7  
 mm; bractlets linear-lanceolate, ca. 8 mm, apex  
 acuminate. Calyx campanulate, 0.9–1.1 cm, 4- or 5-  
 lobed to middle part, occasionally 1 lobe dentate.

Corolla blue-purple, 2–2.2 cm, indistinctly bilabiate; upper lip 2-lobed; lower lip subequalling upper lip; lobes subrounded, dentate and glandular pubescent at margin. Filaments inserted near base of corolla tube, 0.9–1.1 cm, glabrescent; anthers long ovoid or ellipsoid, 1.8–2 mm, white villous, base mucronate. Pistil 1.5–1.6 cm; ovary ellipsoid-globose. Style ca. 1 cm, sparsely pubescent; stigma 2-lobed. Fruit unknown. Fl. Jul–Sep. Xinjiang [Kazakstan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan].

**3. *Orobanche mongolica*** Beck, Monogr. Orob. 117. 1890.

中华列当 zhong hua lie dang

Herbs 15–30 cm tall. Stems slender, yellow-brown glandular pubescent. Leaves numerous, basal ones ovate, 3–6 × 3–4 mm, upper ones lanceolate, 1–1.5 cm × 2–3 mm, glandular pubescent abaxially. Inflorescences subspicate, many flowered, 7–13 cm; bract lanceolate, shorter than calyx; bractlets narrowly linear, 1–1.2 cm × 2–3 mm, 1-veined, apex subulate, subsessile. Calyx oblique campanulate, 1.2–1.6 cm, glandular pubescent and pubescent abaxially, 4-parted; lobes narrowly lanceolate, subequal, 6–9 mm, apex long acuminate or subulate. Corolla pale purple, 1.8–2.5 cm; upper lip 2-lobed; lower lip distinctly longer than upper; lobes subtriangular or oblong, 2–2.5 × 3.5–4.5 mm, oblong, unequal, sinuolate and crenate, densely white villous; tube constricted, broadly funnelliform upward, densely yellow-brown glandular pubescent. Stamens inserted at base of corolla tube, 1–1.2 cm, glabrescent or pubescent basally; anthers long ovoid, 1.5–1.8 mm, densely and white villous along suture. Ovary ellipsoid-ovoid, glandular pubescent upward. Style 1.2–1.5 cm, glandular pubescent; stigma 2-lobed. Capsule ellipsoid-globose, ca. 10 × 5 mm. Seeds long globose, ca. 0.4 × 0.3 mm. Fl. Apr–Jun, fr. Jun–Aug.  
• Sandy beaches, valleys; 1300–1500 m. S Liaoning (Qian Shan), SW Shaanxi (Feng Xian), E Shandong (Ai Shan).

**4. *Orobanche kelleri*** Novopokrovsky, Not. Syst. Herb. Inst. Bot. Acad. USSR 13: 308. 1950.

短齿列当 duan chi lie dang

*Phelipanche kelleri* (Novopokrovsky) Soják.

Herbs biennial, ca. 25 cm tall. Stems glandular pubescent. Leaves deltate-ovate or broadly lanceolate, 8–10 mm. Inflorescences spicate, ca. 14 cm; bract ovate, 6–9 mm, along with bractlets and calyx glandular pubescent abaxially; bractlets linear-subulate, shorter than bract. Calyx broadly campanulate, 8–11 mm, 4-lobed; lobes deltate or deltate-lanceolate, ca. 1/2 as long as calyx tube. Corolla pale yellow, white on tube, sometimes pale purple villous on lobes, becoming pale yellow when dry, 1.8–2.2 cm; tube slightly enlarged, constricted upward, glandular pubescent abaxially; upper lip suberect, lobes ovate. Stamens inserted near base of corolla tube, glabrous or ± pubescent; anthers

white after drying, villous. Style glabrous; stigma yellow. Fl. Jun–Jul.

S Xinjiang [Kazakstan, Russia].

Parasitic on *Kochia prostrata* (Linnaeus) Schrader.

**5. *Orobanche coelestis*** (Reuter) Boissier & Reuter ex Beck, Monogr. Orob. 114. 1890.

长齿列当 chang chi lie dang

*Phelipaea coelestis* Reuter in A. de Candolle, Prodr. 11: 5. 1847; *Orobanche coelestis* f. *persia* Beck; *O. heldreichii* (Reuter) Beck; *Phelipaea heldreichii* Reuter; *Phelipanche coelestis* (Reuter) Soják.

Herbs biennial, 15–40 cm tall. Stems unbranched, white glandular pubescent, glabrescent upward. Leaves ovate-lanceolate or lanceolate, 1–1.5 cm. Inflorescences spicate, 6–18 cm; bract ovate-lanceolate, 0.8–1.8 cm, along with bractlets, calyx, and corolla glandular pubescent abaxially; bractlets narrowly lanceolate or linear, shorter than calyx, subsessile or short pedicelled. Calyx short campanulate, 1–1.5 cm, 4-lobed; lobes narrowly lanceolate, ca. 2/3 as long as calyx. Corolla blue, tubular; tube slightly whitish, pubescent adaxially, 1.8–2.6 cm; upper lip 2-lobed; lower lip longer than upper. Stamens pubescent basally, sparsely glandular pubescent upward, rarely glabrous; anthers sparsely villous, base mucronate. Ovary ellipsoid-globose. Style short, glandular pubescent; stigma 2-lobed. Capsule ellipsoid-globose, 0.9–1.1 cm. Seeds ellipsoid or globose, 0.4–0.6 mm. Fl. May–Jun, fr. Jun–Sep.

S Xinjiang [S Kazakstan, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

Parasitic on species of *Centaurea* Linnaeus, *Eryngium* Linnaeus, *Micromeria* Benth, *Phlomis* Linnaeus, *Tanacetum* Linnaeus, and *Thymus* Linnaeus.

**6. *Orobanche brassicae*** (Novopokrovsky) Novopokrovsky, Izv. Donsk. Inst. Sel'sk. Kohz. Melior. 9: 47, 54, 58. 1929.

光药列当 guang yao lie dang

*Orobanche mutelii* F. Schultz subsp. *brassicae* Novopokrovsky, Izv. Donsk. Inst. Sel'sk. Kohz. Melior. 8: 52. 1928; *Phelipanche brassicae* (Novopokrovsky) Soják.

Herbs annual, 10–30 cm tall, densely glandular pubescent. Stems ± branched from base. Leaves 1–8 cm, along with bracts, bractlets, calyx, and corolla densely glandular pubescent at margin and abaxially. Inflorescences spicate, 7–10 cm; bract ovate-lanceolate, ca. 8 × 3.5 mm, apex acute; bractlets linear, 6–7 mm, apex acuminate. Calyx ca. 8 mm, 4-lobed; lobes subequal, lanceolate, 4–5 mm, apex acute. Corolla pale blue-purple, suberect, 1.8–2 cm, gradually enlarged upward; upper lip 2-lobed; lobes subtriangular, ca. 2.5 × 3.5 mm, white villous at margin and adaxially, margin dentate. Stamens inserted near base of corolla tube, 8–10 mm, sparsely pubescent below middle;

anthers ovoid, ca. 1.5 mm, glabrous, base mucronate. Pistil ca. 1.5 cm; ovary ellipsoid. Style ca. 1 cm, sparsely glandular pubescent above middle; stigma 2-lobed. Capsule ellipsoid-globose. Seeds subglobose, ca. 0.4 mm in diam. Fl. Mar–May, fr. May–Aug.

Naturalized in Fujian (Xiamen City) [India, Russia; SW Asia, Europe].

Parasitic on *Brassica oleracea* Linnaeus var. *capitata* Linnaeus.

**7. *Orobanche aegyptiaca*** Persoon, Syn. Pl. 2: 181. 1807.

分枝列当 fen zhi lie dang

*Orobanche indica* Buchanan-Hamilton ex Roxburgh; *Phelipaea aegyptiaca* (Persoon) Walpers; *P. indica* (Buchanan-Hamilton ex Roxburgh) G. Don;

*Phelipanche aegyptiaca* (Persoon) Pomel.

Herbs annual, 15–50 cm tall, glandular pubescent. Stems branched above middle. Leaves ovate-lanceolate, 8–10 × 2–4 mm, along with bracts, bractlets, calyx, and corolla densely glandular pubescent abaxially.

Inflorescences spicate, 8–15 cm; bract ovate-lanceolate or lanceolate, 6–10 × 3–4 mm; bractlets linear, 6–10 mm. Flowers subsessile or short pedicelled. Calyx campanulate, 1–1.4 cm, 4- or 5-lobed to middle; lobes linear-lanceolate, 4–7 mm. Corolla blue-purple, 2–3.5 cm, suberect; tube ca. 2 cm; upper lip 2-lobed; lower lip longer than upper; lobes entire, white villous at margin. Pistil 2.2–2.6 cm; ovary ellipsoid. Style 1.8–2 cm, glandular pubescent; stigma 2-lobed, lobes semirounded. Capsule oblong, 0.8–1.2 cm × ca. 6 mm. Seeds long ovoid, 0.4–0.6 × ca. 0.2 mm. Fl. Apr–Jun, fr. Jun–Aug.  $2n = 24$ .

Fields, gardens; 100–1400 m. Xinjiang [Afghanistan, Bangladesh, India, Kashmir, Kazakhstan, Kyrgyzstan, Nepal, Pakistan, S Russia, Tajikistan, Turkmenistan, Uzbekistan; N Africa, SW Asia].

Parasitic on *Citrullus lanatus* (Thunberg) Matsumura & Nakai, *Cucumis melo* Linnaeus, *C. sativa* Linnaeus, and *Lycopersicon esculentum* Miller.

**8. *Orobanche coerulescens*** Stephan in Willdenow, Sp. Pl. 3: 349. 1800.

列当 lie dang

*Orobanche ammophila* C. A. Meyer; *O. bodinieri* H. Léveillé; *O. canescens* Bunge; *O. coerulescens* var. *albiflora* Kuntze; *O. coerulescens* f. *korshinskyi* (Novopokrovsky) Ma; *O. coerulescens* f. *pekinensis* Beck; *O. korshinskyi* Novopokrovsky; *O. mairei* H. Léveillé; *O. japonensis* Makino; *O. nipponica* Makino; *O. pycnostachya* Hance var. *yunnanensis* Beck.

Herbs biennial, 15–40(–50) cm tall, densely villous. Stems erect, unbranched. Leaves ovate-lanceolate, 1.5–2 cm × 5–7 mm, along with bracts and calyx densely villous at margin and abaxially. Inflorescences 10–20 cm; bract similar to leaves; bractlets absent. Calyx 1.2–1.5 cm, 2-parted almost to base; segments divided to half; lobes narrowly lanceolate, 3–5 mm. Corolla dark blue, blue-purple, pale purple, or yellow, 2–2.5 cm; tube constricted, open upward; upper lip 2-lobed, rarely emarginate. Filaments 1.2–1.4 cm, usually villous; anthers ovoid, ca. 2 mm, glabrous. Pistil 1.5–1.7 cm;

ovary ellipsoid. Style as long as filaments, usually glabrous; stigma 2-lobed. Capsule ovoid-oblong or oblong, ca. 10 × 4 mm. Seeds irregularly ellipsoid or long ovoid, ca. 0.3 mm.  $2n = 38$ .

Slopes, grasslands; 900–4000 m. Gansu, Hebei, Heilongjiang, Hubei, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Japan, Kazakstan, Korea, Kyrgyzstan, Mongolia, Nepal, Russia, Turkmenistan; Europe].

Parasitic on species of *Artemisia* Linnaeus.

The whole plant is used medicinally for invigorating the kidneys and strengthening yang, relaxing the bowels, strengthening bones and muscles.

Plants with white-yellow flowers, which have been recognized as f. *korshinskyi* or var. *albiflora*, are distributed in Gansu, Hebei, Heilongjiang, Liaoning, and Nei Mongol, as well as in Europe, Mongolia, and Russia.

**9. *Orobanche ombrochares*** Hance, J. Linn. Soc., Bot. 13: 84. 1873.

毛药列当 mao yao lie dang

*Orobanche coerulescens* Stephan f. *ombrochares* (Hance) Beck.

Herbs 15–30 cm tall, densely white arachnoid-tomentose throughout. Stems erect, unbranched. Leaves ovate-lanceolate or lanceolate, 1.5–2.2 cm × 4–5 mm, along with bracts and calyx densely white arachnoid-tomentose abaxially and villous. Inflorescences spicate, many flowered, terminal, 8–15 cm; bract shorter than leaves; bractlets absent. Calyx 1–1.2 cm, 2-parted to base; segments 2-toothed; lobes lanceolate, unequal, 3–4 mm. Corolla dark blue and blue-purple, 2–2.5 cm; upper lip 2-lobed; lower lip slightly longer than upper; lobes oblong, margin irregularly crenate. Filaments ca. 1 cm, lower and basal part pubescent; anthers ovoid, 1.8–2 mm, densely white tomentose-villous along suture. Style shorter than stamens; stigma 2(–4)-lobed. Capsule rounded, ca. 1 cm. Seeds subglobose or oblong, ca. 0.3 × 0.2 mm. Fl. Apr–Jul, fr. Jul–Oct.

• Sandy places on slopes; 600–1300 m. Hebei, Liaoning (Zhangwu Xian), Nei Mongol, Shaanxi, Shanxi.

**10. *Orobanche pycnostachya*** Hance, J. Linn. Soc., Bot. 13: 84. 1873.

黄花列当 huang hua lie dang

Herbs perennial or biennial, 10–40(–50) cm tall, densely glandular pubescent. Stems unbranched, erect. Leaves ovate-lanceolate or lanceolate, 1–2.5 cm × 4–8 mm, along with bracts, calyx lobes, and corolla lobes densely glandular pubescent at margin and abaxially. Inflorescences spicate, 8–20 cm, many flowered; bract ovate-lanceolate, 1.6–1.8 cm × 4–6 mm, apex caudate-acuminate or long caudate-acuminate; bractlets absent. Calyx 1.2–1.5 cm, 2-parted to base; segments 2-lobed; lobes narrowly lanceolate or sublinear, unequal, 4–6 mm. Corolla 2–3 cm; tube slightly curved, constricted, enlarged upward; upper lip 2-lobed, occasionally emarginate; lower lip longer than upper; lobes subrounded, margin sinuate or irregularly dentate.

Filaments 1.4–1.6 cm, sparsely glandular pubescent basally; anthers ovoid, villous. Ovary oblong-ellipsoid. Style ca. 1.5 cm, sparsely glandular pubescent; stigma 2-lobed. Capsule oblong, ca. 10 × 3–4 mm. Seeds oblong, ca. 0.3 × 0.2 mm.

Slopes, roadsides, grasslands; 300–2500 m. Anhui, Fujian, Hebei, Heilongjiang, Henan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Zhejiang [Korea, Mongolia, Russia].

1a. Corolla yellow ..... 10a. var. *pyncostachya*

1b. Corolla blue or blue-purple ..... 10b. var. *amurensis*

**10a. *Orobanche pyncostachya* var. *pyncostachya***

黄花列当(原变种) *huang hua lie dang* (yuan bian zhong)

Corolla yellow. Fl. Apr–Jun, fr. Jun–Aug.

Slopes, grasslands; 300–2500 m. Anhui, Fujian, Hebei, Heilongjiang, Henan, Jiangsu, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Zhejiang [Korea, Mongolia, Russia].

Parasitic on species of *Artemisia* Linnaeus.

**10b. *Orobanche pyncostachya* var. *amurensis* Beck, Monogr. Orob. 141. 1890.**

黑水列当 *hei shui lie dang*

*Orobanche amurensis* (Beck) Komarov.

Corolla blue or blue-purple. Fl. Apr–Jun, Jun–Aug.

Slopes, roadsides, grasslands; 300–1400 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shanxi [Korea, Russia (Far East)].

Parasitic on species of *Artemisia* Linnaeus.

**11. *Orobanche solmsii* C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 325. 1884.**

长苞列当 *chang bao lie dang*

Herbs perennial or biennial, 15–20 cm tall, densely white villous and glandular pubescent. Stems 10–15 cm. Leaves lanceolate or long lanceolate, 2–2.5 cm × 3–4 mm, along with bracts and calyx densely white villous and glandular pubescent at margin and abaxially, apex long acuminate. Inflorescences spicate, 5–10 × 2.5–3 cm; bract lanceolate or narrowly lanceolate, usually longer than flowers, 1.2–1.6 cm × 2–3 mm, apex acuminate; bractlets absent. Calyx ca. 9 mm, 2-parted to base; segments 2-lobed; lobes linear, longest ca. 5 mm, shorter ones 2.5–3 mm. Corolla yellow, 1.3–2 cm, curved, densely glandular pubescent abaxially; upper lip emarginate, lower lip shorter than upper; lobes subrounded, dentate, villous. Filaments inserted near base of corolla tube, ca. 8 mm, sparsely pubescent basally, glabrescent upward; anthers oblong, 1.4–1.8 mm, glabrous. Pistil 1–1.2 cm; ovary oblong. Style ca. 6 mm, sparsely pubescent; stigma 2-lobed. Capsule oblong, ca. 10 × 3–5 mm. Seeds oblong, ca. 0.4 × 0.2 mm. Fl. May–Jun, fr. Jun–Aug.

Waste places and forests; ca. 2700 m. S Xinjiang, W and SE Xizang [Bhutan, Kashmir, Nepal, Pakistan, Sikkim].

Parasitic on species *Heracleum* Linnaeus.

*Orobanche solmsii* was misidentified as *O. sinensis* in Fl. Xizang 4: 389. 1985.

**12. *Orobanche cernua* Loeffling, Iter Hispan. 152. 1758.**

弯管列当 *wan guan lie dang*

Herbs annual, biennial, or perennial, 15–35(–40) cm tall, densely glandular pubescent, usually with branched fleshy roots. Stems unbranched. Leaves deltate-ovate or ovate-lanceolate, 1–1.5 cm × 5–7 mm, along with bracts, calyx, and corolla densely glandular pubescent abaxially, glabrescent adaxially. Inflorescences spicate, 5–20(–30) cm; bract ovate or ovate-lanceolate, 1–1.5 cm × 5–6 mm; bractlets absent. Calyx campanulate, 1–1.2 cm, irregularly 2-parted to base; segments 2-lobed, rarely entire; lobes linear, 2 longer than others. Corolla 1–2.2 cm; tube pale yellow or dark blue-purple, distinctly enlarged, turned into a rounded curve or suberect, constricted upward; upper lip 2-lobed; lower lip slightly shorter than upper; lobes pale purple or pale blue, subrounded. Filaments 7–9 mm, glabrous or pubescent basally; anthers ovoid, 1–1.2 mm, glabrous. Ovary ovoid-oblong. Style 6–8 mm; stigma 2-lobed. Capsule oblong or oblong-ellipsoid, 1–1.2 cm × 5–7 mm. Seeds long ellipsoid, 0.4–0.5 × ca. 0.2 mm.

Grasslands, slopes, forests, roadsides; 500–3000 m. Gansu, Hebei, W Jilin, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, W Xizang [Afghanistan, Kazakstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

The reports in FRPS of *Orobanche cernua* var. *cernua* represent plants of var. *cumana*. The former variety probably does not occur in China and appears to be restricted to SW Asia and Europe.

*Orobanche cernua* is highly variable in plant size, division of calyx, size and color of flowers, and pubescence of filaments. It requires further studies, and the account adopted here is provisional.

1a. Corolla pale yellow, tube distinctly enlarged and turned into a rounded curve; filaments glabrous ..... 12a. var. *cumana*

1b. Corolla dark blue-purple, tube suberect or slightly curved; filaments pubescent basally ..... 12b. var. *hansii*

**12a. *Orobanche cernua* var. *cumana* (Wallroth) Beck, Monogr. Orob. 143. 1890.**

欧亚列当 *ou ya lie dang*

*Orobanche cumana* Wallroth, Orob. Gen. Diask. 58. 1825; *O. bicolor* C. A. Meyer; *O. cernua* subsp. *cumana* (Wallroth) Soó.

Corolla pale yellow, tube distinctly enlarged and turned into a rounded curve. Filaments glabrous.  $2n = 24$ .

Grasslands, slopes, forests, roadsides; 500–3000 m. Gansu, Hebei, W Jilin, Nei Mongol, Qinghai, Shaanxi, Shanxi, Xinjiang [Afghanistan, Kazakstan, Kyrgyzstan, Mongolia, Nepal, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

Parasitic on species of *Artemisia* Linnaeus.

*Orobanche cernua* is highly variable in plant size, division of calyx, size and color of flower, and pubescence of filaments. It requires further studies, and the account adopted here is provisional.

**12b. *Orobanche cernua* var. *hansii* (A. Kerner) Beck, Monogr. Orob. 144. 1890.**

直管列当 *zhi guan lie dang*

*Orobanche hansii* A. Kerner, Nov. Pl. Spec. Decas 2: 15. 1870; *Cistanche feddeana* Hao.

Corolla dark blue-purple, tube suberect or slightly curved. Filaments pubescent basally.

Sichuan, S Xinjiang, W Xizang [Afghanistan, Kazakstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

Parasitic on species of *Cousinia* Cassini.

A critical study of the type of *Cistanche feddeana* reveals that it belongs to the *Orobanche cernua* complex. It is placed in var. *hansii* on account of its flower color and pubescent filaments.

**13. *Orobanche amoena*** C. A. Meyer in Ledebour, Fl. Altaic. 2: 457. 1830.

美丽列当 mei li lie dang

Herbs 15–30 cm tall, densely white villous. Stems erect, unbranched. Leaves ovate-lanceolate, 1.5–2.2 cm × 4–5 mm, along with bracts and calyx densely white arachnoid-tomentose at margin and abaxially.

Inflorescences spicate, 8–15 cm, many flowered; bract similar to and subequalling leaves; bractlets absent.

Calyx 1–1.2 cm, 2-parted to base; segments 2-toothed; lobes lanceolate, 3–4 mm. Corolla dark blue or blue-purple, 2–2.5 cm; tube constricted, slightly enlarged upward; upper lip 2-lobed; lower lip slightly longer than upper; lobes oblong, margin irregularly dentate. Filaments 1.2–1.3 cm, sparsely pubescent near base.

Pistil shorter than flowers. Style sparsely pubescent distally; stigma 2(–4)-lobed. Capsule oblong, ca. 1 cm. Seeds subglobose or oblong, ca. 0.3 × 0.2 mm. Fl. Apr–Jul, fr. Jul–Oct.

Slopes, sandy places; 600–1500 m. Hebei, Liaoning (Zhangwu Xian), Nei Mongol, Shaanxi, Shanxi (Huangqu Xian), Xinjiang [Kazakstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan, Uzbekistan].

**14. *Orobanche clarkei*** J. D. Hooker, Fl. Brit. India 4: 326. 1884.

西藏列当 xi zang lie dang

Herbs perennial or biennial, 5–15 cm tall, densely glandular pubescent. Stems erect. Leaves lanceolate, 5–8 × 2–4 mm, along with bract, calyx, and corolla densely glandular pubescent abaxially. Inflorescences spicate, 2–5 cm; bract ovate-lanceolate, ca. 1/2 as long as corolla; bractlets absent. Calyx 6–8 mm, 2-parted to base; lobes ovate, ovate-lanceolate, or lanceolate, usually entire or 2-lobed. Corolla blue-purple, 1.3–1.7 cm; tube suberect, not enlarged; upper lip 2-lobed; lower lip slightly shorter than upper, margin dentate. Filaments 6–7 mm, glabrous; anthers long ovoid, 1–1.2 mm, glabrous or subglabrous, base mucronate. Ovary long ellipsoid. Style slender, glandular pubescent; stigma 2-lobed. Capsule oblong, 7–8 × 3–4 mm. Seeds ovoid-oblong. Fl. May–Jun, fr. Jul–Aug.

Thickets; 2900–3400 m. W Xizang (Zhada Xian) [Kashmir, Pakistan, Tajikistan].

*Orobanche clarkei* was misidentified as *O. cernua* in Fl. Xizang 4: 389. 1985.

**15. *Orobanche sordida*** C. A. Meyer in Ledebour, Fl. Altaic. 2: 455. 1830.

淡黄列当 dan huang lie dang

Herbs 25–30 cm. Stems 15–20 cm, short glandular pubescent. Leaves ovate-oblong, 1–1.2 cm × ca. 4 mm, glabrescent abaxially. Inflorescences spicate, 8–12 cm; bract oblong-lanceolate, ca. 10 × 4–5 mm, along with calyx and corolla sparsely glandular pubescent abaxially, glabrescent adaxially; bractlets absent. Calyx 2-parted to base; lobes lanceolate, 2-segmented halfway, rarely entire; lobes narrowly lanceolate, subequal, 4–6 mm, apex acuminate. Corolla pale yellow, slightly curved, 2–2.2 cm; tube slightly constricted, slightly enlarged upward; upper lip 2-lobed, lobes semirounded, 2–2.5 × ca. 4 mm; lobes of lower lip oblong, 3–4 × 3–3.5 mm, entire or indistinctly dentate. Filaments 1–1.2 cm, base sparsely pubescent; anthers ellipsoid, ca. 1.8 mm, sparsely pubescent. Pistil ca. 1.5 cm; ovary oblong. Style ca. 1 cm, sparsely glandular pubescent; stigma 2-parted, lobes subrounded. Capsule obovoid-oblong, 8–10 × ca. 5 mm. Fl. May–Jul, fr. Jul–Sep.

Xinjiang (Tacheng Xian) [Kazakstan, Russia].

**16. *Orobanche kotschy*** Reuter in A. de Candolle, Prodr. 11: 33. 1847.

缢筒列当 yi tong lie dang

*Orobanche gigantea* (Beck) Gontsch; *O. kotschy* Reuter var. *gigantea* Beck.

Herbs biennial or perennial, 30–60 cm tall, densely white villous. Stems erect. Leaves lanceolate, 1–1.5 cm × ca. 5 mm, upper ones densely white villous. Inflorescences spicate, 10–20 cm; bract lanceolate, 1.5–2 cm, apex acuminate, along with calyx densely white villous; bractlets absent. Calyx 1–1.2 cm, 2-parted to base; segments 2-lobed halfway; lobes linear-lanceolate, 5–7 mm. Corolla pale yellow or blue-purple, 2–2.5 cm; tube slightly enlarged, middle part distinctly constricted, enlarged and strongly curved upward, sparsely pubescent abaxially, glabrescent adaxially; upper lip entire or emarginate; lobes elliptic, subequal, margin sinuate or dentate. Filaments 1–1.2 cm, base pubescent; anthers oblong, 1.8–2 mm, densely white villous. Ovary oblong-ellipsoid. Style 1.2–1.4 cm, sparsely pubescent or glabrous; stigma 2-lobed. Capsule oblong, 1–1.4 cm. Seeds ovoid-ellipsoid, 0.3–0.5 mm. Fl. May–Jul, fr. Jul–Sep.

Slopes; ca. 600 m. N Xinjiang [Afghanistan, Kazakstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

Parasitic on species of the Apiaceae.

It is not clear if *Orobanche gigantea* should be reduced to the synonymy of *O. kotschy*.

**17. *Orobanche sinensis*** Harry Smith, Acta Hort. Gothob. 8: 128. 1933.

四川列当 si chuan lie dang

Plants densely glandular pubescent and villous. Stems thick. Leaves ovate-lanceolate, 1.2–2 cm × 4–6 mm, along with bracts and calyx lobes yellow-brown glandular and white villous at margin and abaxially. Inflorescences spicate, 10–20(–30) cm, many flowered; bract ovate-lanceolate, 1.4–1.6 cm × ca. 5 mm, glabrous adaxially. Flowers subsessile; bractlets absent. Calyx tubular, 1–1.4 cm, irregularly 2-lobed; segments 2-lobed; lobes linear or linear-lanceolate, unequal. Corolla pale gray-blue, blue, or blue-purple, rarely yellow, 2.5–3.5 cm; tube suberect, densely glandular pubescent abaxially, villous adaxially; upper lip entire or 2-lobed; lower lip subequalling upper. Filaments 1.8–2.1 cm, white villous basally, sparsely glandular pubescent upward; anthers long ovoid, 2.5–3 mm, densely villous. Pistil 1.5–2.5 cm; ovary long ellipsoid, glandular pubescent. Style 1.5–2 cm, glandular pubescent; stigma 2-lobed. Capsule oblong, 1–1.2 cm × ca. 4 mm. Seeds oblong, ca. 0.4 × 0.25 mm.

• Slopes, roadsides, forests, thickets; 1600–3500 m. S Qinghai (Nangqian Xian), NW Sichuan, SE Xizang.

- 1a. Plants 20–40 cm tall; corolla tube not constricted, enlarged funnelform upward, upper lip entire ..... 17a. var. *sinensis*  
1b. Plants ca. 20 cm tall; corolla tube constricted, slightly enlarged upward, upper lip entire or 2-lobed ..... 17b. var. *cyanescens*

**17a. *Orobanche sinensis* var. *sinensis***

四川列当(原变种) si chuan lie dang (yuan bian zhong)  
Plants 20–40 cm tall. Corolla tube not constricted, enlarged funnelform upward; upper lip entire. Fl. May–Jun, fr. Jun–Aug.

• Slopes, roadsides, forests, thickets; 1600–3500 m. S Qinghai (Nangqian Xian), NW Sichuan, SE Xizang.

Parasitic on species of *Artemisia* Linnaeus.

**17b. *Orobanche sinensis* var. *cyanescens* (Harry Smith) Z. Y. Zhang, Acta Phytotax. Sin. 26: 395. 1988.**

藍花列当 lan hua lie dang  
*Orobanche cyanescens* Harry Smith, Acta Hort. Gothob. 8: 130. 1933.

Plant ca. 20 cm tall. Corolla tube constricted, slightly enlarged upward; upper lip entire or 2-lobed; lobes irregularly dentate, villous. Fl. May–Jun, fr. Jun–Aug.

• Slopes; 1800–2000 m. NW Sichuan.

**18. *Orobanche mupinensis* Hu, Bull. Fan. Mem. Inst. Biol. Bot. ser. 9: 202. 1939.**

宝兴列当 bao xing lie dang  
Herbs 15–20 cm tall, densely glandular pubescent. Stems suberect. Leaves ovate-lanceolate, 0.8–1.2 cm × 3–5 mm, along with bracts and calyx densely glandular pubescent abaxially. Inflorescences spicate, ca. 4 cm, 3–5-flowered; bract ovate-lanceolate, as long as leaves; subsessile; bractlets absent. Calyx campanulate, ca. 1

cm, irregularly 2-parted; segments 2-lobed; lobes triangular-lanceolate, 5–7 mm, apex acuminate. Corolla pale yellow, tubular-funnelform, 2.5–2.8 cm; upper lip entire, apex glabrescent adaxially, mucronate, mucro 1–2 mm; lower lip shorter than upper; lobes subrounded, ca. 3 mm in diam., sparsely pubescent. Filaments 1.9–2.1 cm, densely villous basally; anthers ovoid, ca. 3 mm, white villous. Pistil ca. 2 cm; ovary ellipsoid. Style ca. 1.6 cm, upper part pubescent; stigma 2-lobed. Fruit unknown. Fl. May–Jul.

• Roadsides; ca. 2100 m. Sichuan (Baoping Xian).

**19. *Orobanche megalantha* Harry Smith, Acta Hort. Gothob. 8: 131. 1933.**

大花列当 da hua lie dang  
*Orobanche eximia* Harry Smith.

Herbs 16–18 cm tall. Stems erect, yellow-brown glandular pubescent. Leaves triangular or triangular-lanceolate, 0.8–1.2 cm × 3–5 mm, along with bracts, calyx, and corolla densely glandular pubescent abaxially. Inflorescences spicate, 5–10 cm; bract ovate-lanceolate, 1.2–1.4 cm × 6–7 mm; bractlets absent. Calyx ca. 1.3 cm, irregularly 2-parted; segments 2-lobed, sparsely pubescent adaxially; lobes lanceolate, 5–6 mm, 1-veined. Corolla yellow or blue, tubular-funnelform, 3.5(–5) cm; tube not constricted; upper lip entire; lower lip slightly shorter than upper; lobes subrounded, 5–6 mm, margin sinuate. Filaments 2–2.2 cm, base villous, sparsely glandular pubescent upward; anthers ovoid, 2.5–3 mm, villous. Pistil ca. 2.5 cm; ovary glandular pubescent. Style ca. 2 cm, glandular pubescent; stigma 2-lobed. Fruit and seeds unknown. Fl. May–Jun.

• N Sichuan (Wenchuan Xian).

Parasitic on species of *Indigofera* Linnaeus and *Jasminum* Linnaeus.

**20. *Orobanche caryophyllacea* Smith, Trans. Linn. Soc. 4: 169. 1797.**

丝毛列当 si mao lie dang  
*Orobanche galii* Duby; *O. major* Linnaeus; *O. quadrifida* C. Koch; *O. vulgaris* Poir.

Herbs 35–50 cm tall. Stems 15–30 cm, sparsely glandular pubescent upward. Leaves ovate-lanceolate or lanceolate, 2–2.5 cm × 4–6 mm, glabrous adaxially, glandular pubescent at margin and abaxially. Inflorescences spicate, 10–20 cm; bract ovate-lanceolate, 2–3 cm × 4–5 mm, along with calyx densely glandular pubescent; bractlets absent. Calyx 1–1.2 cm, irregularly 2-parted; segments lanceolate, entire or 2-lobed; lobes linear-lanceolate, unequal, 4–8 mm, usually 3-veined, apex long acuminate. Corolla yellow, 2–3.5 cm; tube not constricted, distinctly enlarged upward; upper lip slightly emarginate or mucronate; lobes subrounded, unequal, glandular pubescent at margin and on both sides, margin irregularly dentate or

sinuolate. Filaments 1.2–1.4 cm, white villous proximally, glabrescent distally; anthers oblong, 1.8–2 mm, white pubescent. Pistil ca. 1.6 cm; ovary narrowly ellipsoid. Style ca. 1 cm, glandular pubescent; stigma 2-lobed, lobes globose, ca. 1 mm in diam. Capsule oblong, 1–1.2 cm. Seeds oblong, 0.4–0.5 × ca. 0.3 mm. Fl. May–Jul, fr. Jul–Sep.  $2n = 38$ .

E and N Xinjiang [Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

Parasitic on species of *Galium* Linnaeus.

**21. *Orobanche alba*** Stephan in Willdenow, Sp. Pl. 3: 350. 1800.

白花列当 bai hua lie dang

Herbs 35–65 cm tall, glandular pubescent. Stems erect, thick. Leaves ovate or ovate-lanceolate, 2–3 cm × 6–8 mm, along with bracts, calyx, and corolla lobes glandular pubescent at margin and abaxially. Inflorescences spicate, 10–22 cm, many flowered; bract lanceolate, 2–2.5 cm, apex long acuminate or caudate-acuminate; bractlets absent. Calyx usually 2-parted to base; segments ovate, oblong, or lanceolate, 1–1.5 cm, entire or irregularly 2-lobed; lobes lanceolate, unequal. Corolla usually pinkish white or whitish, campanulate, slightly curved, 2–2.5 cm; tube enlarged; upper lip entire or emarginate; lower lip slightly shorter than upper; lobes subrounded, ca. 3 mm in diam., dentate, villous. Filaments 0.9–1.2 cm, base sparsely pubescent, glandular pubescent upward; anthers oblong, ca. 1.5 mm, pubescent. Pistil 1.6–1.8 cm; ovary oblong, densely glandular pubescent. Style ca. 1 cm, densely glandular pubescent; stigma usually red, 2-lobed, lobes semirounded. Capsule oblong, 1–1.2 cm × ca. 3 mm. Seeds oblong, ca. 0.4 × 0.2 mm. Fl. Apr–Jun, fr. Jul–Aug.  $2n = 38$ .

Slopes, valleys, roadsides; 2500–3700 m. NW Sichuan, SE Xizang [Afghanistan, Kashmir, Nepal, Pakistan, Turkmenistan; SW Asia, Europe].

Parasitic on species of the Lamiaceae.

**22. *Orobanche elatior*** Sutton, Trans. Linn. Soc. 4: 178. 1797.

短唇列当 duan chun lie dang

Herbs 25–45 cm tall. Stems erect, densely glandular pubescent. Leaves ovate-lanceolate, 1.5–2 cm × ca. 4 mm, along with bracts and calyx densely glandular pubescent abaxially and at margin. Inflorescences spicate, 6–15 cm, many flowered; bract similar to and as long as leaves; bractlets absent. Calyx 1–1.3 cm, irregularly 2-parted, rarely 2-parted to base; lobes ovate-lanceolate, usually irregularly 2-lobed, rarely entire. Corolla yellow or yellow-brown, campanulate, 2–2.5 cm, curved; tube enlarged upward; upper lip entire or emarginate, 7–9 mm; lower lip shorter than upper; lobes subrounded, unequal, glandular pubescent abaxially, margin irregularly dentate, glabrous. Filaments 1–1.2 cm, base sparsely pubescent, glandular

pubescent upward; anthers ovoid, 1.5–1.8 mm, pubescent. Pistil 1.6–1.8 cm; ovary ellipsoid, upper part sparsely glandular pubescent. Style ca. 1 cm; stigma 2-lobed. Capsule oblong, 1–1.2 cm × 3–4 mm. Seeds oblong, ca. 0.4 × 0.3 mm. Fl. May–Jul, fr. Jul–Sep.  $2n = 38$ .

Slopes, forests, sandy places; 900–3500 m. S Gansu, W Hubei, Xinjiang [India, Kazakstan, Kyrgyzstan, Russia, Tajikistan; SW Asia, Europe].

Parasitic on species of the Asteraceae (Cardueae).

The name *Orobanche major* Linnaeus has been misapplied to this species.

**23. *Orobanche krylowii*** Beck, Oesterr. Bot. Z. 31: 309. 1881.

丝多毛列当 si duo mao lie dang

*Orobanche major* Linnaeus f. *krylowii* (Beck) Beck.

Herbs perennial, 20–40 cm tall. Stems glabrous below, sparsely glandular pubescent above. Leaves ovate-lanceolate or lanceolate, 1–2 cm × 3–7 mm, lower ones glabrous, others glandular pubescent. Inflorescences spicate, 6–20 cm, usually shorter than stem; bract ovate or broadly lanceolate, 1.2–1.8 cm × 3–7 mm, glandular pubescent; bractlets absent. Calyx 6–12 mm, 2-parted; segments unequally 2-lobed or entire; lobes narrowly lanceolate, apex acuminate. Corolla tubular-campanulate, pale yellow, curved, glandular pubescent, 1.7–2.2 mm, constricted below middle; upper lip subentire; lobes subglabrous at margin. Filaments 0.8–1.4 cm, pubescent along basal 1/2–3/4, glandular above; anthers oblong, villous. Style sparsely glandular pubescent. Capsule ellipsoid. Seeds oblong. Fl. Jun–Jul, fr. Jul–Aug.

Slopes, thickets, roadsides, forests; 1000–2500 m. Xinjiang [Kazakstan, Kyrgyzstan, Russia].

Parasitic on species of *Thalictrum* Linnaeus.

No material of this species has been found in Chinese herbaria.

**24. *Orobanche yunnanensis*** (Beck) Handel-Mazzetti, Symb. Sin. 7: 875. 1936.

滇列当 dian lie dang

*Orobanche alsatica* Kirschleger var. *yunnanensis* Beck in Engler, Pflanzenr. IV. 261(Heft 96): 259. 1930.

Herbs biennial or perennial, 15–25 cm tall, densely glandular pubescent. Stems erect, unbranched. Leaves ovate-lanceolate, 1–1.5 cm × 4–6 mm, along with bracts, calyx, and corolla lobes densely glandular pubescent at margin and abaxially. Inflorescences spicate, 6–10(–12) cm; bracts ovate-lanceolate or lanceolate, 1–1.5(–1.8) cm × 4–6 mm, apex long acuminate or caudate-acuminate; bractlets absent. Calyx 1–1.2(–1.5) cm, irregularly 2-parted to base; lobes long ovate or ovate-lanceolate, 2- or 3-lobed or entire. Corolla usually red, rarely yellow-brown, becoming red-brown or brown when dry, 1.5–1.8(–2) cm, curved; tube enlarged; upper lip elongated, 5–6 mm, apex emarginate; lower lip ca. 1/2 as long as upper; lobes usually reflexed, semirounded, ca. 2 × 3 mm, glandular pubescent, indistinctly dentate villous. Filaments 9–10 mm,



sparsely pubescent basally, sparsely glandular pubescent upward; anthers oblong, 1–1.2 mm, sparsely pubescent. Pistil ca. 1.7 cm; ovary ellipsoid, glandular pubescent. Style ca. 1 cm, glandular pubescent; stigma 2-lobed. Capsule ellipsoid, ca. 8 × 3–4 mm. Seeds long ellipsoid, ca. 0.3 × 0.2 mm. Fl. May–Jun, fr. Jul–Aug.

• Slopes; 2200–3400 m. W Guizhou (Weining Xian), SW Sichuan (Muli Xian), N Yunnan.

*Orobanche yunnanensis* was misidentified as *O. sinensis* in Fl. Xizang 4: 389. 1985.

Parasitic on species of *Origanum* Linnaeus and other Lamiaceae.

**25. *Orobanche alsatica*** Kirschleger, Prodr. Fl. Alsace 109. 1836.

多色列当 duo se lie dang

*Orobanche alsatica* subsp. *libanotidis* (Ruprecht)

Tzvelev; *O. alsatica* var. *libanotidis* (Ruprecht) Beck;

*O. bartlingii* Grisebach; *O. libanotidis* Ruprecht.

Plants biennial or perennial, 15–40 cm tall. Stems glandular pubescent and villous upward. Leaves ovate or ovate-lanceolate, 1–2.5 cm × 4–6 mm, subvillous abaxially and along margin. Inflorescences spicate, 0.4–1.7 cm, shorter than stem; bract ovate-lanceolate, 1–2.5 cm × 2–6 mm, villous and glandular pubescent; bractlets absent. Calyx 6–10 mm, 2-parted; segments lanceolate-ovate, usually 2-lobed; lobes narrowly lanceolate, subequal, 3.5–5 mm, usually 3-veined, apex acuminate. Corolla pale yellow or brown-yellow, often tinged with purple, tubular-campanulate, curved, glandular pubescent, 1.5–2 cm, constricted below middle; upper lip slightly emarginate; lobes subrounded, unequal, margin sparsely glandular. Filaments 0.8–1.2 cm, basal 1/3 sparsely pubescent, glabrous upward; anthers oblong, 1.4–1.6 mm, sparsely villous. Pistil 0.8–1.3 cm; ovary narrowly ellipsoid, glabrous. Stigma 2-lobed. Capsule ellipsoid, 8–9 mm. Seeds oblong, ca. 0.3 × 0.2 mm. Fl. May–Jul, fr. Jul–Aug.  $2n = 38$ .

Slopes, valleys, forests. W Hubei, Sichuan [Kazakstan, Kyrgyzstan, Russia, Uzbekistan; SW Asia, Europe].

Parasitic on species of the Apiaceae.

No material of this species has been found in Chinese herbaria.

