

### 154. CALOPHACA Fischer ex Candolle, Prodr. 2: 270. 1825.

丽豆腐 li dou shu

Zhu Xiangyun (朱相云); Kai Larsen

Shrubs or subshrubs. Stipules lanceolate or broadly lanceolate, large, membranous or herbaceous, adnate to base of petiole. Leaves imparipinnate, 5–27-foliolate; stipels absent; leaflet blades leathery, margin entire. Raceme 4-flowered or more; bracts and bractlets rarely persistent. Calyx tubular, oblique on pedicel; teeth 5, almost equal or adaxial 2 connate. Corolla yellow, large; standard ovate or suborbicular, erect, reflexed at margins; wings obovate-oblong or subfalcate; keel incurved, equal to wings, apex blunt. Stamens diadelphous (9+1); anthers orbicular. Ovary sessile, with glandular trichomes or pubescent; style filiform; stigma small. Legume cylindrical or linear, pubescent or with glandular trichomes, 1-loculed, inside pubescent or glabrous, 2-valved, with persistent calyx. Seeds subreniform, without a caruncle.

Five species: China, Russia; C Asia; three species (two endemic) in China.

*Calophaca tianschanica* (B. Fedtschenko) Boissier (Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 137. 1933; *C. nigricans* var. *tianschanica* B. Fedtschenko, Trudy Imp. S.-Peterburgsk. Bot. Sada 24: 178. 1905) was recorded from Xinjiang by S. H. Cheng and L. K. Dai (Ill. Treatm. Princ. Pl. China (Leguminosae), 357–359. 1955). However, the present authors found no relevant specimens and therefore could not substantiate the occurrence of this species in China.

- 1a. Legume without glandular trichomes ..... 1. *C. chinensis*
- 1b. Legume with glandular trichomes.
  - 2a. Stipules 0.5–0.8 cm; peduncle densely lanuginous; calyx ca. 1 cm, appressed sericeous; seeds dark brown ... 2. *C. soongorica*
  - 2b. Stipules ca. 2 cm; peduncle with glandular and white long trichomes; calyx 1.5–2 cm, with glandular and white long trichomes; seeds olive-green ..... 3. *C. sinica*

**1. *Calophaca chinensis*** Borissova, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 21: 243. 1961.

华丽豆 hua li dou

Shrubs, 20–40 cm tall. Stems with many branches; bark bright, glabrous, with pale yellow grains; young branches pale brown, with dense short trichomes. Stipules linear, 4–5 mm, brown, with dense short trichomes, basally connate, apex acuminate. Leaves 2–4 cm, 5–11-foliolate; leaflet blades orbicular to ovate, 4–9 × 3–6 mm, leathery, grayish white, both surfaces with dense appressed trichomes, veins conspicuous, base rounded, apex shortly acute. Inflorescences subcapitate, 4- or 5-flowered; peduncle 3–4 cm, hard, with dense spreading long trichomes; bracts 2–4 mm, base triangular, apex acuminate. Flowers ca. 2 cm; pedicel 1–2 mm, with dense trichomes; bracteoles 2, ovate or oblong, 1–2 mm, caducous, abaxially with dense short trichomes. Calyx broadly campanulate, 7–9 mm, with short white trichomes, base slightly gibbous; teeth triangular-lanceolate, 1/3–1/2 as long as tube, both surfaces with dense trichomes. Corolla yellow; standard ca. 2 cm, outside with dense trichomes, lamina orbicular, ca. 1.5 cm wide, base cuneate and with a ca. 4 mm claw, apex emarginate; wings ca. 1.8 cm, lamina ca. 14 × 5 mm, outside rarely with white trichomes, basally narrowed with ca. 1.5 mm auricles and a ca. 5 mm incurved claw, apically enlarged, apex truncate to obtuse; keel ± as long as wings, outside rarely with white long trichomes, basally with a ca. 7 × 2 mm claw, auricles short and blunt, lamina ca. 6 mm wide, apex truncate. Stamens 1.5–1.8 cm; anthers orbicular, ca. 0.5 mm in diam. Ovary oblong, with appressed white trichomes; style with semiappressed trichomes but glabrous at apex. Legume 1.5–1.8 cm, ca. 5 mm wide in apical part, with dense white short trichomes, apex beaked. Seeds olive-green, ellipsoid-reniform, ca. 3 × 2 mm, glabrous,

smooth. Fl. Jul–Aug, fr. Aug.

• Sunny slopes, meadows within *Spiraea*, *Artemisia*, and *Poa*; 900–1400 m. Xinjiang.

**2. *Calophaca soongorica*** Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 14: 401. 1841.

新疆丽豆 xin jiang li dou

*Calophaca hovenii* Schrenk.

Shrubs 20–100 cm tall. Stems with many branches; bark pale grayish yellow, glabrous, exfoliating; young branches pale brown, sericeous or lanuginous. Stipules linear-lanceolate, 5–8 mm, membranous, pale brown, rarely with short trichomes. Leaves 3–7 cm, 7–11-foliolate; rachis and petiole rarely with short trichomes; leaflet blades orbicular to narrowly orbicular-elliptical, 4–14 × 4–10 mm, both surfaces bluish gray with a waxy layer and rarely with appressed short trichomes, veins protruding on both surfaces, base rounded, apex shortly acute. Inflorescences 5–8-flowered; peduncle 7–10 cm, hard, densely lanuginous. Flowers ca. 2.5 cm; pedicel 2–4 mm; bracteoles 2, pale brown, triangular, 2–3 mm, with dense silky appressed trichomes. Calyx campanulate, ca. 1 cm, outside rarely densely sericeous, inside rarely appressed sericeous, base oblique; teeth triangular-lanceolate to triangular, ± as long as tube. Corolla yellow, pale brown when dry; standard 2–2.5 cm, outside with dense short trichomes, base shortly clawed, lamina orbicular, apex emarginate; wings slightly shorter than standard, lamina oblong; keel shorter than wings. Legume narrowly cylindrical, 2–3 cm × 6–8 mm, with acute hard glandular appressed trichomes, with short trichomes dorsally, segments disciform. Seeds dark brown, reniform, 3–6 × 2–4 mm, glabrous, smooth. Fl. Jul–Aug, fr. Jul–Aug. *2n* = 32.

Sunny slopes in valleys, among shrubs; 1300–1400 m. Xinjiang [Kazakhstan].

**3. *Calophaca sinica*** Rehder, J. Arnold Arbor. 14: 210. 1933.

丽豆 li dou

Shrubs, 20–40 cm tall. Stems many branched; bark bright, glabrous, with pale yellow grains; young branches pale brown sericeous. Stipules linear, ca. 2 cm, brown, with dense short trichomes, basally connate, apex acuminate. Leaves 2–9 cm, 5–11-foliolate; leaflet blades orbicular to ovate, 1–2.5 × 0.7–1.8 cm, leathery, both surfaces grayish white and with dense appressed trichomes, veins conspicuous, base rounded, apex shortly acute. Inflorescences subcapitate, 4- or 5-flowered; peduncle 5–12 cm, hard, with dense spreading long trichomes; bracts 2–4 mm, base triangular, apex acuminate. Flowers ca. 2.5 cm; pedicel 3–6 mm, with dense trichomes; bracteoles 2, ovate, linear, or oblong, ca. 5 mm, caducous, abaxially with dense short trichomes. Calyx broadly campanulate, 1.5–2 cm, with short white trichomes, base slightly gibbous; teeth triangular-lanceolate, 1/3–1/2 as long as tube, both surfaces with dense trichomes. Corolla yellow; standard ca. 2.5 cm, outside with dense trichomes, lamina orbicular, ca. 1.5 cm wide, base broadly cuneate and with a ca. 4 mm claw, apex emarginate; wings ca. 2.2 cm, lamina ca. 14 × 5 mm, outside rarely with white trichomes, basally narrowed with ca. 1.5 mm auricles and a ca. 5 mm incurved claw, apically enlarged, apex truncate to obtuse; keel ca. as long as wings, outside rarely with long white trichomes, lamina ca. 6 mm wide, basally with short blunt auricles and with a ca. 7 × 2 mm claw, apex truncate. Stamens 1.5–1.8 cm; anthers orbicular, ca. 0.5 mm in diam. Ovary oblong, with white appressed trichomes; style with semiappressed trichomes but glabrous at apex. Legume 1.5–4.5 cm, ca. 9 mm wide in apical part, with dense white short trichomes and with glandular trichomes, apex beaked. Seeds olive-green, ellipsoid-reniform, ca. 3 × 2 mm, glabrous, smooth. Fl. May–Jun, fr. Jun–Aug.  $2n = 16^*$ .

• N-facing valley slopes, among shrubs, dunes of loess; 900–1800 m. W Hebei, Nei Mongol, Shanxi.

