

## 11. CONVULVULUS Linnaeus, Sp. Pl. 1: 153. 1753.

旋花属 xuan hua shu

Plants annual or perennial, prostrate, erect, or straggling or twining herbs, or cushionlike or erect shrubs; axial parts usually pubescent, hairs simple or 2-armed. Leaves simple, petiolate or sessile, margin entire or ± lobed. Flowers axillary, peduncled, solitary or in various kinds of inflorescences. Sepals equal or unequal, middle sepal asymmetric (exposed 1/2 similar to outer 2 sepals, enclosed 1/2 similar to inner 2 sepals), persistent, not enlarged. Corolla funnelform or campanulate; limb shallowly lobed or entire, with 5 ± distinct midpetaline bands. Stamens included, inserted at corolla base; filaments dilated basally, filiform apically; pollen ellipsoid, 3- (or 4)-colpate, not spiny. Disc ringlike or cupular. Pistil included; ovary 2-loculed; ovules 2 per locule. Style 1, filiform; stigmas 2, linear, cylindric, or clavate. Capsule 2-loculed, 4-valved or irregularly dehiscent. Seeds 1–4, black or brown, often verruculose, pubescent, rarely glabrous.

Approximately 250 species: widely distributed; eight species in China.

A workable and profusely illustrated account relevant to several Chinese taxa is that of Sa'ad (The *Convolvulus* Species of the Canary Isles, the Mediterranean Region and the Near and Middle East. Utrecht. 1967). *Convolvulus bryoniifolius* Sims, described from plants grown in England from seed that supposedly originated "in China," was referred by Sa'ad (p. 211) to the synonymy of *C. althaeoides* Linnaeus, a Mediterranean and Macaronesian species. The provenance for the seed must have been in error.

- 1a. Twining herbs; leaves sagittate, cordate, or hastate basally, petiolate or subsessile.
  - 2a. Leaves petiolate, leaf blade ovate-oblong to ovate, 10–40 mm wide; outer sepals retuse apically ..... 7. *C. arvensis*
  - 2b. Leaves subsessile or basal leaves with petioles to 5 mm, leaf blade linear to linear-oblong, 3–5 mm wide; outer sepals acuminate-cuspidate apically ..... 8. *C. steppicola*
- 1b. Shrubs, subshrubs, or prostrate, erect, or ascending herbs; leaves attenuate or decurrent basally, rarely rounded, sessile to subsessile.
  - 3a. Shrubs or subshrubs, often with densely straggling branches; twigs spinescent.
    - 4a. Sepals glabrous or sparsely pubescent, unequal, outer 2 broadly ovate-circular, base cordate, distinctly wider than inner ones ..... 1. *C. gortschakovii*
    - 4b. Sepals hirsute to tomentose-villous, outer 2 neither cordate basally nor distinctly wider than inner ones.
      - 5a. Stems 20–50 cm tall, with short spreading flowering branches often ending in 1 or 2 spines; flower buds often ± reflexed. .... 2. *C. fruticosus*
      - 5b. Stems 4–10(–15) cm tall, forming a ± compact cushion, flowering branches without spines, other twigs with hard spines; flower buds never reflexed ..... 3. *C. tragacanthoides*
  - 3b. Perennial herbs; stems erect, prostrate, or ascending, not spinescent.
    - 6a. Stems erect; leaves and sepals glabrous or ± appressed pilose abaxially; most cymes long pedunculate, much longer than leaves; sepals apically ± obtuse, mucronulate ..... 4. *C. pseudocantabricus*
    - 6b. Stems prostrate or ascending; leaves and sepals densely silvery or golden sericeous; cymes short, hidden amongst leaves; sepals apically acute or acuminate.
      - 7a. Leaves linear or linear-oblong, 1–4 mm wide; flower usually solitary; corolla 0.8–1.5 cm ..... 5. *C. ammannii*
      - 7b. Leaves oblanceolate to oblong-oblong, 5–25 mm wide; flowers 3 or 4 together, rarely 1 or 5; corolla 1.5–2.5 cm ..... 6. *C. lineatus*

**1. *Convolvulus gortschakovii*** Schrenk in Fischer & C. A. Meyer, Enum. Pl. Nov. 1: 18. 1841.

鹰爪柴 ying zhao chai

*Convolvulus pungens* Karelin & Kirilov.

Subshrubs or cushion shrubs, 10–20(–30) cm tall; branches densely straggling, divaricate, densely silvery sericeous; twigs with short hard spines. Leaves subsessile, lanceolate, oblanceolate, or linear-lanceolate, densely silvery sericeous, base attenuate, apex acute to obtuse. Pedicel 1–2 mm. Flowers solitary, axillary, on short branches. Sepals unequal, 0.8–1.2 cm, sparsely pilose or glabrous abaxially, or ciliate distally; outer 2 broadly ovate-circular, base cordate; inner 3 narrower. Corolla rose, funnelform, 1.7–2.2 cm, midpetaline bands densely hirsute. Stamens included, slightly

unequal; filaments glabrous; anthers sagittate. Disc ringlike. Ovary conical, long pubescent. Stigmas linear. Capsule ellipsoid-ovoid, ca. 6 mm, apex sparsely pubescent. Fl. May–Jun.

Sandy or pebbly deserts, stony dry slopes. Gansu, Nei Mongol, Ningxia, Shanxi, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, ?Uzbekistan].

**2. *Convolvulus fruticosus*** Pallas, Reise Russ. Reich. 2: 734. 1773.

灌木旋花 guan mu xuan hua

Shrubs or dwarf shrubs, 20–50 cm tall, with densely straggling divaricate branches; branches densely appressed pilose; twigs sometimes with short hard spines, lower leaves

sometimes clustered on short shoots. Leaves subsessile, linear-spatulate to linear, rarely oblong-obovate, 2.2–3.5(–4.5) cm × 4–7 mm, densely appressed pilose, base decurrent, apex acute to obtuse. Pedicel 2–6 mm. Flowers axillary, solitary or 2–4 in a cyme, on a short lateral branch often ending in 1 or 2 spines. Sepals variable, lax; outer 2 oblong or obovate, 8–10 mm, hirsute abaxially; inner 3 ovate, glabrous, mucronate. Corolla narrowly funnelform, (1.3–)1.7–2.6 cm, midpetaline bands densely brown pubescent outside. Stamens included, unequal; anthers sagittate, retuse apically. Disc ringlike. Ovary conical, pubescent. Stigmas linear. Capsule ovoid-acute, 5–7 mm, pubescent distally. Fl. Apr-Jul, fr. Jul.

Gravelly or sandy soils, deserts, mountains, plains; 1400–2000 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, S Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

### 3. *Convolvulus tragacanthoides* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 5: 201. 1832.

刺旋花 ci xuan hua

*Convolvulus fruticosus* Pallas f. *tianschanica* Palibin; *C. spinifer* M. Popov.

Subshrubs forming ± compact cushions, silvery sericeous, 4–10(–15) cm tall. Stems densely branched; twigs hard, spinescent; flowering branches more elongate, not spinescent. Leaves sessile, linear, rarely oblanceolate, 0.5–2 cm × 1–4 mm, base attenuate, apex rounded. Pedicel 2–5 mm. Flowers 2–6, terminal, rarely solitary, paired spines absent. Sepals elliptic or oblong-obovate, 5–8 mm, abaxially dull yellow tomentose-villous, apex short acuminate. Corolla pink, funnelform, 1.5–2.5 cm, midpetaline bands densely pubescent; limb shallowly 5-lobed. Stamens unequal; filaments dilated basally. Ovary pubescent. Stigmas linear. Capsule globose, 4–6 mm, pubescent apically. Seeds ovoid, glabrous. Fl. May-Jul.

Dry pebbly and stony soils, deserts, rock crevices. Gansu, Hebei, Nei Mongol, Ningxia, Shanxi, Sichuan, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Tajikistan, Turkmenistan, Uzbekistan].

Sa'ad (l.c., p. 77) used *Convolvulus spinifer* M. Popov for this distinctive species, but Grigor'ev (Fl. URSS 19: 15. 1953) placed this name in synonymy with *C. tragacanthoides* Turczaninow, the earlier name.

### 4. *Convolvulus pseudocantabricus* Schrenk in Fischer & C. A. Meyer, Enum. Pl. Nov. 1: 21. 1841.

直立旋花 zhi li xuan hua

*Convolvulus askabadensis* Bornmüller & Sintenis in Bornmüller; *C. dianthoides* Karelin & Kirilov; *C. pseudocantabricus* Schrenk subsp. *dianthoides* (Karelin & Kirilov) Vvedensky.

Herbs perennial, 30–70 cm tall, of broomlike habit. Rootstock woody. Stems erect, much branched basally, densely appressed pilose. Leaves subsessile, linear to linear-lanceolate; basal leaves 2–3.5 cm × ca. 4 mm; cauline leaves 2.5–5 cm × 2–3 mm, abaxially ± appressed pilose, adaxially glabrous, base attenuate, apex acute. Inflorescences long-pedunculate axillary cymes on main stems, solitary on branchlets; peduncle 3–7 cm; bracts linear, to 1.5 cm. Pedicel

2–6 mm. Sepals obovate, oblong, or oblong-elliptic, ± unequal; inner ones 4–7 mm; outer 2 shorter, glabrous, apex ± obtuse, mucronulate. Corolla red or rose, funnelform, 1.5–2.3 cm, midpetaline bands pubescent distally. Stamens included, slightly unequal; filaments glabrous; anthers oblong, apex obtuse. Disc cupular. Ovary glabrous. Stigmas linear. Capsule ovoid-obovoid, 6–8 mm, glabrous. Seeds often 1, dark brown, ca. 3.5 × 3 mm, hirsute. Fl. May-Jul, fr. Jun-Jul.

Steppes, forests, foothills, limestone rock, stony mountain slopes. Xinjiang [NE Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia].

Sa'ad (l.c., pp. 100–104) recognized two varieties in *Convolvulus pseudocantabricus*, var. *pseudocantabricus* (sepals oblong, ca. 7 mm, acute, outer 2 ca. as long as inner ones) and var. *dianthoides* (Karelin & Kirilov) Sa'ad (sepals obovate, 4–5 mm, obtuse, mucronulate, outer 2 usually shorter than inner ones) but cited no Chinese specimens. It is not clear to which of these varieties the Chinese material ought to be assigned, as no material was available for study by Staples. The species is included here based on the account of Fang and Huang (1979).

### 5. *Convolvulus ammannii* Desrousseaux in Lamarck, Encycl. 3: 549. 1789.

银灰旋花 yin hui xuan hua

Herbs perennial, with a short woody rootstock. Stems few to several, prostrate or ascending, 2–10(–15) cm; branches ± densely silvery sericeous. Leaves sessile, linear or linear-oblanceolate, 1–2 cm × 1–4 mm, ± densely silvery sericeous, base attenuate, apex acute. Pedicel 0.5–7 cm. Flowers solitary, subterminal. Sepals slightly unequal, 3.5–7 mm, ± sericeous abaxially; outer 2 oblong or oblong-elliptic, apex acute or acuminate; inner ones wider, elliptic, apex acuminate. Corolla pale rose or whitish with pink-purple lines, funnelform, 0.8–1.5 cm; limb shallowly 5-lobed, midpetaline bands pubescent. Stamens included, unequal; filaments glabrous. Disc ringlike. Ovary ovoid, pilose apically. Stigmas linear. Capsule ovoid-ellipsoid, 6–8 mm, apiculate, apiculum pilose. Seeds 2 or 3, reddish, ovoid, smooth, beaked. Fl. Jun-Aug, fr. Jul-Aug.

Loess soils, ravines, clay banks, on dry grassy slopes, roadsides; 1200–3400 m. Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, W Sichuan, Xinjiang, E Xizang [Kazakhstan, Korea, ?Kyrgyzstan, Mongolia, Russia].

### 6. *Convolvulus lineatus* Linnaeus, Syst. Nat. ed. 10. 923. 1759.

线叶旋花 xian ye xuan hua

*Convolvulus spicifolius* Desrousseaux.

Herbs perennial, with thick rhizomes, 3–20(–40) cm tall. Stems several, prostrate or ascending; branches densely silvery or golden sericeous. Apical leaves sessile, basal leaves petiolate; leaf blade oblanceolate to oblong-oblanceolate, 4–6 × 0.5–2.5 cm, ± shiny silvery or golden sericeous, base gradually attenuate, decurrent, apex acute or obtuse. Flowers (1–)3 or 4 (or 5), axillary or subterminal. Sepals unequal, 6–12 mm, ± densely sericeous, base convex, apex flat, reflexed; outer 2 oblong to lanceolate-linear; inner ones wider, apex

acuminate. Corolla rose or white, funnellform, 1.5–2.5 cm, midpetaline bands densely yellowish sericeous. Stamens included, unequal; filaments glabrous; anthers oblong-sagittate. Disc ringlike, glabrous. Ovary pubescent. Stigmas linear. Capsule oblong-ovoid, ± appressed pubescent. Seeds blackish, ca. 3 mm, short pubescent. Fl. Apr-Aug, fr. Jul-Aug.  $2n = 30$ .

Waste areas, fields, roadsides, sandy hills, bare stony soils, sometimes in saline meadows, semi-desert steppes, dry steppes, rocky deserts; 300–1300 m. Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan, Turkmenistan; N Africa, SW Asia, E and S Europe].

Sa'ad (l.c. pp. 128–130) recognized two varieties of *Convolvulus lineatus*. The Chinese specimens are referable to the type variety.

## 7. *Convolvulus arvensis* Linnaeus, Sp. Pl. 1: 153. 1753.

田旋花 tian xuan hua

*Convolvulus arvensis* var. *angustatus* Ledebour; *C. arvensis* var. *crassifolius* Choisy; *C. arvensis* var. *linearifolius* Choisy; *C. arvensis* var. *sagittatus* Ledebour; *C. arvensis* var. *sagittifolius* Turczaninow; *C. chinensis* Ker Gawler; *C. sagittifolius* (Fischer) Liou & Ling.

Herbs perennial, with ± woody rhizomes. Stems prostrate or twining, to 1 m tall, glabrous or sparsely pubescent. Petiole 0.3–2 cm; leaf blade ovate-oblong to ovate, 1.5–5 × 1–4 cm, glabrous or pubescent, base hastate, sagittate, or cordate, apex obtuse, mucronulate; prominently 3-veined basally, upper parts pinnately veined. Inflorescences axillary, cymose, 1–3-flowered; peduncle 3–8 cm; bracts 2, linear, ca. 3 mm. Pedicel ca. 4 × as long as calyx. Sepals unequal, 3.5–5 mm; outer 2 broadly oblong to obovate, shorter, abaxially sparsely pubescent or glabrous, margin ± ciliate, apex retuse; inner ones ovate-circular, margin membranous, apex obtuse or retuse. Corolla white or pink, broadly funnellform, 1.5–2.6 cm, midpetaline bands pubescent outside distally; limb shallowly 5-lobed. Stamens included, unequal; filaments minutely scaly basally. Disc cupular. Ovary ovoid, glabrous or sparsely pubescent. Stigmas cylindrical. Capsule ovoid to subglobose, 5–8 mm, glabrous. Seeds 4 or fewer, dark brown or black, ovoid, 3–4 mm, tuberculate. Fl. Jun-Aug, fr. Jun-Sep.  $2n = 24, 48, 50$ .

Cultivated areas, wasteland, roadsides, grassy slopes; 600–4500 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang [Asia, Europe, North America, South America].

## 8. *Convolvulus steppicola* Handel-Mazzetti, Symb. Sin. 7: 810. 1936.

草坡旋花 cao po xuan hua

Herbs perennial, with a thick woody rootstock. Stems terete, diffuse, twining, to 1.5 m, densely yellowish tomentose. Petiole 0–5 mm; leaf blade linear to linear-oblong, 2–3.2 cm × 3–5 mm, base sagittate, margin often undulate-crenate or subentire, apex acute. Bracteoles 2, above middle

of pedicel, lanceolate. Pedicel 1.5–5.5 cm. Flowers 1 or 2 together, axillary. Sepals unequal, 5–6 mm, acuminate-cuspidate apically; outer 2 lanceolate-elliptic, sericeous; inner ones broadly ovate, margin ciliate, glabrescent. Corolla funnellform, ca. 1.2 cm, midpetaline bands appressed villous; limb 5-lobed. Stamens included; filaments ca. 4 mm, glabrous; anthers linear, ca. 2.5 mm, base sagittate. Disc ringlike. Ovary glabrous. Stigmas linear. Capsule globose, ca. 8 mm in diam., glabrous, apiculate. Seeds dark brown, ovoid, 3–4 mm, minutely tuberculate. Fl. Apr-May, fr. May.

• Grasslands, steppes; ca. 1600 m. N Yunnan (Jinshajiang Valley).

