

63. DONTOSTEMON Andrzejowski ex C. A. Meyer in Ledebour, Fl. Altaic. 3: 118. 1831,
nom. cons.

花旗杆属 hua qi gan shu

Alaïda Dvorák; *Andreoskia* de Candolle; *Dimorphostemon* Kitagawa; *Hesperidopsis* (de Candolle) Kuntze.

Herbs annual, biennial, or perennial. Trichomes unicellular, eglandular, simple, straight or crisped, sometimes mixed with multicellular, multiseriate glandular ones. Stems erect or ascending, simple or branched. Basal leaves petiolate, rosulate or not, simple, entire, dentate, pinnatifid, or pectinate-pinnatifid. Cauline leaves petiolate or sessile, similar to basal. Racemes ebracteate, elongated in fruit. Fruiting pedicels ascending or divaricate. Sepals ovate, not saccate. Petals white, pink, or purple; blade broadly obovate, obcordate, spatulate, or oblanceolate, apex obtuse or emarginate; claw subequalling sepals or longer. Stamens 6, tetradynamous; median filament pairs united, sometimes free and toothed below anther or expanded to base, dilated at base; anthers ovate or oblong, often apiculate at apex. Nectar glands 4, lateral, 1 on each side of lateral stamen; median glands absent. Ovules 7–60 per ovary. Fruit dehiscent siliques, linear, terete or latiseptate; valves with a prominent midvein and often distinct marginal veins, glabrous or glandular, torulose; gynophore obsolete, rarely to 1 mm; replum flattened; septum complete; style obsolete or to 3 mm; stigma capitate, slightly lobed, rarely prominently lobed and subdecurrent. Seeds uniseriate, winged, margined, or wingless, oblong or ovate, plump or slightly flattened; seed coat reticulate, not mucilaginous when wetted; cotyledons accumbent or incumbent.

Eleven species: China, India, Japan, Kashmir, Kazakstan, Korea, Mongolia, Nepal, Russia, Sikkim, Tajikistan; 11 species (one endemic) in China.

Dontostemon is separated from *Dimorphostemon* only by having united (vs. free) median staminal filaments. However, the union of filaments evolved independently within several other genera in the Brassicaceae, and the separation of these two genera is artificial.

- 1a. Leaves pectinate-pinnatifid, with up to 11 lobes on each side of midvein; stigma prominently 2-lobed, lobes subdecurrent 11. *D. tibeticus*
- 1b. Leaves entire, dentate, or serrate, if pinnatifid then with multicellular glands; stigmas slightly 2-lobed, lobes not decurrent.
- 2a. Plants sparsely to densely glandular.
- 3a. Petals (10–)12–18 × (4–)6–8 mm; fruit flattened; anthers apex obtuse, 1.5–2 mm 1. *D. hispidus*
- 3b. Petals 2–8 × 0.5–3(–5) mm; fruit terete; anthers apiculate, 0.2–0.8 mm.
- 4a. All leaves entire; median filaments united; stems with minute twisted trichomes 3. *D. integrifolius*
- 4b. At least basal leaves dentate, serrate, or pinnatifid; median filaments free; stems glabrous or with straight trichomes.
- 5a. Petals obovate, (5–)6–8 mm; median filaments abruptly expanded and toothed below anther; seeds apically margined; anthers 0.6–0.8 mm 9. *D. pinnatifidus*
- 5b. Petals spatulate, 2–4(–4.5) mm; median filaments gradually expanded to base, toothless; seeds not margined; anthers 0.2–0.4 mm 10. *D. glandulosus*
- 2b. Plants not glandular.
- 6a. At least some cauline leaves petiolate, dentate 2. *D. dentatus*
- 6b. Cauline leaves sessile, entire.
- 7a. Plants annual or biennial, never woody basally; stems with minute twisted trichomes.
- 8a. Petals broadly obovate, 5–7(–8) × 2–3 mm, apex subemarginate; anthers oblong, 0.7–0.8 mm; ovules 15–25 per locule 3. *D. integrifolius*
- 8b. Petals narrowly oblanceolate, 3–5 × 0.6–1 mm, apex obtuse; anthers ovate, 0.4–0.5 mm; ovules 30–50 per locule 4. *D. micranthus*
- 7b. Plants perennial with woody base; stems glabrous or with straight trichomes.
- 9a. Stems glabrous; leaves somewhat fleshy, subleathery; fruit strongly arcuate or twisted.
- 10a. Fruit terete, strongly arcuate, 1.5–2.5 cm × 1–1.7 mm; style 1.5–2.5 mm; plants 5–10 cm tall; sepals 3–4 mm; median filaments 3.5–4 mm 7. *D. crassifolius*
- 10b. Fruit compressed, strongly twisted, 3–5 cm × 2–2.5 mm; style rarely to 0.5 mm; plants 15–50 cm tall; sepals 5–6 mm; median filaments 6–8 mm 8. *D. elegans*

9b. Stems sparsely to densely pilose; leaves not fleshy, herbaceous; fruit straight or rarely slightly curved.

11a. Plants pilose with subappressed trichomes rarely to 1 mm; fruit 1–2.5 cm × 0.9–1.1 mm;

seeds to 1.4 mm, not margined; cotyledons incumbent 5. *D. perennis*

11b. Plants hirsute with spreading trichomes to 3 mm; fruit (2.5–)3–5 cm × 1.4–2 mm; seeds to

2.5 mm, margined or winged; cotyledons accumbent 6. *D. senilis*

1. *Dontostemon hispidus* Maximowicz, Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg 9: 11. 1873.

毛花旗杆 mao hua qi gan

Clausia ussuriensis N. Busch.

Herbs annual, (10–)15–50(–65) cm tall, sparsely to densely hispid with subsetose trichomes to 3.5 mm, these mixed with much shorter ones, glandular on all parts except petals and stamens, gland stalks to 0.4 mm. Stems erect, often simple. Middle cauline leaves with petioles 2–5 mm; leaf blade elliptic or elliptic-lanceolate, 15–3.5 cm × 5–10 mm, base cuneate, margin serrate-dentate, apex acute. Fruiting pedicels divaricate, straight, slender, 7–15 mm, glandular. Sepals narrowly oblong, (3.5–)5–6 × 1.5–2 mm, glandular and often also setose. Petals lavender or purplish, broadly obovate, (10–)12–18 × (4–)6–8 mm, apex submarginate; claw 5–7 mm. Filaments of median stamens 5–7 mm, united; filaments of lateral stamens 3–5 mm; anthers narrowly oblong, 1.5–2 mm, apex obtuse. Ovules 30–60 per ovary. Fruit (2–)3–6(–8) cm × 1.5–2 mm, glandular, straight, divaricate or ascending, subtorulose, flattened, midvein prominent; style (1–)2–3 mm; stigma slightly lobed. Seeds brown, oblong-ovate, 2–2.5 × 1.2–1.4 mm, with a narrow wing to 0.5 mm wide; cotyledons accumbent. Fl. and fr. Jun–Sep. 2n = 14.

Flood plains, sandy river banks; 200–400 m. ?Heilongjiang [Russia (Far East)].

Although the present authors have seen no material from China, this species was described from Manchuria and was recorded from China in Pl. Vasc. Orient. Extr. Sov. 3: 111. 1988. It is likely that the species occurs in SE Heilongjiang and/or NE Jilin.

2. *Dontostemon dentatus* (Bunge) Ledebour, Fl. Ross. 1: 175. 1841.

花旗杆 hua qi gan

Andreoskia dentata Bunge, Enum. Pl. China Bor. 6. 1833; *Dontostemon dentatus* var. *glandulosus* Maximowicz ex Franchet & Savatier; *D. intermedius* Voroschilov; *D. oblongifolius* Ledebour.

Herbs annual, (9–)15–50(–60) cm tall, eglandular. Stems erect, often simple, branched above, pubescent distally with minute, twisted, simple trichomes, rarely glabrescent. Middle cauline leaves sessile or petiole 2–10 mm; leaf blade lanceolate to lanceolate-linear,

(1.5–)2–5.5(–7) cm × (2–)3–10(–13) mm, base attenuate or cuneate, margin minutely to coarsely dentate, rarely subentire, ciliate with simple, subsetose trichomes to 0.9 mm, apex acute. Fruiting pedicels ascending or divaricate, straight or curved upward, thick, (2–)3–7(–9) mm, glabrous or with twisted trichomes. Sepals oblong, 3–5 × 1–1.5 mm, often with straight simple trichomes. Petals lilac or purplish, obovate, (5–)6–9(–11) × 2.5–4.5 mm, apex submarginate; claw 2.5–4 mm. Filaments of median stamens 3.5–5.5 mm, united; filaments of lateral stamens 2–4 mm; anthers oblong, 1–1.8 mm, apiculate. Ovules 20–60 per ovary. Fruit (1–)2–5(–6) cm × 0.9–1.1 mm, glabrous, straight, erect or slightly ascending, subtorulose, terete or slightly flattened, midvein prominent; style 0.4–1.5 mm; stigma slightly lobed. Seeds brown, oblong-ovate, 0.8–1.3 × 0.6–0.8 mm, narrowly margined distally; cotyledons accumbent. Fl. and fr. Jun–Sep.

Rocky slopes, sandy areas, roadsides; 200–1900 m. Anhui, Hebei, Heilongjiang, Henan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Xinjiang, Yunnan [Japan, Korea, Russia].

3. *Dontostemon integrifolius* (Linnaeus) C. A. Meyer in Ledebour, Fl. Altaic. 3: 120. 1831.

线叶花旗杆 xian ye hua qi gan

Sisymbrium integrifolium Linnaeus, Sp. Pl. 2: 660. 1753; *Andreoskia eglandulosa* (de Candolle) de Candolle; *A. integrifolia* (Linnaeus) de Candolle; *Cheiranthus muricatus* Weinmann; *Dontostemon eglandulosus* (de Candolle) Ledebour; *D. integrifolius* var. *eglandulosus* (de Candolle) Turczaninow; *D. integrifolius* var. *glandulosus* Turczaninow; *Hesperis glandulosa* Persoon; *Sisymbrium eglandulosum* de Candolle; *Systemon linearifolius* Z. X. An.

Herbs annual, (2.5–)5–20(–25) cm tall, eglandular or glandular nearly throughout, pubescent, with minute, twisted, simple trichomes mixed with straight ones to 1.5 mm. Stems erect or ascending, simple several branched. Middle cauline leaves sessile, linear, (0.7–)1.5–3 cm × 0.5–1.5 mm, base attenuate, margin entire, ciliate and often pubescent with simple subappressed trichomes, apex subacute. Fruiting pedicels divaricate or rarely ascending, straight, slender, 3–8(–11) mm, pilose. Sepals oblong, 2.5–3.5 × 1–1.5 mm. Petals lilac, broadly obovate, 5–7(–8) × 2–3 mm, apex submarginate; claw 2.5–4 mm. Filaments of median

stamens 2.5–4 mm, united; filaments of lateral stamens 2–3 mm; anthers oblong, 0.7–0.8 mm, apiculate. Ovules 30–50 per ovary. Fruit (0.6–)1.5–2.8(–3.3) cm × 0.9–1.1 mm, glandular or glabrous, straight or slightly curved, divaricate or rarely ascending, torulose, terete, midvein prominent; style 0.5–1 mm; stigma slightly lobed. Seeds brown, oblong, 0.7–0.9 × 0.4–0.5 mm, not margined; cotyledons incumbent or obliquely so. Fl. and fr. Jul–Oct. $2n = 14$.

Open grasslands, meadows, pastures, sandy slopes, dunes; 200–1700 m. Heilongjiang, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shanxi [Mongolia, Russia].

Glandular and eglandular forms of *Dontostemon integrifolius*, which are frequently found within the same population (see for example, *Bunge 1831* (P) and *Liu 5430* (NAS)), have variously been treated as independent species or varieties. However, the present authors believe that these variants do not merit formal recognition.

4. *Dontostemon micranthus* C. A. Meyer in Ledebour, Fl. Altaic. 3: 120. 1831.

小花花旗杆 xiao hua hua qi gan

Herbs annual, (7–)15–55(–75) cm tall, eglandular, pubescent, with minute, twisted, simple trichomes mixed with straight rigid ones to 0.5 mm. Stems erect, often simple, branched above. Middle cauline leaves sessile, linear or rarely lanceolate-linear, 1–4(–5) cm × 1–2(–3) mm, base attenuate, margin entire, ciliate and often pubescent with simple rigid trichomes, apex acute. Fruiting pedicels divaricate or rarely ascending, straight, slender, (4–)5–10(–12) mm, pubescent. Sepals narrowly oblong, 2.5–3.5 × 0.5–0.8 mm. Petals lilac or purplish, narrowly oblanceolate, 3–5 × 0.6–1 mm, attenuate to a clawlike base to 1.5 mm, apex obtuse. Filaments of median stamens 2.5–3.5 mm, united; filaments of lateral stamens 2–2.5 mm; anthers ovate, 0.4–0.5 mm, apiculate. Ovules 30–50 per ovary. Fruit (1.8–)2.5–4 cm × 0.6–0.8 mm, glabrous, straight, erect or slightly ascending, torulose, terete, midvein prominent; style 0.4–0.8(–1) mm; stigma slightly lobed. Seeds brown, ovate, 0.5–0.8 × 0.4–0.5 mm, not margined; cotyledons obliquely incumbent. Fl. Jun–Jul, fr. Jul–Aug.

Grassy slopes, river banks; 900–3300. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Qinghai, Shanxi, Xinjiang [Mongolia, Russia (Far East, Siberia)].

5. *Dontostemon perennis* C. A. Meyer in Ledebour, Fl. Altaic. 3: 121. 1831.

多年生花旗杆 duo nian sheng hua qi gan

Herbs perennial, 5–15 cm tall, eglandular, with a woody base, pilose, with simple, subappressed trichomes rarely to 1 mm. Stems erect or subdecumbent, branched basally and above, rarely simple, sparsely to densely pilose. Middle cauline leaves sessile, linear, 0.4–3.5 cm × 0.5–1.5(–2.5) mm, base attenuate, margin entire, ciliate with subappressed trichomes, apex obtuse or subacute. Fruiting pedicels divaricate, straight, slender, 4–8 mm, glabrous or sparsely pilose. Sepals oblong, 2.5–3.5 × 1–1.5 mm, often sparsely pilose.

Petals lilac or white, obovate, 6–8.5 × 2.5–4 mm, apex rounded; claw 2.5–3.5 mm. Filaments of median stamens 3–3.5 mm, united; filaments of lateral stamens 2–2.5 mm; anthers oblong, 0.6–0.9 mm, apiculate. Ovules 20–30 per ovary. Fruit 1–2.5 cm × 0.9–1.1 mm, glabrous or sparsely puberulent, straight, divaricate, somewhat torulose, slightly flattened, midvein prominent; style to 1 mm; stigma slightly lobed. Seeds to 1.4 × 0.9 mm, not margined or winged; cotyledons incumbent. Fl. and fr. Jun–Sep.

Sandy areas, deserts. Nei Mongol [Mongolia, Russia].

The records of *Dontostemon perennis* in FRPS from Hebei, Heilongjiang, Liaoning, and Ningxia are based on eglandular plants of *D. integrifolius*. The present authors have seen no material of *D. perennis* from China, but, because of its common occurrence in neighboring Mongolia and Russia (Altai, Siberia), it is likely to be found in N Nei Mongol and NW Xinjiang. The illustrations in FRPS (33: 319. 1987) and Fl. Intramongol. (ed. 2, 2: 670. 1990) of *D. perennis* clearly represent plants of *D. integrifolius* because *D. perennis* has a strongly woody base and straight stem trichomes.

6. *Dontostemon senilis* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg, Sér. 3, 26: 421. 1880.

白花花旗杆 bai hua hua qi gan

Herbs perennial, 4–25(–35) cm tall, eglandular, with a woody base, hirsute with simple, spreading trichomes to 3 mm. Stems erect or ascending, branched basally and above, rarely simple, sparsely to densely hirsute. Middle cauline leaves sessile, linear, (0.4–)1.5–3.5 cm × 0.5–3(–5) mm, sparsely to densely hirsute, base attenuate, margin entire, ciliate with spreading trichomes, apex obtuse or subacute. Fruiting pedicels divaricate, straight, stout, (2–)3–5 mm, glabrous or sparsely hirsute. Sepals oblong, 3–3.5 × 1–1.5 mm, often hirsute. Petals lilac, obovate, 6–8.5 × 1.5–2.5 mm, apex rounded; claw 3–3.5 mm. Filaments of median stamens 4–5 mm, united; filaments of lateral stamens 2–2.5 mm; anthers oblong, 1–1.3 mm, apiculate. Ovules 20–40 per ovary. Fruit (2.5–)3–5 cm × 0.9–1.1 mm, glabrous, straight, ascending or divaricate, torulose, flattened, midvein prominent; style 1–3 mm; stigma slightly lobed. Seeds oblong, 1.5–2.5 × 1–1.2 mm, margined or narrowly winged; cotyledons accumbent. Fl. Jun–Jul, fr. Jul–Sep. $2n = 28$.

Gravelly areas; 300–1500 m. Gansu, Nei Mongol, Ningxia, Xinjiang [Mongolia].

7. *Dontostemon crassifolius* (Bunge) Maximowicz, Prim. Fl. Amur. 46. 1858.

厚叶花旗杆 hou ye hua qi gan

Andreoskia crassifolia Bunge ex Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 15: 271. 1842.

Herbs perennial, 5–10 cm tall, eglandular, with a woody base. Stems ascending, branched basally, glabrous. Middle cauline leaves sessile, linear or lanceolate-linear, rarely oblanceolate, (1–)1.8–3.5(–4.5) cm × 1–3(–5) mm, somewhat fleshy, subleathery, glabrous or rarely sparsely covered with simple

trichomes, base attenuate or cuneate, margin entire, apex acute. Fruiting pedicels divaricate, straight or slightly recurved, thick, 3–6 mm, glabrous. Sepals oblong, 3–4 × 1–1.5 mm, glabrous or subapically sparsely pubescent with simple trichomes. Petals lilac, obovate, (6–)7–10 × 2–3 mm, apex obtuse; claw 3–4 mm. Filaments of median stamens 3.5–4 mm, united; filaments of lateral stamens 2–3 mm; anthers oblong, 0.9–1.3 mm, apiculate. Ovules 20–30 per ovary. Fruit (1.5–)2–2.5 cm × 1–1.7 mm, glabrous, strongly arcuate with suberect apex, torulose, terete, midvein obscure; style 1.5–2.5 mm; stigma slightly lobed. Seeds brown, oblong, ca. 1.5 × 1 mm. Fl. Jun–Aug, fr. Jul–Sep. 2n = 14.

Sandy or gravelly areas, grasslands. Nei Mongol [Mongolia, Russia].

8. *Dontostemon elegans* Maximowicz, Enum. Pl. Mongol. 57. 1889.

扭果花旗杆 niu guo hua qi gan

Dontostemon elegans var. *semiamplexicaulis* (H. L. Yang) H. L. Yang & M. S. Yan; *D. semiamplexicaulis* H. L. Yang.

Herbs perennial, 15–50 cm tall, eglandular, with whitish woody base. Stems ascending, branched basally, glabrous. Middle cauline leaves sessile, linear to oblanceolate-linear, 2–5 cm × 3–5 mm, somewhat fleshy, subleathery, glabrous or sparsely pilose with simple trichomes to 1 mm, base attenuate, margin entire, apex obtuse to subacute. Fruiting pedicels divaricate, straight or slightly recurved, thick, 3–6 mm, glabrous. Sepals oblong or oblong-linear, 5–6 × 1–1.5 mm, sparsely pubescent with simple trichomes. Petals lilac, obovate, 9–12 × 2.5–4 mm, apex obtuse; claw 5–7 mm. Filaments of median stamens 6–8 mm, united; filaments of lateral stamens 4–6 mm; anthers oblong, 1.2–1.8 mm, apiculate. Ovules 32–60 per ovary. Fruit 3–5 cm × 2–2.5 mm, glabrous, strongly twisted, torulose, flattened, midvein prominent; style to 0.5 mm; stigma lobed. Seeds brown, oblong, ca. 1.5–1.9 × 0.9–1.1 mm, margined; cotyledons accumbent. Fl. May–Jul, fr. Jun–Aug.

Deserts, dry sandy river beds; 1000–1500 m. Gansu, Nei Mongol, Xinjiang [Mongolia, Russia].

9. *Dontostemon pinnatifidus* (Willdenow) Al-Shehbaz & H. Ohba, Novon 10: 96. 2000.

羽裂花旗杆 yu lie hua qi gan

Herbs annual or biennial, (5–)10–40(–60) cm tall, glandular. Stems erect, often simple, branched above. Basal and lowermost cauline leaves sparsely to densely pubescent, with simple trichomes to 2 mm, glandular; petiole 2–10(–15) mm; leaf blade lanceolate, elliptic, or oblong, (0.7–)1.5–4.5(–6) cm × (1.5–)3–10(–15) mm, base attenuate or cuneate, margin dentate, serrate, or pinnatifid, ciliate, apex acute; middle and upper leaves linear and entire, or elliptic or lanceolate and dentate. Fruiting pedicels ascending or divaricate, (0.3–)0.5–

1.5(–2.3) cm, glandular. Sepals oblong, 2–3(–4) × (0.8–)1–1.5 mm, glabrous or sparsely pubescent apically. Petals white, broadly obovate, (5–)6–8 × (2.5–)3–4(–5) mm, apex emarginate; claw 1–3 mm. Filaments of median stamens 2–3 mm, free, abruptly expanded and toothed below anther; filaments of lateral stamens 1.5–2.5 mm, slender; anthers oblong-ovate, 0.6–0.8 mm, apiculate. Ovules 16–60 per ovary. Fruit (1.1–)1.5–4(–5) cm × (0.8–)1–1.3 mm, straight, torulose, terete; valves glandular, with prominent midvein and marginal veins; style 0.5–1.5 mm; stigma slightly lobed. Seeds brown, oblong-ovate or narrowly oblong, 1.1–2.3 × 0.7–1 mm, narrowly margined distally; cotyledons obliquely accumbent or incumbent. Fl. and fr. Jun–Aug.

Grassy plains, hillsides, rocky slopes, roadsides, sand dunes, flood plains, grasslands; 1100–4600 m. Gansu, Hebei, Heilongjiang, Nei Mongol, Qinghai, Shandong, Sichuan, Xinjiang, Xizang, Yunnan [India, Mongolia, Nepal, Russia].

- 1a. Middle cauline leaves elliptic or lanceolate, serrate, dentate, or rarely pinnatifid, (3–)5–10(–15) mm wide; seeds oblong or ovate, 1.1–1.8 mm; cotyledons obliquely accumbent or obliquely incumbent; plants pilose, moderately to densely glandular 9a. subsp. *pinnatifidus*
- 1b. Middle cauline leaves linear to filiform, entire, 0.5–1(–1.5) mm wide; seeds narrowly oblong, 2–2.3 mm; cotyledons incumbent; plants glabrous, very sparsely glandular 9b. subsp. *linearifolius*

9a. *Dontostemon pinnatifidus* subsp. ***pinnatifidus***

羽裂花旗杆(原亚种) yu lie hua qi gan (yuan ya zhong)

Cheiranthus pinnatifidus Willdenow, Sp. Pl. 3: 523. 1800; *Alaïda pectinata* (de Candolle) Dvorák; *Andreoskia pectinata* (de Candolle) de Candolle; *Andreziowskia pectinata* (de Candolle) Turczaninow; *Dimorphostemon asper* Kitagawa; *D. pectinatus* (de Candolle) Golubkova; *D. pectinatus* var. *humilior* (N. Busch) Golubkova; *D. pinnatus* (Persoon) Kitagawa; *D. shanxiensis* R. L. Guo & T. Y. Cheo; *Dontostemon asper* Schischkin; *D. pectinatus* (de Candolle) Ledebour; *D. pectinatus* var. *humilior* N. Busch; *Erysimum glandulosum* Monnet; *E. hookeri* Monnet; *Hesperidopsis pinnatifidus* (Willdenow) Kuntze; *Hesperis pilosa* Poiret; *H. pinnata* Persoon; *H. punctata* Poiret; *Sisymbrium asperum* Pallas (1777), not Linnaeus (1753); *S. pectinatum* de Candolle; *Torularia pectinata* (de Candolle) Ovczinnikov & Junussov.

Plants sparsely to densely pilose, moderately to densely glandular. Middle cauline leaves elliptic or lanceolate, serrate, dentate, or rarely pinnatifid, (3–)5–10(–15) mm wide. Seeds oblong or ovate, 1.1–1.8 mm; cotyledons obliquely accumbent or obliquely incumbent.

Grassy plains, hillsides, rocky slopes, roadsides; 1100–4600 m. Gansu, Hebei, Heilongjiang, Nei Mongol, Qinghai, Shandong, Sichuan, Xinjiang, Xizang, Yunnan [India, Mongolia, Nepal, Russia].

9b. *Dontostemon pinnatifidus* subsp. *linearifolius* (Maximowicz) Al-Shehbaz & H. Ohba, Novon 10: 97. 2000.

线叶羽裂花旗杆 *xian ye yu lie hua qi gan*

Sisymbrium glandulosum (Karelin & Kirilov) Maximowicz var. *linearifolium* Maximowicz, Fl. Tangut. 61. 1889.

Plants glabrous, very sparsely glandular. Middle cauline leaves linear to filiform, entire, 0.5–1(–1.5) mm wide. Seeds narrowly oblong, 2–2.3 mm; cotyledons incumbent. Fl. and fr. Jul–Aug.

• Sand dunes, flood plains, grasslands; 3100–4500 m. Gansu, Qinghai, Xinjiang.

10. *Dontostemon glandulosus* (Karelin & Kirilov) O. E. Schulz, Notizbl. Bot. Gart. Berlin-Dahlem 10: 554. 1930.

腺花旗杆 *xian hua qi gan*

Arabis glandulosa Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 15: 146. 1842; *Alaïda glandulosa*

(Karelin & Kirilov) Dvorák; *Dimorphostemon glandulosus* (Karelin & Kirilov) Golubkova; *D. sergievskianus* (Polozhij) S. V. Ovchinnikova;

Neotorularia sergievskiana (Polozhij) Czerepanov; *Sisymbrium glandulosum* (Karelin & Kirilov)

Maximowicz; *Stenophragma glandulosum* (Karelin & Kirilov) B. Fedtschenko; *Torularia glandulosa* (Karelin & Kirilov) Vassilzenko; *T. sergievskiana* Polozhij.

Herbs annual or biennial, (1.5–)5–20(–30) cm tall, glandular. Stems erect or ascending, simple or many branched basally. Basal and lowermost cauline leaves pubescent, with simple trichomes to 1.5 mm, glandular; petiole 2–10(–25) mm; leaf blade lanceolate or oblong, (0.3–)0.5–2.5(–4) cm × 2–10(–15) mm, base attenuate or cuneate, margin dentate or pinnatifid, ciliate, apex acute. Fruiting pedicels ascending or divaricate, 2–8(–12) mm, glandular. Sepals oblong, 1–2(–3) × 0.5–1 mm, sparsely pubescent apically or glabrous. Petals lavender or white, spatulate, 2–4(–4.5) × (0.5–)1–1.5(–2) mm, apex obtuse or subemarginate; claw to 1.5 mm. Filaments of median stamens 1.5–2.5 mm, free, gradually expanded to broad base, toothless; filament of lateral stamens 1–2 mm, slender; anthers broadly ovate, 0.2–0.4 mm, apiculate. Ovules 14–70 per ovary. Fruit (0.7–)1.3–3(–4) × 0.8–1.3 mm, straight, torulose, terete; valves glandular, with prominent midvein and marginal veins; style 0.5–1 mm; stigma slightly lobed. Seeds brown, ovate or oblong, 0.8–1.7 × 0.5–0.8 mm, not margined distally; cotyledons obliquely accumbent or obliquely incumbent. Fl. and fr. Jun–Aug.

Alpine meadows and steppe, sandy river banks, rock crevices, gravelly plains, dry scrub, roadsides, scree slopes; 1900–5300 m. Gansu, Nei Mongol, Ningxia, Qinghai, Sichuan, Xinjiang, Xizang, Yunnan [Kashmir, Kazakstan, Nepal, Russia, Sikkim, Tajikistan].

11. *Dontostemon tibeticus* (Maximowicz) Al-Shehbaz, Novon 10: 334. 2000.

西藏花旗杆 *xi zang hua qi gan*

Nasturtium tibeticum Maximowicz, Fl. Tangut. 54. 1889.

Herbs biennial, (1.5–)4–14(–20) cm tall, pilose with simple trichomes to 1.5 mm, with somewhat fleshy root. Stems often few from base, simple above. Basal and lowermost cauline leaves eglandular; petiole (0.3–)1–2 cm; leaf blade lanceolate, oblong, or oblanceolate in outline, somewhat fleshy, (0.7–)1.2–2.7(–3.5) cm × (3–)5–1(–14) mm, base attenuate or cuneate, margin pectinate-pinnatifid, apex acute; lateral lobes (4–)7–11, to 5 × 2.5 mm, sometimes imbricate, abaxially toothed or entire, adaxially entire, acute; uppermost cauline leaves sessile. Fruiting pedicels divaricate, (2–)3–7(–9) mm, eglandular, stout. Sepals ovate, 3–4 × 1.5–2 mm, glabrous or sparsely pubescent apically, lateral pair slightly saccate. Petals white, with pink or purplish claws, obcordate, 5–8 × 2.5–3.5(–4) mm, apex emarginate; claw 3–4 mm. Filaments of median stamens 3–4 mm, free, flattened and sometimes minutely toothed on 1 side; filaments of lateral stamens 2–2.5 mm, slender; anthers oblong, 0.7–1 mm, apex obtuse. Ovules 12–20 per ovary. Fruit (0.8–)1–1.5(–1.7) cm × (0.8–)1–1.3 mm, straight, torulose, terete; valves with a prominent midvein and multicellular, glandlike warts; style 1–3 mm; stigma prominently 2-lobed, lobes subdecurent. Seeds brown, oblong-ovate, 1.4–1.6 × 0.9–1 mm, wingless; cotyledons accumbent. Fl. Jun–Jul, fr. Jul–Aug.

• Loose scree, disturbed alpine meadows, moist gravelly slopes, permafrost gravel and sandstone, steep rocky slopes; 3200–5200 m. Gansu, Qinghai, Xizang.

Flora of China 8: 137–142. 2001.