
**石莲属** shi lian shu

Plants annual, biennial, or perennial, with reddish brown, thin striations or spots throughout, glabrous or minutely hairy. Roots fibrous. Sterile stems usually present. Leaves mostly in basal rosettes, often with several rosettes per plant, often caducous and lost by anthesis, alternate, apex obtuse or acuminate. Flowering stems erect, ± elongated; stem leaves alternate. Inflorescence terminal or lateral, paniculate-corymbiform with long, basally subopposite branches, rarely simple and racemelike; bracts leaflike, laxly arranged. Flowers erect, pedicellate, bisexual, 5-merous. Calyx subglobose; sepals erect, triangular or triangular-lanceolate, base connate. Petals free or almost so, yellow to red or purplish red, subglobose-urceolate, S-shaped in longitudinal section, apically extrorsely vaulted curved, base concave, apex sometimes thickened. Stamens as many as petals, inserted on sepals, slightly shorter than petals. Nectar scales entire, apex emarginate or dentate. Carpels somewhat wide, base abruptly narrowed. Styles short; stigmas capitulate. Follicles many seeded.

Seven species: Bhutan, China, India, Nepal, Pakistan, Sikkim; seven species (six endemic) in China.

1a. Plants usually more than 10 cm.
   2a. Lateral branches of inflorescence to 10 cm ................................................................. 5. *S. longistyla*
   2b. Lateral branches of inflorescence generally 5–6 cm or shorter.
      3a. Stem leaves uniformly broad lanceolate, subobovate, or ovate-elliptic, 0.4–1 cm wide . . 6. *S. indica*
      3b. Stem leaves dimorphic: proximal ones broadly obovate or elliptic, 2–2.7 cm wide, distal ones narrowly lanceolate to linear-lanceolate, 0.3–0.8 cm wide .................................................. 7. *S. diversifolia*

1b. Plants 5–10 cm.
   4a. Plants densely shortly white pubescent ........................................................................ 1. *S. yunnanensis*
   4b. Plants glabrous, or sparsely hairy on leaves adaxially or on flowering stems.
      5a. Leaves hairy but flowering stems glabrous ................................................................ 6. *S. indica*
      5b. Leaves glabrous but flowering stems sometimes sparsely pilose.
         6a. Sepals equaling or longer than petals; caudex branched, 3–6 cm ............................. 2. *S. ambiguus*
         6b. Sepals shorter than petals; caudex not elongated.
            7a. Basal leaves in a compact rosette; petals triangular-lanceolate ...................... 3. *S. densirosulata*
            7b. Basal leaves caducous; petals oblong ................................................................. 4. *S. techinensis*

1. **Sinocrassula yunnanensis** (Franchet) A. Berger in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 18a: 463. 1930.

**云南石莲** yun nan shi lian


Plants 5–10 cm tall. Rosette lax, 2.5–3.5 cm in diam.
Basal leaves oblanceolate to spatulate, 1.2–2.5 × 0.4–0.5 cm, with dense, white, short pubescent, apex acute to acuminate. Flowering stems 5–10 cm, densely leafy, hairy; stem leaves obovate-lanceolate, hairy. Inflorescences corymbiform, ± dense, ca. 2.5 cm in diam.; bracts few, obovate-lanceolate, pubescent. Flowers mostly large. Sepals linear-lanceolate, ca. 1.8 mm, minutely papillate, apex obtuse. Petals yellowish green, obovate-lanceolate, 3.5–4 × ca. 1 mm, minutely papillate abaxially. Stamens shorter than petals. Nectar scales quadrate. Carpels lanceolate. Styles short. Fl. Sep–Oct.

* W Yunnan (Dali Xian).


**长萼石莲** chang e shi lian


Plants perennial, glabrous. Caudex branched, ascending, slender, 3–6 cm, with sterile lateral branches. Basal leaves opposite, oblanceolate to oblong, 7–9 × 1.5–3 mm, apex obtuse. Flowering stems terminal, erect, 7–10 cm; stem leaves few, alternate or opposite, orbicular, orbicular-obovate, or orbicular-omphaloid, 0.9–1.2 × 0.9–1.2 cm, apex acute and mucronate. Inflorescences corymbiform, lax, 1.2–2.5 × 2.5–3.5 cm; bracts few, linear-oblong, apex obtuse; pedicels purple, longer than flowers. Sepals linear-lanceolate, 2.5–4 × 0.8–1 mm, apex obtuse. Petals reddish purple, obovate-triangular, apex acute. Filaments narrowly triangular, 1.1–1.3 mm. Nectar scales nearly quadrate. Carpels erect. Styles short. Seeds oblong-ovoid. Fl. May–Sep.

* • Rocks on slopes; 2000–3000 m. SW Sichuan, NW Yunnan.


**密叶石莲** mi ye shi lian


Rosette compact, 2–2.5 × 4–4.5 cm. Basal leaves ca. 30, pale green, spatulate, 1–2.5 × 0.6–0.8 cm, apex purple, acuminate. Flowering stem branched near base, 5–7.5 cm; stem leaves alternate, spatulate to elliptic, 1–2 × 0.3–0.5 cm, base rounded to cuneate. Inflorescences

globose, 1.5–3 × 2.5–5 cm, many flowered; pedicels short. Sepals narrowly triangular, ca. 2.5 × 0.8 mm. Petals purplish red, with purple spots toward apex, triangular-lanceolate, to 4 × 1–1.2 mm. Stamens ca. 3 mm. Nectar scales spatulate-quadrature, minute. Carpels erect, almost free, ovate-lanceolate. Styles slender. Fl. Jul, fr. Nov.


Herbs biennial, glabrous. Roots fibrous. Basal leaves alternate, broadly spatulate-oblong, 3.5–6 × 1–1.5 cm. Flowering stem erect, 5–60 cm; stem leaves alternate, broadly ob lanceolate, subobovate, or ovate-ornicular, 2.5–3 × 0.4–1 cm, margin entire or distally acuminately serrate, apex obtusely rounded or acuminate. Inflorescences paniculate, often corymbiform; lateral branches generally 5–6 cm or shorter; bracts resembling distal stem leaves but smaller. Sepals broadly triangular, ca. 2 × 1 mm, apex subacute. Petals red, reddish, yellow, or greenish yellow, lanceolate to ovate, 2.5–5.5 × ca. 2 mm, apex usually reflexed. Stamens 3–4 mm. Nectar scales quadrature, apex emarginate. Carpels ovoid, 2.5–3 cm, base connate for 0.5–1 mm, apex acute. Styles less than 1 mm. Follicles apically with a recurved beak. Seeds smooth. Fl. Jul–Oct.

Rocks in valleys or on slopes, dry stony and gravelly slopes, river banks, 500–4000 m. S Gansu, Guangxi, Guizhou, Henan, Hubei, Hunan, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Nepal, Pakistan, Sikkim].

1a. Plants 5–10 cm tall; leaves hairy, margin acuminately serrate distally ......... 6b. var. serrata

1b. Plants more than 10 cm tall (8–9 cm tall in var. obtusifolia); leaves glabrous, margin entire.

2a. Petals red or reddish.
3a. Leaf apex acuminate ........ 6a. var. indica
3b. Leaf apex obtuse-rounded 6e. var. obtusifolia

2b. Petals yellow or greenish yellow, sometimes with reddish apex.
4a. Plants 30–60 cm tall; leaves ovate-ornicular .......................... 6d. var. forrestii
4b. Plants 10–20 cm tall; leaves narrow.

5a. Petals yellow with reddish apex, 5–5.5 mm .. 6e. var. luteorubra
5b. Petals greenish yellow, ca. 2.5 mm .......... 6f. var. viridiflora

6a. Sinocrassula indica var. indica


Herbs biennial, glabrous. Roots fibrous. Basal leaves spatulate-oblong, 3.5–6 × 1–1.5 cm. Flowering stem erect, 5–60 cm; stem leaves alternate, broadly ob lanceolate, subobovate, or ovate-ornicular, 2.5–3 × 0.4–1 cm, margin entire or distally acuminately serrate, apex obtusely rounded or acuminate. Inflorescences paniculate, often corymbiform; lateral branches generally 5–6 cm or shorter; bracts resembling distal stem leaves but smaller. Sepals broadly triangular, ca. 2 × 1 mm, apex subacute. Petals red, reddish, yellow, or greenish yellow, lanceolate to ovate, 2.5–5.5 × ca. 2 mm, apex usually reflexed. Stamens 3–4 mm. Nectar scales quadrature, apex emarginate. Carpels ovoid, 2.5–3 cm, base connate for 0.5–1 mm, apex acute. Styles less than 1 mm. Follicles apically with a recurved beak. Seeds smooth. Fl. Jul–Oct.

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The plants are used medicinally.

钝叶石莲 dун ye shi lian

Plants 8–9 cm tall. Leaves glabrous, margin entire, apex obtuse-rounded. Petals reddish.

• Rocks in valleys; 2300–2500 m. W Sichuan, NW Yunnan.


圆叶石莲 yuан ye shi lian

Plants 30–60 cm tall. Leaves ovate-orbicular, glabrous, margin entire. Petals yellow.

• Rocks; 1000–3000 m. NW Yunnan.

This variety was treated as Sinocrassula luteorubra var. forrestii (Raymond-Hamet) H. Chuang (in C. Y. Wu, Fl. Yunnan. 8: 142. 1997), but that name is invalid because the basionym was not fully cited and the species name to which it was assigned was itself invalid (see note under var. luteorubra).


黄花石莲 huang hua shi lian

Plants 10–20 cm tall. Leaves narrow, glabrous, margin entire. Petals yellow with reddish apex, 5–5.5 mm.

• Dry stony and gravelly slopes; 700–1200 m. Henan, S Shaanxi, N Sichuan.

This variety was treated at specific rank, as Sinocrassula luteorubra var. forrestii (Raymond-Hamet) H. Chuang (in C. Y. Wu, Fl. Yunnan. 8: 142. 1997), but that name is invalid because the basionym was not fully cited and the species name to which it was assigned was itself invalid (see note under var. luteorubra).


绿花石莲 lü hua shi lian

Plants 10–20 cm tall. Leaves narrow, glabrous, margin entire. Petals greenish yellow, ca. 2.5 mm.

• River banks, rocks on slopes; 500–1200 m. Henan, S Shaanxi, N Sichuan.

This species is included here on the basis of the protologue; no material has been seen by the present authors. It is clearly closely related to the widespread and variable Sinocrassula indica.


异形叶石莲 yì xínɡ yè shi lian
Plants 40–50 cm tall, glabrous, many parts purple-spotted. Roots fibrous. Rosette not well defined. Basal leaves densely brown-spotted, broadly obovate, 3–4 × 2–2.5 cm, base broadly cuneate, apex rounded. Stem leaves alternate, dimorphic: broadly obovate or elliptic and 3–5 × 2–2.7 cm proximally on stem, narrowly lanceolate to linear-lanceolate and 0.3–0.8 cm wide distally on stem, base cuneate to angustate, apex obtuse to acute or acuminate. Inflorescences corymbiform, 6–15 × 8–12 cm; branches winged; bracts resembling distal stem leaves but smaller; pedicels longer than flowers, winged. Sepals triangular-lanceolate, 2–2.5 × 1–1.5 mm, apex acute or acuminate. Petals yellow, spotted with purple, lanceolate, 3.5–4 × 1–1.5 mm, apex acuminate. Stamens 2.5–3 mm; filaments white, spotted with purple; anthers oblong-cordate, ca. 0.8 mm. Nectar scales broadly quadrate, 0.3–0.5 × 0.5–0.7 mm. Carpels erect, narrowly ovoid, 2.5–3 mm. Styles slender, 0.5–1 mm. Follicles many seeded. Seeds brown, ovoid-cylindric, longitudinally 10–12-striate. Fl. Aug, fr. Nov.

• 2500–2700 m. NW Yunnan (Gongshan Drung-Nu Zu Zizhixian).

This species is included here on the basis of the protologue; no material has been seen by the present authors. It is clearly closely related to the widespread and variable Sinocrassula indica.