

12. SEDUM Linnaeus, Sp. Pl. 1: 430. 1753.

景天属 *jing tian shu*

Herbs annual or perennial, mostly glabrous, less often hairy. Roots normally fibrous. Rootstock usually not developed, occasionally plants rhizomatous. Stems erect or decumbent, sometimes fasciculate or mosslike, fleshy, glabrous or hairy, base rarely woody. Leaves alternate, opposite, or verticillate, base often spurred, margin normally entire (4–8-dentate in *Sedum rosthornianum* and remotely dentate in *S. engleri* var. *dentatum*). Inflorescence terminal or axillary, cymose, often corymbiform, 1- to many flowered. Flowers usually bisexual, rarely unisexual, mostly unequally (3–)5(–9)-merous. Sepals and petals free or basally connate. Petals free or almost so, mostly yellow, less often white or reddish. Stamens usually 2 × as many as petals, in 2 series, rarely equal in number to petals and in 1 series; antepetalous ones adnate to petal base or slightly above. Nectar scales entire or apex emarginate. Carpels usually as many as petals, occasionally fewer, free or basally widened and connate. Styles short or long. Follicles many or few seeded. Seeds smooth or papillate, less often striate.

About 470 species; mainly in the N hemisphere, but extending to the S hemisphere in Africa and South America; 121 species (91 endemic) in China.

Key to sections

- 1a. Carpels and follicles adaxially gibbous 3. *S.* sect. *Sedum*
- 1b. Carpels and follicles adaxially not gibbous.
 - 2a. Leaf base spurred; petals yellow, rarely red or purple-red 2. *S.* sect. *Oreades*
 - 2b. Leaf base spurless; petals white or reddish purple, rarely yellow 1. *S.* sect. *Filipes*

1. *Sedum* sect. *Filipes* (Fröderström) S. H. Fu, Acta Phytotax. Sin., Addit. 1: 115. 1965.

小山飘风组 *xiao shan piao feng zu*

Sedum Linnaeus “group” *Filipes* Fröderström, Acta Horti Gothob. 6(App.): 34. 1931.

Leaf base often narrowed into a petiole, spurless. Inflorescence cymose or paniculate-corymbose, lax. Flowers long pedicellate. Sepals spurless. Petals white or reddish purple, rarely yellow. Carpels and follicles adaxially not gibbous. Carpels erect to suberect, base connate to subconnate. Follicles usually many seeded.

Eight species: Bhutan, China, Japan, Myanmar, Nepal, Sikkim; eight species (three endemic) in China.

- 1a. Plants perennial, fasciculate; stamens in 1 series 1. *S. correptum*
- 1b. Plants annual or biennial, rarely perennial, solitary or tufted; stamens in 2 series.
 - 2a. Plants glandular hairy.
 - 3a. Plants annual; stems soft; leaves 2–4 × 1.4–2.5 cm 7. *S. drymarioides*
 - 3b. Plants biennial; stems ± woody at base; leaves 0.7–1.5 × 0.7–0.9 cm 8. *S. stellariifolium*
 - 2b. Plants glabrous.
 - 4a. Carpels minutely papillate.
 - 5a. Stems simple, erect; leaf margin dentate 2. *S. rosthornianum*
 - 5b. Stems many branched, decumbent; leaf margin entire 3. *S. elatinoides*
 - 4b. Carpels smooth.
 - 6a. Carpels 3 4. *S. bonnieri*
 - 6b. Carpels 5.
 - 7a. Petals reddish purple; flowering stems branched, ca. 20 cm 5. *S. filipes*
 - 7b. Petals white; flowering stem simple, ca. 10 cm 6. *S. majus*

1. *Sedum correptum* Fröderström in Handel-Mazzetti, Symb. Sin. 7: 409. 1931.

单花景天 *dan hua jing tian*

Herbs perennial. Stems tufted, 2–4 cm, basally prostrate then ascending to suberect, terete, densely and minutely papillate. Leaves alternate, crowded, sessile, spatulate to narrowly obovate, 5–6.5 × 1.3–1.6 mm, densely and minutely papillate-hairy, apex rounded. Cyme terminal or axillary, simple, 3–6-flowered; bracts leaflike, small. Flowers 5-merous; pedicel 1.5–2 mm. Sepals narrowly oblong-lanceolate, 1.6–2 × 0.3–0.5 mm, apex obtuse. Petals white, narrowly elliptic, 3.2–3.5 × 0.9–1.2 mm, apex acute. Stamens 5, antepetalous, 2.2–2.4 mm;

anthers ovoid, apex emarginate. Nectar scales narrowly linear-spatulate. Carpels erect, 2.5–3 mm, base broad, subconnate; ovules 8–10. Styles ca. 0.5 mm. Follicles 3.2–3.5 mm. Seeds narrowly oblong, narrowly winged. Fl. May.

Rocks on slopes; 4100–4300 m. SW Sichuan (Yanyuan Xian), NW Yunnan [Bhutan].

2. *Sedum rosthornianum* Diels, Bot. Jahrb. Syst. 29: 361. 1900.

南川景天 *nan chuan jing tian*

Herbs ?perennial, glabrous. Flowering stems solitary, simple, erect, 15–25 cm. Leaves opposite or 3- or 4-verticillate; pseudopetiole 4–6 mm wide; leaf blade rhombic-oblong, 20–33 × 8–12 mm, base abruptly narrowed, margin 4–8-dentate. Cyme paniculiform, 5–10 cm. Flowers unequally 5-merous; pedicel 3–8 mm. Sepals narrowly triangular, 1–1.5 mm, midvein conspicuous, base connate. Petals white, suboblong, 3–4 mm, base broad, apex acuminate, tip subobtusate. Stamens 10; antesepalous ones ca. 2 mm; antepetalous ones ca. 1.5 mm, inserted slightly above petal base. Nectar scales broadly spatulate, ca. 0.5 mm. Carpels erect, broadly ovoid, ca. 3 mm, adaxially minutely papillate, base broad. Styles slender. Follicles many seeded. Seeds ovoid. Fl. Jun.

• Grassland slopes; ca. 1500 m. E Sichuan.

3. *Sedum elatinoide* Franchet, *Nouv. Arch. Mus. Hist. Nat.*, sér. 2, 6: 11. 1883.

细叶景天 *xi ye jing tian*

Sedum silvestrii Pampanini.

Herbs annual, glabrous. Stems solitary or tufted, 5–30 cm; branches many, decumbent. Leaves 3–6-verticillate, sessile or subsessile; leaf blade narrowly oblanceolate, 8–20 × 2–4 mm, base attenuate, apex acute. Cymes terminal and axillary, long pedunculate basally on rachis, paniculiform or corymbiform, few flowered. Flowers unequally 5-merous; pedicel slender, 5–8 mm. Sepals narrowly triangular to ovate-lanceolate, 1–1.5 cm, apex subacute. Petals white, lanceolate-ovate, 2–3 mm, apex acute. Stamens 10, shorter than petals. Nectar scales broadly spatulate, ca. 0.5 mm, apex emarginate. Carpels suberect, ellipsoid, minutely mammillate, base connate. Follicles divergent when mature. Seeds ovoid. Fl. May–Jun, fr. Aug–Sep.

Rocks on slopes; 400–3400 m. Gansu, Hubei, Shaanxi, Shanxi, Sichuan, NW Yunnan [Myanmar].

This species is used medicinally.

4. *Sedum bonnierii* Raymond-Hamet, *Rev. Gén. Bot.* 25: 92. 1913.

城口景天 *cheng kou jing tian*

Herbs perennial, glabrous. Stems tufted, 5–20 cm; branches many, creeping, slender. Leaves 3–5-verticillate; pseudopetiole 1–7 mm; leaf blade ovate to orbicular, 5–9 × 2–7 mm, base abruptly narrowed, apex rounded-obtusate. Cyme subpaniculiform, 4- or 5-flowered. Flowers unequally 4- or 5-merous; pedicel slender, 5–9 mm. Sepals broadly triangular to suboblong, 0.6–1.5 mm, apex obtuse. Petals obovate, 2–2.3 mm, apex obtuse. Stamens 8–10, shorter than or subequaling petals. Nectar scales 3, linear-spatulate, ca. 0.6 mm. Carpels 3, oblong, 2.5–5 mm, base connate. Styles short. Follicles 3–8-seeded. Seeds oblong, ca. 0.6 mm. Fl. Aug–Sep, fr. Oct.

• Rocks in forests; 500–1400 m. S Shaanxi, E Sichuan.

5. *Sedum filipes* Hemsley in F. B. Forbes & Hemsley, *J. Linn. Soc., Bot.* 23: 284. 1887.

小山飘风 *xiao shan piao feng*

Herbs annual or perennial, glabrous. Stems 10–30 cm, usually branched, erect or ascending. Leaves opposite or 3- or 4-verticillate; pseudopetiole ca. 1.5 cm; leaf blade broadly ovate to suborbicular, 15–30 × 12–20 mm, apex rounded. Cymes terminal and subterminal, corymbiform, 5–10 cm in diam. Flowers unequally 5-merous; pedicel 3–5 mm. Sepals lanceolate-triangular, 1–1.2 mm, apex obtuse. Petals reddish purple, ovate-oblong, 3–4 mm, apex obtuse. Stamens 10, 3–5 mm. Nectar scales spatulate, minute, apex emarginate. Carpels suberect, oblong to lanceolate, 2–3 mm, glabrous. Styles ca. 1 mm. Follicles 3- or 4-seeded. Seeds brown, obovoid. Fl. Aug–Oct, fr. Oct.

Forested slopes; 800–2000 m. Henan, Hubei, Jiangsu, Shaanxi, Sichuan, Yunnan, Zhejiang [Bhutan, Myanmar, Nepal, Sikkim].

6. *Sedum majus* (Hemsley) Migo, *Bull. Shanghai Sci. Inst.* 14: 293. 1944.

山飘风 *shan piao feng*

Sedum filipes Hemsley var. *majus* Hemsley in F. B. Forbes & Hemsley, *J. Linn. Soc., Bot.* 23: 284. 1887.

Herbs. Stem simple, ca. 10 cm. Leaves in 2 pairs, decussate but appearing 4-verticillate; pseudopetiole or subsessile; leaf blade orbicular to ovate-orbicular, ca. 40 × 40 mm in larger pair, base abruptly narrowed, apex rounded to obtuse. Cyme corymbiform; peduncle 1.5–3 cm. Flowers unequally 5-merous; pedicel 3–5 mm. Sepals subquadrangular, ca. 0.5 mm, apex obtuse. Petals white, oblong-lanceolate, 3–4 × 1–1.2 mm. Stamens 10, ca. 3 mm. Nectar scales oblong, ca. 0.8 mm. Carpels erect, oblong-ellipsoid, 3–4 mm, glabrous, base connate for ca. 1 mm. Follicles few seeded. Fl. Jul–Oct.

Rocks on forested slopes; 1000–4300 m. Hubei, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, Nepal, Sikkim].

This species is used medicinally.

7. *Sedum drymarioides* Hance, *J. Bot.* 3: 379. 1865.

大叶火焰草 *da ye huo yan cao*

Sedum uraiense Hayata.

Herbs annual, glandular pubescent. Stems solitary, 7–25 cm; branches many, ascending, slender, soft. Proximal stem leaves opposite or 4-verticillate, others alternate; petiole 1–2 cm; leaf blade ovate to broadly so, 26–40 × 14–25 mm, base broadly cuneate and decurrent. Cyme paniculiform, few flowered. Flowers unequally 5-merous; pedicel 4–8 mm. Sepals oblong to lanceolate, ca. 2 mm, apex subacute. Petals white, oblong, 3–4 mm, apex acuminate. Stamens 10, 2–3 mm. Nectar scales broadly spatulate, apex emarginate to shallowly cleft. Carpels divergent, 2.5–5 mm. Seeds oblong-ovoid, longitudinally striate. Fl. Apr–Jun, fr. Aug.

Shady places among rocks on mountains; ca. 900 m. Anhui, Fujian, Guangdong, Guangxi, Henan, Hubei, Hunan, Jiangxi, Taiwan, Zhejiang [Japan].

8. *Sedum stellariifolium* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 6: 10. 1883.

火焰草 huó yán cǎo

Sedum bodinieri H. Léveillé & Vaniot; *S. drymarioides* Hance var. *stellariifolium* (Franchet) Raymond-Hamet; *S. esquirolii* H. Léveillé; *S. viscosum* Praeger. Herbs annual or biennial, glandular pubescent. Stems solitary or tufted, erect, brown, 10–15 cm; branches many, declinate, base ± woody. Leaves alternate; petiole 4–8 mm; leaf blade triangular to broadly triangular-ovate, 7–15 × 7–9 mm, base broadly cuneate to truncate, apex acute. Cyme lax, sometimes 1-

branched. Flowers unequally 5-merous; pedicel 5–10 mm. Sepals lanceolate to oblong, 1–2 mm, apex acuminate. Petals yellow, lanceolate to oblong, 3–5 mm. Stamens 10, shorter than petals. Nectar scales broadly spatulate to cuneate, ca. 0.3 mm, apex emarginate. Carpels suberect, oblong, ca. 4 mm. Styles short. Follicles basally connate, apically divergent. Seeds brown, oblong-ovoid, longitudinally striate. Fl. Jun–Aug, fr. Aug–Sep.

• Soil or rock crevices in valleys or on slopes; 400–3400 m. Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan.

2. *Sedum* sect. **Oreades** (Fröderström) K. T. Fu, Acta Phytotax. Sin. 12: 52. 1974.

山景天组 shān jǐng tiān zǔ

Sedum “group” *Oreades* Fröderström, Acta Horti Gothob. 6(App.): 41. 1931.

Leaf base sessile, rarely subsessile, spurred. Inflorescence usually corymbiform, 1- to many flowered. Flowers pedicellate, very rarely subsessile. Sepals spurred or spurless. Petals yellow, rarely red or purple-red. Carpels erect to suberect, rarely divergent, not or only very slightly adaxially gibbous, base mostly broad and connate, less often free. Follicles erect or apically slightly divergent, not or only very slightly adaxially gibbous. Seeds mostly papillate.

About 67 species: Bhutan, China, India, Myanmar, Nepal, Pakistan, Sikkim; 64 species (54 endemic) in China.

1a. Leaves verticillate or both opposite and alternate (all leaves alternate in *S. chauveaudii* var. *margaritae*).

2a. Inflorescences cymose-scorpoid; flowers sessile or subsessile; sepals broadly ovate to suboblong, equal, ca. 1.5 mm 72. *S. chuhsingense*

2b. Inflorescences corymbiform; flowers shortly pedicellate; sepals sublinear, unequal, 3–6.5 mm.

3a. Plants annual or biennial.

4a. Styles ca. 1.8 mm; nectar scales broadly linear-spatulate 70. *S. leblancae*

4b. Styles ca. 0.5 mm; nectar scales quadrangular 71. *S. tsiangii*

3b. Plants perennial.

5a. Leaves both verticillate and alternate; placenta subfalcate 66. *S. bergeri*

5b. Leaves all verticillate (alternate in *S. chauveaudii* var. *margaritae*); placenta not subfalcate.

6a. Petals ± free, apex papillate 69. *S. dielsii*

6b. Petals basally connate for more than 1.5 mm, apex not papillate.

7a. Sepals linear-spatulate; petals basally connate for ca. 1.5 mm 67. *S. chauveaudii*

7b. Sepals linear-lanceolate; petals basally connate for 2–3 mm 68. *S. tsonanum*

1b. Leaves alternate (sometimes opposite in *S. blepharophyllum*).

8a. Seed funicle inflated at base, appendage stomach-shaped.

9a. Sepals spurless.

10a. Seeds covered with thick, chaffy scales 58. *S. ramentaceum*

10b. Seeds minutely papillate or hairy.

11a. Follicles 2- or 3-seeded; seeds minutely hairy 59. *S. trichospermum*

11b. Follicles 12–14-seeded; seeds minutely papillate 60. *S. prasinopetalum*

9b. Sepals spurred.

12a. Leaves and sepals acuminate to cuspidate apically; petals 2–2.3 mm 65. *S. erici-magnusii*

12b. Leaves and sepals obtuse to sometimes subacute apically; petals 4–7.2 mm.

13a. Sepals of terminal flower in 2 series 64. *S. didymocalyx*

13b. Sepals in 1 series.

14a. Leaves oblong to subovate; nectar scales 1.6–1.8 mm 61. *S. forrestii*

14b. Leaves linear-oblong, linear-lanceolate, or linear-obovate; nectar scales 0.4–0.7 mm.

15a. Leaves linear-lanceolate to linear-obovate; petals 4–6 mm; follicles 4- or 5-seeded 62. *S. perrotii*

15b. Leaves linear-oblong; petals 7–7.2 mm; follicles usually ca. 7-seeded 63. *S. longifuniculatum*

8b. Seed funicle not inflated at base.

16a. Placenta inflated, falcate to lunate.

17a. Plants perennial; sterile stems present.

- 18a. Flowers 5-merous; petals ca. 3.5 mm, apex obtuse 43. *S. muyaicum*
- 18b. Flowers unequally 5-merous; petals 5.8–9 mm, apex acuminate.
- 19a. Underground stems absent; basal spur of leaves truncate-obtuse 46. *S. longyanense*
- 19b. Underground stems present; basal spur of leaves obtuse or 3-lobed.
- 20a. Sepals 6.5–7.2 mm, spurless 44. *S. celiae*
- 20b. Sepals 3.5–5 mm, spurred 45. *S. dugueyi*
- 17b. Plants annual or biennial; sterile stems absent.
- 21a. Sepals spurless at base.
- 22a. Nectar scales broadly spatulate, ca. 0.4 mm, apically appendaged; leaf apex acuminate . 47. *S. celatum*
- 22b. Nectar scales narrowly linear to linear-spatulate, 0.7–1.3 mm, apically not appendaged; leaf apex obtuse.
- 23a. Nectar scales 0.8–1.3 mm; follicles 3–6-seeded; stamens 5 48. *S. przewalskii*
- 23b. Nectar scales ca. 0.7 mm; follicles 1–3-seeded; stamens 10.
- 24a. Petals narrowed toward base, apex obscurely mucronate; placenta lunulate 49. *S. pagetodes*
- 24b. Petals broadened toward base, apex not mucronate; placenta basal 50. *S. pratoalpinum*
- 21b. Sepals spurred at base.
- 25a. Leaves broadened in distal 1/2 (sometimes not so in *S. sinoglaciale*); nectar scales 1–1.5 mm.
- 26a. Follicles 2-seeded; antepetalous stamens inserted 1–1.2 mm from petal base; seeds smooth 57. *S. semilunatum*
- 26b. Follicles 5- to many seeded; antepetalous stamens inserted ca. 2 mm from petal base; seeds papillate.
- 27a. Carpels basally connate for 1.2–1.8 mm; basal leaves spatulate, others subpanduriform; sepals obtuse at apex 55. *S. chingtungense*
- 27b. Carpels ± free; leaves linear to linear-oblong; sepals acute at apex 56. *S. sinoglaciale*
- 25b. Leaves broadened in proximal 1/2; nectar scales 0.5–0.8 mm.
- 28a. Nectar scales apically parted to lobate; leaf apex obtuse; follicles 2–4-seeded 54. *S. purdomii*
- 28b. Nectar scales apically obtuse or retuse; leaf apex acute to acuminate; follicles (3–)7–12-seeded.
- 29a. Petals ca. 4 mm, ± free 53. *S. fedtschenkoi*
- 29b. Petals 6–10.5 mm, basally subconnate.
- 30a. Petals yellow; placenta falcate; follicles 10–12-seeded 51. *S. paracelatum*
- 30b. Petals purplish red; placenta sublunulate; follicles 7–9-seeded 52. *S. luchuanicum*
- 16b. Placenta not inflated, rarely falcate to lunate.
- 31a. Petals abruptly narrowed basally or attenuate into a claw.
- 32a. Plants annual or biennial; sterile stems absent.
- 33a. Sepals lanceolate to lanceolate-oblong; petals red, obtrullate; stamens often 5 41. *S. obrullatum*
- 33b. Sepals ovate to ovate-oblong; petals yellow, narrowly oblong; stamens 10 42. *S. raymondii*
- 32b. Plants perennial; sterile stems present.
- 34a. Petal claw broad, less than 3 mm; sepals spurred, margin papillate 38. *S. gagei*
- 34b. Petal claw narrow, to 4 mm; sepals spurless, margin laevigate.
- 35a. Petals sagittate, limb subovate, attenuate in distal 1/2, apex narrowly apiculate . 39. *S. sagittipetalum*
- 35b. Petals trullate, limb ovate-lanceolate to broadly ovate, basally narrowed, apex mucronate 40. *S. trullipetalum*
- 31b. Petals neither narrowed basally nor attenuate into claw.
- 36a. Petals basally connate for more than 1 mm (for ca. 0.8 mm in *S. costantinii*); stamens in 2 series.
- 37a. Petal margin erose or suberose.
- 38a. Petals lanceolate to oblong, margin conspicuously erose; leaves linear, apex spinose-apiculate; sepals spurless, apex spinose-apiculate 9. *S. daigremontianum*
- 38b. Petals obovate-lanceolate to obovate, margin ± erose; leaves lanceolate to broadly oblong, apex acute; sepals spurred, apex acute 10. *S. oreades*
- 37b. Petal margin entire.
- 39a. Petals ca. 11 mm 12. *S. feddei*
- 39b. Petals 5–6.2 mm
- 40a. Sepals yellowish green; leaf base spur 3-lobed 11. *S. costantinii*
- 40b. Sepals green; leaf base spur entire.
- 41a. Petal base clawless, apex long mucronate; sepals linear or subspatulate 13. *S. fui*
- 41b. Petal base ± clawed, apex subacuminate; sepals suboblong 14. *S. wangii*

- 36b. Petals free or basally subconnate usually for less than 1 mm; stamens in 1 or 2 series.
- 42a. Leaf apex obtuse; stamens 5–10(–12).
- 43a. Sepals spurless.
- 44a. Flowers 5-merous; plants less than 2.5 cm tall.
- 45a. Plants 1–2.5 cm tall; leaves narrowly oblong; follicles 6–8(–14)-seeded; seeds minutely papillate 28. *S. fischeri*
- 45b. Plants ca. 10 mm tall; leaves ovate to suborbicular; follicles 1- or 2-seeded; seeds winged at both ends 29. *S. oligocarpum*
- 44b. Flowers unequally 5-merous; plants 3.5–6 cm tall.
- 46a. Leaves broadly linear to oblong; follicles few seeded 30. *S. lutzii*
- 46b. Leaves ovate; follicles 6- or 7-seeded 31. *S. tsinghaicum*
- 43b. Sepals spurred.
- 47a. Seeds smooth, winged; leaf and sepal margin smooth; follicles 10–12-seeded .. 37. *S. magniflorum*
- 47b. Seeds papillate, wingless; leaf and sepal margin papillate; follicles more than 12-seeded.
- 48a. Petals basally free or almost so.
- 49a. Petal apex smooth; nectar scales apically emarginate; follicles 12–15-seeded 32. *S. roborowskii*
- 49b. Petal apex papillate; nectar scales apically rounded; follicles 20–22-seeded 33. *S. blepharophyllum*
- 48b. Petal basally subconnate.
- 50a. Leaves broadly lanceolate to lanceolate-oblong; petal apex papillate 34. *S. obtusipetalum*
- 50b. Leaves obovate, obovate-oblong, or suboblong; petal apex smooth.
- 51a. Petals broadly triangular; sepal apex rounded; stamens 5 or 10 35. *S. somenii*
- 51b. Petals narrowly oblong; sepal apex obtuse; stamens 10 36. *S. morotii*
- 42b. Leaf apex acuminate to acute; stamens 10 (sometimes 5 in *S. ulricae*).
- 52a. Plants perennial; sterile stems numerous.
- 53a. Leaf base spur obtuse or truncate.
- 54a. Sepals spurless; petals basally almost free; basal leaves of flowering stems ovate-lanceolate, persistent; seeds winged 19. *S. barbeyi*
- 54b. Sepals spurred; petals basally connate for ca. 1.2 mm; basal leaves of flowering stems linear, soon withered; seeds wingless 20. *S. pampaninii*
- 53b. Leaf base spur lobed to sublobed.
- 55a. Spur 2-lobed, occasionally \pm 3-lobed; leaf and sepal margin glandular ciliate 18. *S. glaebosum*
- 55b. Spur 3-lobed or \pm so (sometimes truncate in *S. heckelii*); leaf and sepal margin glabrous.
- 56a. Sepals spurless, adaxially papillate 15. *S. beauverdii*
- 56b. Sepals spurred, adaxially smooth.
- 57a. Inflorescences dense; sepals narrowly oblong to ovate, apex shortly acuminate 16. *S. heckelii*
- 57b. Inflorescences lax; sepals lanceolate to narrowly triangular, apex acuminate 17. *S. nothodugueyi*
- 52b. Plants annual or biennial; sterile stems absent (present in *S. susanneae*).
- 58a. Sepals spurless.
- 59a. Leaf and sepal margin glabrous; carpels glabrous 21. *S. susanneae*
- 59b. Leaf and sepal margin spinescent ciliate; carpels adaxially spinescent hairy 22. *S. stimulosum*
- 58b. Sepals spurred.
- 60a. Petals 6.5–8.9 mm.
- 61a. Pedicel 1–2 mm; sepals linear-lanceolate or subovate; petals apex long mucronate . 23. *S. rosei*
- 61b. Pedicel 6–10 mm; sepals oblong; petal apex acuminate 24. *S. platysepalum*
- 60b. Petals less than 4.5 mm.
- 62a. Petals ca. 3 mm, basally connate, apex mucronulate 27. *S. henrici-robertii*
- 62b. Petals to 4.5 mm, free, apex not mucronulate.
- 63a. Plants 10–13 cm tall; carpels suberect 25. *S. franchetii*
- 63b. Plants 3–6 cm tall; carpels divergent 26. *S. ulricae*

9. *Sedum daigremontianum* Raymond-Hamet, Bull. Soc. Bot. France 56: 235. 1909.

啮瓣景天 *nie ban jing tian*

Flowering stems erect, ascending, or arched-ascending, slender, 3–10(–20) cm. Leaves alternate, linear, 4–9 \times 0.9–1.3 mm, base slightly broadened and with a 3-lobed spur, apex spinose-apiculate. Cyme corymbiform, with

several or many crowded flowers; bracts leaflike. Flowers unequally 5-merous; pedicel 0.4–0.8 mm. Sepals linear, unequal or rarely equal, 4–8 × 0.9–1.1 mm, base connate and spurless, apex spinose-apiculate. Petals yellow, lanceolate to oblong, 5–8 × ca. 1.5 mm, base connate for 1–1.5 mm, margin markedly erose, apex mucronate. Stamens 10; antesepalous ones 1.5–2 mm; antepetalous ones 1.4–1.5 mm, inserted 1.5–2 mm from petal base. Nectar scales linear-spatulate, apex subrounded. Carpels erect, narrowly ovoid, apex acuminate; ovules ca. 10. Seeds obovoid-oblong, mammillate. Fl. Aug, fr. Sep–Oct.

•Rocks, mountain slopes, rocks on grassland slopes; 2300–4000 m. S Gansu, C and W Sichuan.

1a. Flowering stems erect or ascending; cyme dense; sepals unequal, 4–7 mm; petals 7–8 mm 9a. var. *daigremontianum*

1b. Flowering stems arched-ascending; cyme lax; sepals rarely equal, 5–8 mm; petals 5–6 mm 9b. var. *macrosepalum*

9a. *Sedum daigremontianum* var. *daigremontianum*
啮瓣景天(原变种) nie ban jing tian (yuan bian zhong)
Flowering stems erect or ascending. Cyme dense. Sepals unequal, 4–7 mm. Petals 7–8 mm. Fl. Aug, fr. Sep.

•Rocks, mountain slopes. W Sichuan.

9b. *Sedum daigremontianum* var. *macrosepalum* Fröderström, Acta Horti Gothob. 7: 114. 1932.
大萼啮瓣景天 da e nie ban jing tian
Flowering stems arched-ascending. Cyme lax. Sepals rarely equal, 5–8 mm. Petals 5–6 mm. Fl. Aug, fr. Sep–Oct.

•Rocks on grassland slopes. S Gansu, C Sichuan.

10. *Sedum oreades* (Decaisne) Raymond-Hamet, Bull. Soc. Bot. France 56: 571. 1909.
山景天 shan jing tian

Umbilicus oreades Decaisne in Jacquemont, Voy. Inde 4(Bot.): 62. 1844; *Cotyledon oreades* (Decaisne) C. B. Clarke; *Sedum piloshanense* Fröderström.
Stems simple or branched from base, tufted, 2.5–12 cm. Leaves alternate, gradually larger toward stem apex; leaf blade lanceolate to broadly oblong, 3–9 mm, veins several, base obtuse or 3-lobed spurred, apex acute. Cyme corymbiform, 1- to several flowered. Flowers subsessile, unequally 5-merous. Sepals oblong to obovate-lanceolate, 7–7.5 × 2–2.2 mm, base spurred, margin entire or minutely erose, apex acute. Petals yellow, obovate to obovate-lanceolate, 6–9.8(–12) × 2.5–3.5 mm, base connate for 1.2–1.3(–3) mm, shortly clawed, margin ± minutely erose, apex mucronate. Stamens 10; antesepalous ones 2.5–3.5 mm; antepetalous ones 2.5–3.5 mm, inserted 1–1.5(–3) mm from petal base. Nectar scales nearly linear-spatulate. Carpels erect, lanceolate, base connate for 0.3–0.5(–0.7) mm; ovules many. Seeds obovoid-oblong, minutely mammillate. Fl. Jul–Aug, fr. Sep–Oct.

Grasslands, rocks on slopes; 3000–4500 m. SE Xizang, NW Yunnan [Bhutan, India, Myanmar, N Pakistan, Sikkim].

11. *Sedum costantinii* Raymond-Hamet, Bull. Mus. Hist. Nat. (Paris) 15: 490. 1909.

山裂距景天 san lie ju jing tian

Roots fibrous. Flowering stems branched from base, divergent, slender, 2.5–5 cm. Leaf blade linear-triangular, 3.5–5.2 × 1.1–1.8 mm, basal spur 3-lobed. Cyme corymbiform, 2–5-flowered; bracts leaflike. Flowers unequally 5-merous; pedicel 1.2–1.5 mm. Sepals yellowish green, suboblong to obovate-linear, 7–7.5 × ca. 2 mm, base 3-lobate and obtuse, apex obtuse to subacute. Petals yellow, obovate-oblong, base slightly narrowed and connate for ca. 0.8 mm, apex obtuse and shortly mucronate. Stamens 10, all shorter than petals; antepetalous ones inserted 2.5–3.5 mm from petal base. Nectar scales linear-spatulate, apex obtuse. Carpels 4–6.5 mm, base connate for 0.5–0.8 mm; ovules 4–6. Seeds obovoid, mammillate. Fl. Sep, fr. Oct.

•Rocks in forests; 3000–3500 m. W Sichuan.

12. *Sedum feddei* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 25. 1910.

折多景天 zhe duo jing tian

Roots fibrous. Sterile stems absent. Flowering stems branched from base, erect, 8–10 cm, glabrous. Leaf blade narrowly triangular to lanceolate, 7–8.5 × 2.4–3.2 mm, base spurred (spur entire, 1.3–1.6 mm), apex acute, entire. Cyme corymbiform, densely many flowered, 0.8–1.5 × 0.9–2.5 cm; bracts leaflike. Flowers unequally 5-merous; pedicel 1.2–3 mm. Sepals broadly lanceolate, 6–6.8 × 1.7–2 mm, base spurless, apex entire, papillate-apiculate. Petals oblong-obovate, ca. 11 × 2.5 mm, base connate for 1.2–1.4 mm, apex apiculate. Stamens 10, all shorter than petals; antepetalous ones inserted 3–4 mm from petal base. Nectar scales linear, ca. 0.8 × 0.3 mm, apex truncate. Carpels 4.3–5.3 mm, base connate for 0.8–1 mm; ovules many. Styles ca. 1.5 mm. Fl. Sep–Oct.

•W Sichuan (Kangding Xian).

13. *Sedum fui* Rowley, Natl. Cact. Succ. J. 28: 6. 1973.

宽叶景天 kuan ye jing tian

Sedum platyphyllum S. H. Fu, Acta Phytotax. Sin. 1: 123. 1951, not Alexander (1942).

Roots fibrous. Sterile stems absent. Flowering stems branched from base, erect, 6.5–14 cm; branches alternate or opposite. Leaves remote; leaf blade obovate-lanceolate to lanceolate, 1.2–1.8 × 1.5–5 mm, base subobtusate and spurred, apex obtuse to acute. Cyme corymbiform, many flowered; bracts leaflike, small. Flowers unequally 5-merous; pedicel to 2 mm. Sepals green, linear to subs spatulate, 2.2–7 × 0.7–2 mm, base spurless, apex subacute. Petals greenish yellow, lanceolate, 5–6.2 × ca. 1.1 mm, base connate for 1.5–2 mm, apex long mucronate. Stamens 10; antesepalous ones ca. 1 mm; antepetalous ones 0.7–0.8 mm, inserted 1.5–2.5 mm from petal base. Nectar scales linear, 0.6–

0.9 mm, apex truncate to obtuse. Carpels erect, 3.5–5 mm, mammillate, base connate for 1.2–1.5 mm, apex abruptly tapered. Seeds ovoid, winged. Fl. Aug–Sep, fr. Sep–Oct.

• Rocks in forests, grasslands, or at mixed *Picea* forest margins; 3500–3800 m. S Sichuan, W Yunnan.

- 1a. Sepals 2.2–4.5 × ca. 0.7 mm; antepetalous stamens ca. 0.8 mm, inserted 1.5–1.8 mm from petal base; nectar scales 0.6–0.8 mm
13a. var. *fui*
1b. Sepals 6.5–7 × 1.2–2 mm; antepetalous stamens ca. 0.7 mm, inserted ca. 2.5 mm from petal base; nectar scales 0.8–0.9 mm 13b. var. *longisepalum*

13a. *Sedum fui* var. *fui*

宽叶景天(原变种) kuan ye jing tian (yuan bian zhong)

Sepals 2.2–4.5 × ca. 0.7 mm. Antepetalous stamens ca. 0.8 mm, inserted 1.5–1.8 mm from petal base. Nectar scales 0.6–0.8 mm. Fl. Aug–Sep, fr. Oct.

• Rocks in forests or grasslands; 3700–3800 m. S Sichuan, W Yunnan.

13b. *Sedum fui* var. *longisepalum* (K. T. Fu) S. H. Fu in S. H. Fu & K. T. Fu, Fl. Reipubl. Popularis Sin. 34(1): 86. 1984. 长萼宽叶景天 chang e kuan ye jing tian
Sedum platyphyllum S. H. Fu var. *longisepalum* K. T. Fu, Acta Phytotax. Sin. 12: 54. 1974.

Sepals 6.5–7 × 1.2–2 mm. Antepetalous stamens ca. 0.7 mm, inserted ca. 2.5 mm from petal base. Nectar scales 0.8–0.9 mm. Fl. Aug, fr. Sep–Oct.

• Rocks at mixed *Picea* forest margins; ca. 3500 m. NW Yunnan.

14. *Sedum wangii* S. H. Fu, Acta Phytotax. Sin. 1: 125. 1951.

德钦景天 de qin jing tian

Roots fibrous. Sterile stems absent. Flowering stems branched from base, erect, 1.5–3 cm. Leaf blade linear to lanceolate-ovate, 2–5 × 0.7–1.5 mm, base spurred, apex obtuse to subacute. Cyme corymbiform, few flowered, rarely 1-flowered. Flowers unequally 5-merous; pedicel slender, 0.5–1 mm. Sepals green, suboblong, ca. 3 × 1 mm, base spurless, apex acuminate. Petals yellow, narrowly ovate-oblong, ca. 5.4–1.3 mm, base connate for ca. 1.5 mm and shortly clawed, apex subacuminate. Stamens 10, equal; antesealous ones ca. 1.2 mm, inserted at basal suture of petals; antepetalous ones inserted ca. 1.5 mm from petal base; anthers oblong-reniform. Nectar scales ca. 1 mm, apex obtuse. Carpels erect, lanceolate, base connate for ca. 1 mm; ovules many. Seeds oblong-ovoid, densely mammillate. Fl. Aug–Sep, fr. Sep–Oct.

• Slopes; ca. 3000 m. NW Yunnan.

15. *Sedum beauverdii* Raymond-Hamet, Bull. Soc. Bot. France 56: 48. 1909.

短尖景天 duan jian jing tian

Herbs perennial. Roots fibrous. Rhizome creeping underground. Sterile stems numerous. Flowering stems erect, slender, 1.5–8. Leaves numerous, alternate, sessile, linear to triangular-lanceolate, 4–7 mm, adaxially papillate-hairy, base dilated and 3- or 4-lobed, apex acuminate. Cyme corymbiform, dense; bracts

leaflike. Flowers unequally 5-merous; pedicel 1–3.5 mm. Sepals linear to linear-lanceolate, 4.2–6.5 × 0.9–1.2 mm, adaxially mammillate, base spurless, apex acuminate and spinose. Petals yellow, lanceolate, 7.5–8 × 1.5–1.6 mm, base connate for ca. 0.5 mm, apical mucro 0.2–0.3 mm, occasionally twinned. Stamens 10; antesealous ones ca. 5.5 mm, inserted on suture of petals; antepetalous ones 3.5–4 mm, inserted ca. 2 mm from petal base. Nectar scales linear-spatulate, apically expanded, ca. 0.5 mm. Carpels erect, ovoid-lanceolate, base connate for 0.9–1.1 mm; ovules 12–15. Seeds obovoid, minutely mammillate. Fl. Sep–Oct, fr. Nov–Dec.

• Rock crevices or rocks in forests, rocks on slopes; 3000–4000 m. W Sichuan, NW Yunnan.

16. *Sedum heckelii* Raymond-Hamet, Notul. Syst. (Paris) 1: 139. 1910.

巴塘景天 ba tang jing tian

Herbs perennial, glabrous. Sterile stems 1–5, 1–2.5 cm. Flowering stems simple or branched, erect or basally vaulted, 7–13 cm, densely leafy. Leaf blade ovate-lanceolate to narrowly triangular, 3–7 × 1.2–2 mm, basal spur short and truncate or 3-lobed. Cyme corymbiform, ± dense; bracts leaflike. Flowers shortly pedicellate, unequally 5-merous. Sepals narrowly oblong to ovate, 3.5–4.8 × ca. 0.4 mm, base truncate and shortly spurred, apex shortly acuminate. Petals yellowish green, narrowly ovate-lanceolate, 6.5–8.2 × 1.4–1.5 mm, base subconnate and slightly narrowed, apex acute and mucronate. Stamens 10; antepetalous ones ca. 4 mm, inserted 1.5–2 mm from petal base. Nectar scales linear-spatulate, apex depressed. Carpels oblong, base connate for ca. 1.1 mm; ovules 10–17. Styles ca. 2 mm. Seeds brown, obovoid, mammillate. Fl. Sep, fr. Oct.

• Forests, forest margins, rocks, gravel beaches in valleys; 3500–4200 m. W Sichuan, E Xizang.

17. *Sedum nothodugueyi* K. T. Fu, Acta Phytotax. Sin. 12: 55. 1974.

距萼景天 ju e jing tian

Herbs perennial. Rhizome erect, robust, 4–6 mm. Sterile stems present. Flowering stems 4–10, tufted, broomlike, 3–6 cm, densely leafy. Leaf blade narrowly triangular-lanceolate to triangular-linear, 2–6 × 0.7–1 mm, basal spur broadly obtuse and 3-lobed, apex acuminate. Cyme corymbiform, 2–5-flowered; bracts leaflike. Flowers unequally 5-merous; pedicel 1–3 mm. Sepals lanceolate to narrowly triangular, 5–5.6 × 0.9–1 mm, base spurred, apex acuminate. Petals yellow, lanceolate to ovate, 6–6.5 × 1.3–1.4 mm, base connate, apex long mucronate. Stamens 10; antesealous ones ca. 4.5–5.5 mm; antepetalous ones inserted 0.8–1 mm from petal base. Nectar scales broadly spatulate, apex rounded. Carpels erect, lanceolate, base subconnate; ovules 4 or 5. Fl. Sep–Oct.

• Rocks; ca. 2300 m. W Sichuan.

18. *Sedum glabosum* Fröderström, Acta Horti Gothob. 15: 16. 1942.

道孚景天 *dao fu jing tian*

Herbs perennial. Sterile stems densely tufted, 1–2 cm. Flowering stems usually solitary, suberect, 4–6 cm. Leaf blade linear-lanceolate to ovate, 3–6 mm, basal spur obtuse or 2-lobed to ± 3-lobed, margin sparsely glandular ciliate, apex acuminate. Cyme corymbiform, dense; bracts lanceolate, sparsely glandular ciliate. Flowers subsessile, unequally 5-merous. Sepals suboblong, 4–6 × 1–1.2 mm, base spurred, margin glandular ciliate, apex spinose-acuminate. Petals yellow, suboblong, 6–7.5 × ca. 2 mm, base connate for ca. 0.5 mm and broadly clawed, apex mucronate. Stamens 10; antesepalous ones 4.5–5.5 mm; antepetalous ones inserted 1–2 mm from petal base. Nectar scales clawed-spatulate. Carpels erect, ovoid-lanceolate, base connate for ca. 2 mm; ovules many. Styles ca. 2 mm. Seeds smooth, narrowly winged. Fl. Aug–Sep, fr. Oct.

• Rocks on slopes, ravines; 3500–5000 m. SE Qinghai, W Sichuan, Xizang.

19. *Sedum barbeyi* Raymond-Hamet, Bull. Soc. Bot. France 56: 45. 1909.

离瓣景天 *li ban jing tian*

Herbs perennial, tufted. Stolon roots fibrous. Sterile stems erect, 1–3.5 cm. Flowering stems erect, 3–6 cm. Proximal stem leaves glaucescent, persistent, others yellowish green; leaf blade ovate-lanceolate, 4–7 × 1.2–2 mm, basal spur obtuse, apex acuminate. Cyme corymbiform, 3–5-flowered; bracts leaflike. Flowers shortly pedicellate, unequally 5-merous. Sepals yellowish green, broadly lanceolate, 4–5 × 1.2–1.8 mm, base spurless, apex acuminate. Petals yellow, lanceolate, 6–7.5 × 1.2–1.5 mm, base almost free, apex mucronate. Stamens 10; antesepalous ones 4.5–5 mm; antepetalous ones 3–3.5 mm, inserted 1.5–2 mm from petal base. Nectar scales subspatulate, ca. 0.4 mm, apex retuse. Carpels lanceolate to linear-lanceolate, 4–6 mm, base connate for 1.3–1.5 mm; ovules 6–8. Styles ca. 2 mm. Seeds narrowly oblong, minutely mammillate, winged. Fl. Aug, fr. Sep–Oct.

• Humus-rich soil in forests, rocks on shady slopes, usually with mosses; 800–2400 m. W Henan, NW Hubei, S Shaanxi.

20. *Sedum pampaninii* Raymond-Hamet, Malpighia 26: 59. 1913.

秦岭景天 *qin ling jing tian*

Herbs perennial, glabrous. Roots fibrous. Sterile stems 0.2–0.3 cm. Flowering stems branched, ascending, 5–10 cm. Proximal stem leaves soon withered; leaf blade linear, 4–7 × 0.5–0.8 mm, base truncately and obtusely spurred, apex acute. Cyme corymbiform, several flowered; bracts linear. Flowers unequally 5-merous; pedicel slender, 4–6 mm. Sepals lanceolate, 4–6 × 1.2 mm, base shortly spurred, apex acute. Petals yellow, lanceolate, 6–10 × ca. 1.8 mm, base connate for ca. 1.2 mm, apex subacuminate and mucronate. Stamens 10;

antesepalous ones 5.5–7.5 mm; antepetalous ones 3–4.5 mm, inserted 2.5–3 mm from petal base. Nectar scales oblong-spatulate, apex obtuse to retuse. Carpels oblong, base connate for 2–3 mm; ovules 4–6. Seeds ovoid, ca. 1 mm, mammillate, wingless. Fl. Jul–Sep, fr. Sep–Oct.

• Forested slopes, rocks in ravines; 1000–2500 m. W Henan, S Shaanxi, Sichuan, Yunnan.

21. *Sedum susanneae* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 24. 1910.

方腺景天 *fang xian jing tian*

Herbs biennial. Roots fibrous. Sterile stems present. Flowering stems many branched from base, erect or ascending, ± slender, 4–12 cm. Leaf blade linear-lanceolate to oblong, 4–9 × 1–2.2 mm, basal spur obtuse or 3-lobed, apex spinose-acuminate. Cyme dense; bracts linear-lanceolate to oblong. Flowers unequally 5-merous; pedicel 0.8–1.5 mm. Sepals linear-lanceolate, 3.8–5.6 × 1.1–1.5 mm, base spurless, apex spinose-acuminate. Petals oblong-lanceolate, 5.5–7 × 1.6–1.8 mm, base connate for 0.3–0.5 mm or ± free, apex long acuminate. Stamens 10; antesepalous ones ca. 5 mm; antepetalous ones ca. 4 mm, inserted 1–1.5 mm from petal base. Nectar scales oblong-spatulate, 0.4–0.8 mm, apex retuse to obtuse. Carpels erect, oblong, ca. 6 mm, base connate for 1–1.5 mm, apex attenuate; ovules many. Styles 0.8–1 mm. Seeds oblong, ca. 1 mm. Fl. Aug–Sep, fr. Sep–Oct.

Exposed rocks, rock walls in valleys, stone walls; 2100–3800 m. W Sichuan, E Xizang [Myanmar].

1a. Sepals subequal 21a. var. *susanneae*

1b. Sepals unequal 21b. var. *macrosepalum*

21a. *Sedum susanneae* var. *susanneae*

方腺景天(原变种) *fang xian jing tian* (*yuan bian zhong*)

Sedum subgaleatum K. T. Fu.

Sepals subequal. Fl. Aug–Sep, fr. Sep–Oct.

Exposed rocks, stone walls; 2100–3800 m. W Sichuan [Myanmar].

21b. *Sedum susanneae* var. *macrosepalum* K. T. Fu, Acta Phytotax. Sin. 12: 57. 1974.

大萼方腺景天 *da e fang xian jing tian*

Sepals unequal.

• Rock walls in valleys; 3200–3500 m. E Xizang.

22. *Sedum stimulosum* K. T. Fu, Acta Phytotax. Sin. 12: 57. 1974.

刺毛景天 *ci mao jing tian*

Herbs biennial. Flowering stems branched from base, erect or ascending, 6–10 cm. Leaf blade oblong to obovate-oblong, 4–9.5 × 1–2.5 mm, abaxially spinescent and hirsute in distal 1/2, adaxially glabrous, base truncate or 3-lobed spurred, margin spinescent ciliate, apex long mucronate. Cyme corymbiform,

dense, many flowered; bracts oblong to obovate-oblong. Flowers subsessile, unequally 5- or 6-merous. Sepals linear-oblong, 5.3–6 × 1.3–2 mm, abaxially spinescent hirtellous in distal 1/2, base spurless, margin spinescent ciliate, apex long mucronate. Petals free, yellow, lanceolate, ca. 7.5 × 1.8 mm, abaxially spinescent hairy and apically keeled, apex long mucronate. Stamens 10; antesealous ones ca. 5 mm; antepetalous ones inserted ca. 2 mm from petal base. Nectar scales oblong-spatulate, 0.4–0.8 mm, apex retuse to obtuse. Carpels erect, adaxially spinescent hairy, base connate for ca. 0.8 mm; ovules 4–6. Seeds oblong, ca. 1 mm, appendaged. Fl. Sep–Oct, fr. Oct–Nov.

• Rocks in valleys; 1500–2600 m. W Sichuan (Kangding Xian).

23. *Sedum rosei* Raymond-Hamet, Bot. Jahrb. Syst. 44(Beibl. 101): 32. 1910.

川西景天 *chuan xi jing tian*

Herbs annual. Roots fibrous. Flowering stems branched from base, erect or ascending, 3–8 cm. Leaves ± crowded or remote; leaf blade sublinear to narrowly triangular-linear, 5–6.8 × 1.2–1.4 mm, basal spur truncate to shallowly 3-lobed, apex acuminate. Cyme corymbiform, dense; bracts sublinear to narrowly triangular-linear. Flowers unequally 5- or 6-merous; pedicel 1–2 mm. Sepals sublinear-lanceolate or subovate, subequal or unequal, 5.5–9 × 1.3–1.8 mm, base obtusely spurred, apex acuminate. Petals yellow, oblong-lanceolate, 7–8.9 × ca. 1.3 mm, base connate for 0.5–0.8 mm, apex long mucronate. Stamens 10; antesealous ones 4.5–5.2 mm; antepetalous ones ca. 3 mm, inserted ca. 2.5 mm from petal base. Nectar scales linear-spatulate, apex ± dilated. Carpels erect, oblong to narrowly ovoid; ovules 5–10. Seeds obovoid-oblong. Fl. Sep–Oct, fr. Oct–Nov.

• Alpine thickets, grasslands, rocky or stony slopes, rocks in valleys or on slopes, stone walls; 2700–4800 m. W Sichuan, E Xizang.

1a. Stem leaves crowded; sepals sublinear-lanceolate, subequal, 5.5–6 mm, shorter than petals; carpels basally connate for ca. 0.5 mm 23a. var. *rosei*

1b. Stem leaves remote; sepals subovate, unequal, 7–9 mm, longer than petals; carpels basally connate for ca. 2 mm 23b. var. *magniflorum*

23a. *Sedum rosei* var. *rosei*

川西景天(原变种) *chuan xi jing tian* (*yuan bian zhong*)

Sedum rosei var. *brevistamineum* Fröderström.

Stem leaves crowded. Sepals sublinear-lanceolate, subequal, 5.5–6 mm, shorter than petals. Carpels basally connate for ca. 0.5 mm.

• Alpine thickets, grasslands, rocky or stony slopes, rocks in valleys; 2700–4800 m. W Sichuan, E Xizang.

23b. *Sedum rosei* var. *magniflorum* Fröderström, Acta Horti Gothob. 15: 18. 1942.

大花川西景天 *da hua chuan xi jing tian*

Stem leaves remote. Sepals subovate, unequal, 7–9 mm, larger than petals. Carpels basally connate for ca. 2 mm.

• Rocks on slopes, stone walls; 4000–4300 m. W Sichuan.

24. *Sedum platysepalum* Franchet, J. Bot. (Morot) 10: 289. 1896.

宽萼景天 *kuan e jing tian*

Herbs annual or biennial, glabrous. Flowering stems many branched from base, 6–10 cm, leafy. Leaf blade linear-lanceolate to linear, 6–10 mm, base broadly spurred, apex acute. Cyme corymbiform, dense. Flowers unequally 5-merous; pedicel 6–10 mm. Sepals oblong, 5–8.5 × 1.5–2.5 mm, veins with rust-colored dots, base spurred, apex acuminate. Petals yellow, linear-lanceolate, 6.5–7.5 × 2.4–2.8 mm, base connate for 0.8–1.3 mm and slightly narrowed, apex shortly mucronate. Stamens 10; antesealous ones 5–6.5 mm; antepetalous ones 2.5–3.5 mm, inserted 2–3.5 mm from petal base. Nectar scales linear, 0.7–1 mm, apex slightly dilated. Carpels oblong, ca. 0.8 mm, mammillate. Fl. Aug–Sep, fr. Oct.

• Forest margins, rocks in forests and on alpine summits, stony places; 3200–4000 m. SW Sichuan, NW Yunnan.

25. *Sedum franchetii* Grande, Bull. Orto Bot. Regia Univ. Napoli 4: 364. 1914.

细叶山景天 *xi ye shan jing tian*

Sedum tenuifolium Franchet, J. Bot. (Morot) 10: 290. 1896, not Strobl (1884).

Herbs annual. Roots fibrous. Flowering stems erect, subrobust, 10–13 cm, leafy. Leaf blade linear-lanceolate, 5–10 × ca. 1 mm, base shortly spurred, apex subacute. Cyme corymbiform, many flowered; bracts linear-lanceolate. Flowers unequally 5-merous; pedicel 1–3 mm. Sepals lanceolate to linear-oblong, subequal, 4.5–5 × 1–1.2 mm, base obtusely spurred, apex subacute. Petals free, yellow, lanceolate-spatulate, narrowed at middle, 4–4.5 × ca. 1.1 mm, apex obtuse. Stamens 10; antesealous ones ca. 4 mm; antepetalous ones ca. 1.6 mm, inserted ca. 2 mm from petal base. Nectar scales narrowly linear, ca. 1.5 mm, apex obtuse. Carpels suberect, ca. 3.5 mm, base connate for ca. 1 mm; ovules many. Seeds obovoid, 0.3–0.4 mm, mammillate. Fl. Jul–Aug, fr. Sep–Oct.

• Thickets, rocks in *Abies* forests and by water, cliffs, rock crevices, pebble beaches; 2800–4100 m. NW Yunnan.

26. *Sedum ulricae* Fröderström, Bull. Mus. Hist. Nat. (Paris), sér. 2, 1: 442. 1929.

甘南景天 *gan nan jing tian*

Herbs annual, glabrous. Roots fibrous. Flowering stems erect but sometimes basally arched, 3–6 cm. Leaf blade linear to suboblong, 5–7.5 mm, base shortly spurred, apex subacute. Cyme corymbiform, few flowered. Flowers equally or unequally 5-merous; pedicel 2–2.4 mm. Sepals linear to oblanceolate, 4.5–5 mm, base obtusely spurred, apex subacute. Petals free, lanceolate, ca. 4 × 1–1.2 mm, apex subobtusely. Stamens 5 and shorter than petals, or 10 and antesepalous ones 2.1–2.6 mm. Nectar scales narrowly linear, 1.1–1.2 mm, apex emarginate. Carpels stellately divergent, 2.7–3.2 mm, base connate for 1.2–1.3 mm, apex abruptly tapered; ovules 5 or 6. Seeds narrowly ovoid-oblong, ca. 1 mm, shallowly furrowed, minutely mammillate. Fl. Jul–Aug, fr. Aug.

• *Abies* forests, mountain summits, gravelly slopes; 3000–4500 m. S Gansu, SE Qinghai, E Xizang.

27. *Sedum henrici-robotii* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 12: 407. 1913.

山岭景天 *shan ling jing tian*

Herbs annual, glabrous. Roots fibrous. Flowering stems branched from base, erect, slender, 1.8–2.5 cm. Leaves alternate; leaf blade broadly linear to narrowly obovate, 2.5–5 × 0.6–0.7 mm, base obtusely spurred, apex acute. Cyme subcorymbiform, few flowered; bracts narrowly obovate to broadly linear. Flowers unequally 5-merous; pedicel 1.7–2 mm. Sepals narrowly ovate-lanceolate, ca. 3 mm, base obtusely spurred, apex acute. Petals suboblong, ca. 3 mm, base connate for 0.3–0.4 mm, apex subacute and mucronulate. Stamens 10; antesepalous ones 1.7–1.9 mm; antepetalous ones 1.4–1.5 mm, inserted 0.6–0.9 mm from petal base. Nectar scales linear, 1–1.1 mm, apex obtuse. Carpels 2–2.8 mm, base connate for 1.4–1.8 mm, apex tapered; ovules few. Seeds obovoid, ca. 1 mm, minutely mammillate. Fl. Jul, fr. Aug.

Rocks, stony places; 3800–5000 m. E Qinghai, S Xizang [?Bhutan, Nepal, ?Sikkim].

The record of this species in FRPS from Bhutan and Sikkim has not been confirmed.

28. *Sedum fischeri* Raymond-Hamet, Russk. Bot. Zhurn. 1914: 1. 1914.

小景天 *xiao jing tian*

Herbs annual, glabrous. Stems branched from base, ascending, 1–2.5(–4) cm. Leaf blade narrowly oblong, 3–6 × 1–2 mm, base obtusely spurred, apex obtuse. Cyme corymbiform, few flowered; bracts narrowly oblong. Flowers shortly pedicellate, 5-merous. Sepals subovate, 3–4 mm, base spurless, apex obtuse. Petals free, yellow, suboblong, 3–4 mm, apex obtuse. Stamens 5, ca. 3 mm. Nectar scales narrowly linear-spatulate, 0.8–1.1 mm, apex obtuse. Carpels ovoid-oblong, ca. 4.2 mm, base subconnate, apex abruptly tapered; ovules 12–14. Styles ca. 1 mm. Follicles 6–8(–14)-seeded. Seeds oblong-ovoid, ca. 0.7 mm, minutely mammillate. Fl. Jul–Aug, fr. Aug–Sep.

Meadows and rock crevices on slopes; 3600–5600 m. E Qinghai (Xinghai Xian), S Xizang [Bhutan, NW India, Sikkim].

The follicles of specimens from Xizang sometimes have up to 14 seeds.

29. *Sedum oligocarpum* Fröderström, Acta Horti Gothob. 15: 26. 1942.

少果景天 *shao guo jing tian*

Herbs annual, glabrous. Stems many branched from base, ca. 1 cm; branches divergent. Leaf blade ovate to suborbicular on middle and distal stem leaves, 1–1.5 mm, basal spur broad or emarginate, apex obtuse. Cyme few flowered; bracts usually 2, subopposite, lanceolate, ca. 1.5 mm, apex apiculate. Flowers shortly pedicellate, mostly 5-merous. Sepals subovate, 1.5–2 mm, base spurless, apex subacute. Petals yellow when dry, oblong, ca. 2 mm, base broad, apex mucronate. Stamens 5, ca. 1.5 mm, base dilated; anthers nearly ovate-reniform, ca. 0.5 mm. Nectar scales narrowly linear, ca. 1 mm, apex slightly expanded. Carpels 3, slightly divergent, ca. 1.5 mm. Styles long. Follicles 1- or 2-seeded. Seeds lanceolate, ca. 1.5 mm, smooth, winged at both ends. Fl. Aug, fr. Aug.

• Rocks; 4400–4600 m. W Sichuan.

30. *Sedum lutzii* Raymond-Hamet, Bull. Soc. Bot. France 59: 762. 1913.

康定景天 *kang ding jing tian*

Herbs annual, glabrous. Roots fibrous. Stems branched from base, erect, ± slender, 3.5–5 cm. Leaves greenish; leaf blade broadly linear to oblong, 5–6 × 0.8–1.4 mm, base obtusely spurred, apex obtuse. Cyme corymbiform, few flowered; bracts broadly linear to oblong. Flowers unequally 5-merous; pedicel 2.5–3 mm. Sepals greenish or yellowish green, suboblong-linear to ovate-linear, 2.7–3.5 × 1–1.5 mm, base spurless, apex obtuse. Petals yellow, broadly ovate, 3.3–4.8 or more × 1.4–1.8 mm, base connate for 0.2–0.3 mm, apex subobtusely and mucronate. Stamens 10; antesepalous ones 2.6–2.8 mm; antepetalous ones shorter than petals, inserted 0.8–3 mm from petal base. Nectar scales suboblong-obovate, 0.5–0.6 × 4–5 mm, apex emarginate. Carpels 2.4–2.8 mm, base connate for ca. 0.4 mm, apex tapered; ovules few to many. Follicles few seeded. Seeds mammillate. Fl. Sep, fr. Oct.

• Grasslands, mountain ridges, shady places on summits, rocks, trailsides; 4200–4400 m. W Sichuan.

- 1a. Sepals greenish; petals 3.3–4.8 mm; antepetalous stamens inserted 0.8–1.2 mm from petal base; carpels few ovuled 30a. var. *lutzii*
- 1b. Sepals yellowish green; petals longer than 4.8 mm; antepetalous stamens inserted 2.2–3 mm from petal base; carpels many ovuled 30b. var. *viridiflavum*

30a. *Sedum lutzii* var. *lutzii*

康定景天(原变种) kang ding jing tian (yuan bian zhong)

Sepals greenish. Petals 3.3–4.8 mm. Antepetalous stamens inserted 0.8–1.2 mm from petal base. Carpels few ovuled. Fl. Sep, fr. Oct.

• Grasslands, shady places on summits, rocks on shady slopes; ca. 4400 m. W Sichuan (Dawu Xian, Kangding Xian).

30b. *Sedum lutzii* var. *viridiflavum* K. T. Fu, Acta Phytotax. Sin. 12: 60. 1974.

黄绿景天 huang lu jing tian

Sepals yellowish green. Petals longer than 4.8 mm. Antepetalous stamens inserted 2.2–3 mm from petal base. Carpels many ovuled. Fl. Sep.

• Mountain ridges, rocks, trailsides; 4200–4300 m. W Sichuan (Dawu Xian, Jinchuan Xian).

31. *Sedum tsinghaicum* K. T. Fu, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 1980(6): 40. 1980.

青海景天 qing hai jing tian

Herbs annual, dark purplish red. Stems branched from base, 5–6 cm. Leaf blade ovate, 3–6 mm, base spurred, apex obtuse. Cyme many flowered. Flowers unequally 5-merous. Sepals narrowly ovate, 2.5–3 mm, base spurless, apex obtuse. Petals yellow, oblong, ca. 3.2 mm, base subconnate, apex mucronate. Stamens 10, all shorter than petals; antepetalous ones inserted ca. 0.8 mm from petal base. Nectar scales broadly spatulate, ca. 0.2 × 0.3 mm, apex dilated. Carpels suberect, narrowly oblong, ca. 3.5 × 1.2 mm, base subconnate. Follicles 6- or 7-seeded. Seeds narrowly ovoid, ca. 0.8 mm, mammillate. Fl. Jul–Sep, fr. Sep.

• Stony cliffs or slopes, river beaches; 3800–4100 m. SE Qinghai.

32. *Sedum roborowskii* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg, Sér. 3, 29: 154. 1883.

阔叶景天 kuo ye jing tian

Herbs biennial, glabrous. Roots fibrous. Stems branched from base, suberect, 3.5–15 cm. Leaf blade oblong, 5–13 × 2–6 mm, base obtusely spurred, apex obtuse. Cyme corymbiform with ± scorpioid cymes, lax, many flowered; bracts oblong. Flowers unequally 5-merous; pedicel to 3.5 mm. Sepals oblong to oblong-obovate, unequal, 3–5 × 1.1–2 mm, sometimes papillate apically, base obtusely spurred, apex obtuse. Petals free, yellowish, ovate-lanceolate, 3.5–3.8 × ca. 1 mm, apex obtuse. Stamens 10; antesealous ones ca. 2.7 mm; antepetalous ones ca. 2 mm, inserted ca. 0.7 mm from petal base. Nectar scales oblong, 0.6–0.9 mm, apex emarginate, sometimes dilated. Carpels oblong, ca. 6 mm, base connate for ca. 0.7 mm, apex abruptly tapered. Styles 0.5–0.7 mm. Follicles 12–15-seeded. Seeds ovoid-oblong, ca. 0.7 mm, minutely mammillate. Fl. Aug–Sep, fr. Sep.

Forested slopes, shady rocks in forests, alluvial beaches; 2200–4500 m. C Gansu, C Ningxia, Qinghai, SE Xizang [Nepal].

33. *Sedum blepharophyllum* Fröderström, Acta Horti Gothob. 15: 26. 1942.

叶景天 sui ye jing tian

Herbs biennial. Roots short, fibrous. Stems erect, subrobust, long branched, 6–14 cm, papillate. Leaves alternate or opposite; leaf blade ovate to suboblong, 5–6 mm, densely shortly and acutely papillate-hairy, base broad and obtusely spurred, apex obtuse. Cyme corymbiform, to 6 cm; bracts broadly lanceolate, mammillate. Flowers shortly pedicellate, 5-merous. Sepals brownish red or striate, oblong, equaling or longer than petals, base obtusely spurred, margin mammillate, apex subobtuse. Petals almost free, pale yellow, oblong-ovate, 4–4.2 mm, apex subacute and mammillate. Stamens 5, 3–3.2 mm. Nectar scales linear-spatulate, ca. 0.8 mm, apex rounded. Carpels suberect, oblong, 4–5 mm, adaxially mammillate, base connate for 1–1.5 mm. Styles long. Follicles 20–22-seeded. Seeds ovoid, ca. 0.5 mm, minutely mammillate. Fl. Aug–Sep, fr. Oct.

• Sunny rocks in valleys, stone walls; 3200–3800 m. W Sichuan (Dawu Xian, Kangding Xian).

34. *Sedum obtusipetalum* Franchet, J. Bot. (Morot) 10: 289. 1896.

钝瓣景天 dun ban jing tian

Sedum mosoynense Franchet; *S. obtusipetalum* subsp. *danyanum* H. Ohba.

Herbs biennial, glabrous. Roots carrot-shaped. Stems branched, erect, 5–15 cm. Basal leaves crowded, soon withering but persistent; leaf blade broadly lanceolate to lanceolate-oblong, 6–10 × 1.7–2.5 mm, base truncately spurred, apex obtuse. Cyme corymbiform, dense; bracts broadly lanceolate to lanceolate-oblong. Flowers unequally 5-merous; pedicel to 5 mm. Sepals suboblong, 3.5–5 × 1.1–1.8 mm, base obtusely spurred, apex obtuse and mammillate. Petals yellow, oblong, 5–6.5 × 1.3–1.7 mm, base connate for 0.4–1 mm and narrowed, apex subemarginate and mammillate. Stamens 10; antesealous ones 4.5–5 mm; antepetalous ones inserted 1–2 mm from petal base. Nectar scales subquadrangular to linear-spatulate, 0.4–0.6 mm, apex abruptly expanded, obtuse to retuse. Carpels oblong, 5–6 mm, base connate for ca. 1 mm. Follicles many seeded. Seeds obovoid, ca. 0.5 mm, minutely mammillate. Fl. Aug–Oct, fr. Sep–Nov.

Rocks on slopes in *Abies* forests and in valleys, moist soil and sandy places on slopes; 2000–3700 m. SW Sichuan, NW Yunnan [Nepal].

35. *Sedum somenii* Raymond-Hamet, J. Bot. 54(Suppl. 1): 18. 1916.

邓川景天 deng chuan jing tian

Sedum mairei Praeger.

Herbs annual, glabrous. Roots fibrous. Stems apically branched, suberect to ascending, 12–23 cm. Leaf blade obovate-oblong to suboblong, 3.5–7 × 2.6–8.5 mm, adaxially papillate-hairy, base shortly and obtusely

spurred, apex obtuse. Cyme corymbiform, lax; bracts ovate-deltoid, longer than wide, spurred, apex acute. Flowers shortly pedicellate, equally or unequally 5-merous. Sepals obovate, 2.5–7 × 0.6–3 mm, base obtusely spurred, apex rounded. Petals broadly triangular, 3.5–5 × 1.2–2 mm, base subconnate, apex subacute. Stamens 5 or 10; antepetalous ones (when present) inserted ca. 1 mm from petal base. Nectar scales linear-spatulate; claw linear. Carpels erect, 4–4.5 mm, base connate for ca. 1 mm and wide, apically tapered; ovules many. Styles short. Seeds obovoid-oblong, 0.5–0.6 mm, mammillate. Fl. Aug–Sep, fr. Sep–Oct.

• Below 2500 m. NW Yunnan (Eryuan Xian).

36. *Sedum morotii* Raymond-Hamet, Bull. Mus. Hist. Nat. (Paris) 15: 491. 1909.

倒卵叶景天 *dao luan ye jing tian*

Herbs biennial, glabrous. Roots fibrous. Stems branched from base, erect or ascending, 5–15 cm. Leaf blade obovate to obovate-oblong, 6–22 × 1.8–8 mm, adaxially papillate-hairy, base obtusely spurred, apex obtuse. Cyme corymbiform, dense; bracts obovate to obovate-oblong. Flowers unequally 5-merous; pedicel 0.4–0.8 mm. Sepals oblong to subobovate, subequal or equal, 3.5–4.5 or less × ca. 1.1 mm, base obtusely spurred, apex obtuse. Petals yellow, narrowly oblong, 5–6 × 1.2–1.3 mm, base connate for ca. 0.3 mm and narrowed, apex submucronate to mucronate. Stamens 10; anteseptalous ones ca. 4.3 mm; antepetalous ones ca. 3 mm, inserted ca. 1.6 mm from petal base; anthers retuse at apex. Carpels oblong, 5.5–6 mm, base connate for 1–1.5 mm, apex attenuate; ovules many. Styles ca. 1.5 mm. Seeds ca. 1 mm, mammillate. Fl. Aug–Sep, fr. Sep–Oct.

• Rocks on woodland slopes or in valleys, trails on slopes, rock crevices, stone walls; 1300–3000 m. W Sichuan, E Xizang.

- 1a. Leaf blade 6–22 mm; sepals subequal, 3.5–4.5 mm; petals ca. 6 mm, apex scarcely mucronate 36a. var. *morotii*
1b. Leaf blade 3.6–8 mm; sepals equal, to 3.5 mm; petals ca. 5 mm, apex prominently mucronate 36b. var. *pinoyi*

36a. *Sedum morotii* var. *morotii*

倒卵叶景天(原变种) *dao luan ye jing tian* (*yuan bian zhong*)

Leaf blade 6–22 mm, adaxially papillate-hairy. Sepals subequal, 3.5–4.5 mm. Petals ca. 6 mm, apex scarcely mucronate. Fl. Aug–Sep, fr. Oct.

• Rocks in valleys, trails on slopes, stone walls; 1300–2800 m. W Sichuan, E Xizang.

36b. *Sedum morotii* var. *pinoyi* (Raymond-Hamet) Fröderström, Acta Horti Gothob. 6(App.): 69. 1931.

小倒卵叶景天 *xiao dao luan ye jing tian*

Sedum pinoyi Raymond-Hamet, Bull. Soc. Bot. Genève 11: 149. 1919.

Leaf blade 3.6–8 mm, margin entire. Sepals equal, to 3.5 mm. Petals ca. 5 mm, apex prominently mucronate. Fl. Aug–Sep, fr. Sep–Oct.

• Rocks on woodland slopes, rock crevices; 2800–3000 m. W Sichuan.

37. *Sedum magniflorum* K. T. Fu, Acta Phytotax. Sin. 12: 61. 1974.

大花景天 *da hua jing tian*

Herbs annual, tufted, glabrous. Stem solitary, erect, 7–8 cm. Leaf blade narrowly oblong, 6–8 × 1.6–1.8 mm, veins 3–5, lateral ones anastomosing before reaching margin, base broadly and truncately spurred, apex obtuse. Cyme corymbiform, lax, 3–5-flowered; bracts narrowly oblong. Flowers unequally 5-merous; pedicel 2–7(–15) mm. Sepals narrowly oblong, 6.8–7.5 × 2–2.2 mm, veins 3–5, anastomosing near margin, base obtusely long spurred, apex obtuse. Petals yellowish, oblong, 7–8 × 2–2.3 mm, base connate for ca. 0.8 mm, apex obtuse. Stamens 10; antepetalous ones inserted 1–1.5 mm from petal base. Nectar scales linear-subspatulate, dilated at both ends, apex subrounded to truncate. Carpels suberect, oblong, 7–7.6 mm, base subconnate; ovules 10–12. Seeds obovoid-lanceolate, winged. Fl. Aug, fr. Sep.

• Rocks in *Abies* forests, among weeds, pebble beaches; ca. 3800 m. NW Yunnan (Zhongdian Xian).

38. *Sedum gagei* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 263. 1910.

锡金景天 *xi jin jing tian*

Sedum trullipetalum J. D. Hooker & Thomson var. *gagei* (Raymond-Hamet) H. Ohba.

Herbs perennial, glabrous. Sterile stems 0.6–2 cm. Flowering stems erect, slender, 1.4–6 cm. Leaves alternate, sessile, triangular-linear, 3.6–4.8 × 1.3–1.8 mm, minutely papillate on margin, basal spur 3-lobed, apex acuminate. Cyme corymbiform, dense, 0.8–2.3 cm; bracts triangular-linear. Flowers unequally 5-merous, small; pedicel 0.8–1.3 mm. Sepals ovate-linear, 3.5–5.6 mm, base obtusely spurred, margin entire and minutely mammillate, apex acuminate. Petals ovate-lanceolate, 5.6–7.3 mm, basally connate for 0.4–0.5 mm, basal claw less than 3 mm, apex acute and mucronate. Stamens 10; anteseptalous ones 4–5.7 mm; antepetalous ones 2.1–2.6 mm, inserted 1.3–2 mm from petal base. Nectar scales clawed, subquadrangular, 0.4–0.6 mm, apex deeply emarginate. Carpels 4.2–4.6 mm, base connate for 2.3–2.5 mm. Follicles obliquely divergent, many seeded. Fl. Aug, fr. Aug.

Below 5000 m. S Xizang [Bhutan, Nepal, Sikkim].

39. *Sedum sagittipetalum* Fröderström, Acta Horti Gothob. 15: 15. 1942.

箭瓣景天 *jian ban jing tian*

Herbs perennial, tufted, glabrous. Primary root present. Rootstock capitate, ± thickened, small. Sterile stems tufted, 0.5–1 cm. Flowering stems erect, 1–2 cm. Leaves crowded; leaf blade bright green to greenish white when dry, 4–6 mm, basal spur obtuse or lobed, apex long acuminate. Cyme 1- or 2-flowered; bracts 2, resembling stem leaves. Flowers unequally 5–7-merous. Sepals oblanceolate to oblong, 4–4.5 mm, base spurless, apex long acuminate. Petals free, yellow when dry, sagittate, 6–6.5 mm, base narrowly clawed, limb subovate, apex narrowly apiculate. Stamens 10–14; antesealous ones ca. 4 mm; antepetalous ones inserted 2–2.5 mm from petal base. Nectar scales dilated and emarginate at apex. Carpels erect, lanceolate to broadly so; ovules many. Styles very short. Follicles many seeded. Seeds ovoid, ca. 1 mm, smooth, winged at both ends. Fl. Aug, fr. Sep.

• Cliffs in glacial valleys; 4300–4500 m. W Sichuan (Dawu Xian).

40. *Sedum trullipetalum* J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 102. 1858.

饅瓣景天 *man ban jing tian*

Herbs perennial, glabrous. Sterile stems densely tufted, 1–4 mm. Flowering stems simple or branched from base, 2.8–8 cm. Leaf blade suboblong to narrowly triangular, 3–10 mm, base broad, 3-lobed spurred or spurless, apex acuminate. Cyme corymbiform, dense. Flowers subsessile, unequally 5-merous. Sepals suboblong to narrowly ovate, 4–6.5 mm, base spurless, apex acuminate. Petals free, yellow, trullate, 6–10 mm, base narrowly clawed, limb broadly ovate to ovate-lanceolate, apex mucronate. Stamens 10; antesealous ones 4.5–5.5 mm; antepetalous ones inserted on petal claw, shorter than petal limb. Nectar scales oblong, apex emarginate. Carpels erect, linear, 5–9 mm, base connate for ca. 2.5 mm; ovules many. Styles long. Seeds oblong, ca. 0.6 mm, minutely mammillate. Fl. Aug–Oct, fr. Oct–Nov.

Grassy meadows on alpine summits, grasslands, rocks, rock crevices, dry places; 2700–4400 m. W Sichuan, NE and S Xizang, NW Yunnan [Nepal, Sikkim].

- 1a. Basal spur of leaf blade broadly 3-lobed; sepal margin entire; anther apex obtuse 40a. var. *trullipetalum*
- 1b. Basal spur of leaf blade usually absent; sepal margin long ciliate; anther apex acute 40b. var. *ciliatum*

40a. *Sedum trullipetalum* var. *trullipetalum*

饅瓣景天(原变种) *man ban jing tian* (*yuan bian zhong*)

Basal spur of leaf blade broadly 3-lobed. Sepal margin entire. Anther apex obtuse. Fl. Aug–Oct, fr. Oct–Nov.

Grassy meadows on alpine summits, grasslands, rocks, rock crevices, dry places; 2700–4400 m. W Sichuan, S Xizang, NW Yunnan [Nepal, Sikkim].

40b. *Sedum trullipetalum* var. *ciliatum* Fröderström, Acta Horti Gothob. 15: 14. 1942.

缘毛景天 *yuan mao jing tian*

Basal spur of leaf blade usually absent. Sepal margin long ciliate. Anther apex acute. Fl. Aug–Oct.

• Granitic rocks in glacial valleys; ca. 4300 m. W Sichuan (Dawu Xian, Kangding Xian), NE Xizang.

41. *Sedum obrullatum* K. T. Fu, Acta Phytotax. Sin. 12: 63. 1974.

铲瓣景天 *chan ban jing tian*

Herbs biennial, glabrous. Flowering stems branched or rarely simple, erect, 3–8 cm. Proximal stem leaves crowded, sparse toward stem apex; leaf blade ovate-lanceolate, 4–5 mm, base shortly spurred, apex acuminate. Cyme corymbiform. Flowers 5-merous, rarely unequally so; pedicel 2–3 mm. Sepals free, lanceolate to lanceolate-oblong, subequal, 3.5–4.2 mm, base obtusely long spurred, apex acute. Petals red, obrullate to narrowly so, 2.5–2.6 mm, base clawed, apex obtuse to acute. Stamens 5, rarely 10 when antepetalous ones inserted between petal claw and limb. Nectar scales linear, 1.3–1.7 mm, apex obtuse to truncate. Carpels oblong, 3–3.5 mm, base connate; ovules many. Seeds obovoid, 0.6–0.7 mm, mammillate. Fl. Jul, fr. Sep.

• Slopes, along rivers; 2400–3300 m. SE Xizang (Zayü Xian), NW Yunnan (Dêqên Xian).

42. *Sedum raymondii* Fröderström in Handel-Mazzetti, Symb. Sin. 7: 411. 1931.

膨果景天 *peng guo jing tian*

Herbs annual, glabrous. Roots fibrous. Flowering stems simple or branched from base, erect, stout, 1–2.5 cm. Leaves crowded; leaf blade broadly oblanceolate to subobovate, 4–9 mm, basal spur broad and obtuse, apex subacute. Cyme corymbiform, 1–2.7 cm in diam., densely 5–20-flowered; bracts broadly oblanceolate to subobovate. Flowers unequally 5-merous; pedicel 3–5 mm. Sepals ovate to ovate-oblong, unequal, 2.8–4 mm, base obtuse and shortly spurred, apex subacute. Petals free, yellow, narrowly oblong, 2.5–3.5 mm, base broadly clawed, apex subacute. Stamens 10; antesealous ones ca. 2.8 mm; antepetalous ones inserted ca. 0.8 mm from petal base. Nectar scales linear, 1–1.7 mm, apex obtuse. Carpels divergent, ca. 3 mm, base connate for 0.5–0.7 mm; ovules many. Seeds ovoid-oblong, 0.8–1 mm, mammillate. Fl. Jul, fr. Aug.

• Grasslands, rocks on slopes or along trails, pebble beaches; 3200–4300 m. NW Yunnan.

43. *Sedum muaicum* K. T. Fu, Acta Bot. Boreal.-Occid. Sin. 6: 107. 1986.

木雅景天 *mu ya jing tian*

Herbs perennial, glabrous. Roots curved; fibrous roots present. Sterile shoots present. Flowering stems solitary or tufted, erect, 1.2–2.3 cm. Leaves alternate, usually clustered at base; leaf blade oblong to obovate-oblong, 4–5.5 × 2–2.3 mm, base shortly spurred, apex subacute. Cyme 5–8-flowered. Flowers 5-merous; pedicel 3–5 mm. Sepals linear-lanceolate, equal, ca. 4 mm, longer than petals, base spurless, apex obtuse to acute. Petals yellowish green to greenish, linear-lanceolate, ca. 3.5 mm, base subconnate, apex obtuse. Stamens 5, ca. 2.8 mm; anthers pink, ovoid, ca. 1.2 mm. Nectar scales transversely oblong, ca. 0.2 × 0.5 mm. Carpels triangular-ovoid, 1.3–1.5 mm; ovules 20–30. Styles 1.5–2 mm. Follicles erect, more than 20-seeded; placenta lunulate. Seeds narrowly ovoid, 0.5–0.6 mm, smooth. Fl. Aug, fr. Aug.

• W Sichuan (Kangding Xian).

44. *Sedum celiae* Raymond-Hamet, Bull. Acad. Int. Géogr. Bot. 23: 67. 1913.

镰座景天 *lian zuo jing tian*

Herbs perennial, glabrous. Roots fibrous. Underground stems creeping. Sterile stems tufted, 1–2 cm. Flowering stems erect, slender, 3–8 mm. Leaf blade linear to linear-lanceolate, 3.2–8.5 mm, basal spur obtuse or ± 3-lobed, apex acuminate. Cyme corymbiform, dense, few flowered; bracts linear to linear-lanceolate. Flowers unequally 5-merous; pedicel 0.6–1.6 mm. Sepals ± free, lanceolate, 6.5–7.2 mm, base spurless, apex acute. Petals broadly lanceolate, 6–9 mm, apex acuminate and mucronate. Stamens 10; antesealous ones 5–6 mm; antepetalous ones inserted 0.8–1.5 mm from petal base. Nectar scales obovate-spatulate, 0.4–0.6 mm, apex obtuse to emarginate. Carpels oblong, 7–8 mm, base connate for 0.5–1 mm. Follicles 13–15-seeded; placenta falcate, conspicuously stalked below middle. Seeds obovoid-oblong, ca. 0.8 mm, smooth. Fl. Oct, fr. Oct–Nov.

• Rocks in valleys; 2600–3000 m. SW Sichuan (Yanyuan Xian), NW Yunnan (Eryuan Xian).

45. *Sedum dugueyi* Raymond-Hamet, J. Bot. 54(Suppl. 1): 24. 1916.

藓茎景天 *xian jing jing tian*

Herbs perennial. Sterile stems erect, mosslike, 1–3 cm. Flowering stem usually solitary, erect, 1.5–5.5 cm. Leaf blade triangular-lanceolate, 3–7.5 mm, midvein often reddish brown, basal spur obtuse or 3-lobed, apex acuminate. Cyme corymbiform, few flowered; bracts triangular-lanceolate. Flowers subsessile, unequally 5-merous. Sepals triangular-lanceolate, 5–5.5 mm, base obtuse and shortly spurred, apex acuminate. Petals yellow, lanceolate-ovate, 6–8 mm, base subconnate and slightly narrowed. Stamens 10; antepetalous ones inserted 0.8–1 mm from petal base. Nectar scales linear-spatulate, 0.4–0.6 mm, apex emarginate. Carpels suboblong, 5–7 mm, base connate for ca. 0.8 mm.

Follicles 10–12-seeded. Seeds narrowly ovoid, ca. 0.8 mm, smooth. Fl. Sep–Oct, fr. Oct–Nov.

• Slopes in *Abies* forests, rocks in valleys; 2000–3600 m. NW Sichuan, NW Yunnan (Dèqên Xian).

46. *Sedum longyanense* K. T. Fu, Acta Bot. Boreal.-Occid. Sin. 6: 108. 1986.

浪岩景天 *lang yan jing tian*

Herbs perennial. Roots fibrous. Sterile stems 0.5–1.2 cm. Flowering stems simple, arched, 5–10 cm. Proximal stem leaves alternate, scalelike; leaf blade narrowly suboblong, 3–7 × 1–1.6 mm, gradually larger toward stem apex, veins brown spotted when dry, basal spur truncate-obtuse, apex spinose-cuspidate. Cyme 5–12-flowered. Flowers unequally 5-merous; pedicel 1–3 mm. Sepals oblong-lanceolate to lanceolate, 3.5–4 × 0.7–0.9 mm, veins 3, brown spotted, base spurred, apex spinose-acuminate. Petals yellow with brown midvein, linear to sublinear-oblong, 5.8–6 × 0.8–1 mm, base subconnate to ± free, apex shortly mucronate. Stamens 10; antesealous ones 3.5–4 mm; antepetalous ones 2–2.2 mm, inserted 0.8–1.2 mm from petal base. Nectar scales linear or quadrangular, 0.3–0.4 mm, apex rounded to obtuse. Carpels erect, narrowly ovoid, ca. 5 mm, base connate for 1–2 mm; ovules 6–10. Styles 1.7–1.8 mm. Follicles suberect, 6–8-seeded; placenta sublunulate. Seeds ovoid, 0.5–0.6 mm, smooth.

• Among moss on rocks. E Xizang.

47. *Sedum celatum* Fröderström, Acta Horti Gothob. 7: 114. 1932.

隐匿景天 *yin ni jing tian*

Sedum celatum f. *calcaratatum* K. T. Fu; *S. wuanum* K. S. Hao.

Herbs biennial, glabrous. Main root conical. Flowering stems branched from base, erect, 3–9 cm. Leaf blade lanceolate to narrowly ovate, 5–7 mm, basal spur obtuse or ± lobed, apex acuminate. Cyme corymbiform, 3–9-flowered; bracts lanceolate to narrowly ovate. Flowers unequally 5-merous; pedicel 2–6.5 mm. Sepal base spurless, apex long acuminate. Petals yellow, lanceolate, 3.5–4.5 mm, base connate for 0.2–0.3 mm, apex acuminate and long mucronate. Stamens 10; antesealous ones ca. 3 mm; antepetalous ones inserted 0.5–0.7 mm from petal base. Nectar scales broadly spatulate, ca. 0.4 mm, apical appendage transversely oblong. Carpels suboblong, 3.5–3.8 mm, base connate for 0.6–0.7 mm; ovules 6–8. Follicles 6–8-seeded; placenta falcate, apically 3–5-lobed. Seeds obovoid-oblong, 0.7–1 mm, mammillate, narrowly winged. Fl. Jul, fr. Aug–Sep.

• Slopes; 2900–4200 m. S Gansu, E Qinghai.

48. *Sedum przewalskii* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg, Sér. 3, 29: 156. 1883.

高原景天 *gao yuan jing tian*

Herbs annual, glabrous. Roots fibrous. Flowering stems usually branched from base, erect, 1–4 cm. Leaf blade broadly lanceolate to ovate, 2–4.8 mm, base truncately spurred, apex obtuse. Cyme corymbiform, 3–7-

flowered; bracts broadly lanceolate to ovate. Flowers 5-merous; pedicel 3–6 mm. Sepals suboblong, base spurless, apex obtuse. Petals yellow, triangular-ovate, 3–3.5 mm, base subconnate, apex obtuse. Stamens 5, ca. 3 mm. Nectar scales narrowly linear to linear-spatulate, 0.8–1.3 mm, apex subobtusely. Carpels subrhomboid, 3.2–3.4 mm, base free or connate for 0.2–0.5 mm. Follicles 3–6-seeded; placenta falcate. Seeds ovoid-oblong, ca. 0.8 mm, minutely mammillate. Fl. Aug, fr. Sep.

Dry grasslands on high mountain slopes, rocks; 2400–5400 m. C Gansu (Datong He), SE Qinghai, W Sichuan, E Xizang, NW Yunnan (Dêqên Xian) [Nepal].

49. *Sedum pagetodes* Fröderström, Acta Horti Gothob. 15: 25. 1942.

寒地景天 han di jing tian

Herbs annual, glabrous. Flowering stems branched from base, erect or ascending, 2–4 cm. Leaf blade broadly linear to oblong, 2.5–4.8 mm, basal spur broad and truncate, apex obtuse. Cyme corymbiform, 4–12-flowered; bracts broadly linear to oblong. Flowers unequally 5-merous; pedicel 1–3 mm. Sepals blackish brown spotted, subovate to broadly lanceolate, 2.8–3 mm, base spurless, apex obtuse. Petals yellow, sub-oblong, 3.7–4 mm, base subconnate and slightly narrowed, apex obtuse and obscurely mucronate. Stamens 10; antesepalous ones 2.9–3.2 mm; antepetalous ones inserted ca. 1.2 mm from petal base. Nectar scales linear-spatulate, ca. 0.7 mm, apex obtuse. Carpels obovoid, 2.8–3 mm, base subconnate. Follicles 2.8–3 mm, 2- or 3-seeded; placenta lunulate. Seeds obovoid-oblong, 0.9–1.2 mm, mammillate. Fl. Aug–Sep, fr. Sep.

• Grassland slopes; 3700–4600 m. S Qinghai (Zadoi Xian), W Sichuan (Kangding Xian).

50. *Sedum pratoalpinum* Fröderström, Acta Horti Gothob. 15: 24. 1942.

牧山景天 mu shan jing tian

Herbs annual, glabrous. Roots fibrous. Flowering stems branched near base, erect, 2–4 cm. Leaf blade oblong, 3–5 mm, base broadly spurred, apex obtuse. Cyme corymbiform, many flowered; bracts broadly lanceolate. Flowers unequally 5-merous, long pedicellate. Sepals broadly lanceolate, ca. 3 mm, base spurless, apex subacute. Petals ± free, whitish when dry, lanceolate, ca. 4 mm, base broadened, apex obtuse. Stamens 10; antesepalous ones longer; antepetalous ones inserted 1–1.2 mm from petal base. Nectar scales linear-spatulate, ca. 0.7 mm, apex obtuse. Carpels obovoid, ca. 3 mm, base connate, apex divergent. Styles long. Follicles 1–3-seeded; placenta basal. Seeds subovoid, ca. 1 mm, mammillate. Fl. Aug–Sep, fr. Sep.

• Alpine pastures, bare places on mountain summits; 4300–4600 m. S Qinghai (Zhidoi Xian), W Sichuan (Danba Xian).

51. *Sedum paracelatum* Fröderström, Acta Horti Gothob. 15: 17. 1942.

敏感景天 min gan jing tian

Herbs annual, glabrous. Roots fibrous. Flowering stems many branched above base, erect, 6–10 mm. Leaves larger toward stem apex; leaf blade lanceolate to oblong,

4–7 mm, basal spur obtuse and entire or rarely ± lobed, apex abruptly and shortly apiculate. Cyme corymbiform, few flowered; bracts oblong. Flowers unequally 5-merous. Sepals abaxially dark red mottled, oblong, unequal, 4.2–6 mm, base obtusely spurred, apex acute. Petals yellow, oblong, 6–7 mm, base connate for ca. 0.5 mm, apex long mucronate. Stamens 10; antesepalous ones 4–4.5 mm; antepetalous ones inserted ca. 1 mm from petal base. Nectar scales oblong spatulate, ca. 0.5 mm, apex obtuse. Follicles suberect, 5–5.5 mm, 10–12-seeded, base connate for 1.5–1.8 mm; placenta falcate. Seeds subovoid, ca. 0.8 mm, mammillate. Fl. Aug–Sep, fr. Sep–Oct.

• Grasslands, meadows, shady places on alpine slopes, sunny places, rocks in valleys, beaches; 3200–4400 m. W Sichuan (Dawu Xian, Kangding Xian).

52. *Sedum luchuanicum* K. T. Fu, Acta Phytotax. Sin. 12: 65. 1974.

禄劝景天 lu quan jing tian

Herbs annual, glabrous. Roots fibrous. Stems branched from base, erect, 5–9 cm. Proximal stem leaves very small; leaf blade subulate, linear-lanceolate to triangular-lanceolate, 1–7 mm, veins 3–5, brown spotted, basal spur broadly 3-lobed or truncate, apex acuminate. Cyme corymbiform, 3–9-flowered; bracts linear-lanceolate to triangular-lanceolate. Flowers unequally 5(or 6)-merous; pedicel 3–4 mm. Sepals linear-lanceolate to sublanceolate, 5.8–7.5 mm, veins 3–5, brown spotted, base obtusely long spurred, apex acuminate. Petals purplish red, linear-lanceolate, 9–10.5 mm, base connate for 0.3–0.7 mm, apex long mucronate. Stamens 10(–12); antesepalous ones 6–6.8 mm; antepetalous ones inserted 2.5–3 mm from petal base. Nectar scales broadly spatulate, 0.7–0.8 mm, apex obtuse. Follicles erect, free, lanceolate, 8–10 mm, 7–9-seeded; placenta sublunulate. Seeds obovoid, 1.2–1.4 mm, few mammillate. Fl. Sep–Oct, fr. Nov.

• Rock crevices; ca. 4400 m. NC Yunnan (Luquan Xian).

53. *Sedum fedtschenkoi* Raymond-Hamet, Russk. Bot. Zhurn. 1914: 2. 1914.

尖叶景天 jian ye jing tian

Herbs annual. Stems branched from base, ascending, 2.5–4.5 cm. Leaf blade linear-lanceolate, 4.7–8 mm, base obtusely spurred, apex acute. Cyme corymbiform, very lax, few flowered. Flowers unequally 5-merous. Sepals lanceolate to subovate, 3–5 mm, base spurred, apex acuminate. Petals ± free, yellow, suboblong, ca. 4 mm, apex shortly acuminate. Stamens 10; antesepalous ones ca. 2.8 mm; antepetalous ones ca. 1.5 mm, inserted 0.8–1 mm from petal base. Nectar scales suborbicular-spatulate, ca. 0.5 mm, apex rounded to retuse. Carpels erect, base connate for 0.8–0.9 mm, apex abruptly tapered. Follicles broadly ovoid, 3–3.5 mm, 3–8-seeded; placenta falcate. Seeds ovoid, 0.8–1 mm, minutely mammillate. Fl. Aug, fr. Sep.

• Meadows near river beaches, swampy places by beaches in valleys, lake banks, rocks on alpine slopes, steppes, granite crevices; 3300–4800 m. S Qinghai, W Sichuan, E Xizang.

54. *Sedum purdomii* W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 126. 1916.

裂鳞景天 *lie lin jing tian*

Herbs annual, glabrous. Stems simple or branched from base, erect, 4.5–5.5 cm. Leaf blade linear-oblong to oblong, 4–5 mm, base truncate and shortly spurred, apex obtuse. Cyme more than 10-flowered. Flowers unequally 5-merous; pedicel 1–4 mm. Sepals oblong, 2–3 mm, base shortly spurred, apex obtuse. Petals yellow, narrowly oblanceolate, 4.5–5 mm, apex subobtusate and mucronate. Stamens 10; antepetalous ones equaling petals, inserted ca. 1 mm from petal base. Nectar scales broadly linear-spatulate, ca. 0.7 × 0.8 mm, apex parted to lobate. Carpels basally connate for ca. 1 mm. Follicles divergent, broad, 3–4 mm, 2–4-seeded; placenta falcate. Seeds densely mammillate, basally narrowly winged. Fl. Aug.

• Gravelly places in alpine zone; 3700–4000 m. S Gansu.

55. *Sedum chingtungense* K. T. Fu, Acta Phytotax. Sin. 12: 67. 1974.

景东景天 *jing dong jing tian*

Herbs annual, glabrous. Stems prostrate, 4–15 cm. Leaf blade spatulate and ca. 1 cm on proximal leaves, subpanduriform and 4–8 mm on distal ones, basal spur broad and obtuse, apex obtuse. Flower solitary, terminal, unequally 5-merous. Sepals narrowly oblong to ± oblanceolate-oblong, 4.5–6 mm, base obtusely spurred, apex obtuse. Petals yellow, subobovate, ca. 5.8 mm, base connate and slightly narrowed, apex obtuse. Stamens 10; antepetalous ones inserted ca. 2 mm from petal base. Nectar scales linear, 1–1.2 mm, apex slightly dilated, retuse. Carpels basally connate for 1.2–1.8 mm, apically divergent. Follicles oblong, 4–5 mm, many seeded; placenta lunulate. Seeds obovoid, ca. 0.7 mm, mammillate; funicle curved. Fl. Apr, fr. May.

• Sides of wells; ca. 2100 m. WC Yunnan (Jingdong Xian).

56. *Sedum sinoglaciale* K. T. Fu, Acta Phytotax. Sin. 12: 67. 1978.

冰川景天 *bing chuan jing tian*

Sedum glaciale Franchet, J. Bot. (Morot) 1896: 290. 1896, not de Candolle (1828).

Herbs annual, glabrous. Stems branched from base, erect or ascending, 1.5–3 cm. Leaf blade linear to linear-oblong, 4–7 mm, base spurred, apex subobtusate. Cyme corymbiform, 1–3-flowered; bracts linear to linear-oblong. Flowers unequally 5-merous; pedicel 3–7 mm. Sepals oblong to linear-oblong, 5–7 mm, veins 6–8, basal spur truncate or obtuse, apex acute. Petals yellow, subobovate, 7–7.5 mm, base connate for 0.5–0.8 mm, apex obtuse and very shortly mucronate. Stamens 10; antesepalous ones 5.5–6 mm; antepetalous ones inserted ca. 2 mm from petal base. Nectar scales spatulate, widened near base, 1–1.5 mm, apex retuse. Carpels erect, ± free. Styles ca. 1.8 mm. Follicles

almost free, oblong, ca. 7 mm, 5-seeded; placenta falcate, not stalked. Seeds oblong, ca. 1 mm, mammillate. Fl. Aug, fr. Sep.

• Thickets in meadows, slopes; 3000–4700 m. NW Yunnan (Lijiang Naxi Zu Zizhixian, Zhongdian Xian).

57. *Sedum semilunatum* K. T. Fu, Acta Phytotax. Sin. 12: 67. 1974.

月座景天 *yue zuo jing tian*

Herbs annual, glabrous. Roots fibrous. Stems simple or 2- or 3-branched at base, erect, 1–1.8 cm. Leaf blade brown spotted, broadly oblanceolate to subobovate, 3.2–3.5 mm, base broadly spurred, apex obtuse. Cyme 1–3-flowered. Flowers unequally 5-merous; pedicel 2–3 mm. Sepals brown spotted, obovate to subobovate, 3.5–3.8 mm, base obtusely spurred, apex obtuse. Petals yellow, suboblong, 3.8–3.9 mm, base connate for ca. 0.3 mm, apex ± helmet-shaped. Stamens 10; antesepalous ones 3.5–4 mm; antepetalous ones inserted 1–1.2 mm from petal base. Nectar scales linear, 1–1.3 mm, apex obtuse to subrounded. Carpels free. Styles ca. 1 mm. Follicles oblong, 2.5–3.5 mm, 2-seeded; placenta falcate, 2-branched. Seeds narrowly obovoid, ca. 1 mm, smooth. Fl. Aug, fr. Sep.

• W Yunnan (Dali Xian).

58. *Sedum ramentaceum* K. T. Fu, Acta Phytotax. Sin. 12: 71. 1974.

糠秕景天 *kang bi jing tian*

Herbs biennial, glabrous. Stems simple or few branched at base, erect, 0.8–1.2 cm. Proximal stem leaves yellowish green and deciduous, others persistent; leaf blade linear- to oblanceolate-oblong, 3.5–5.5 mm, base broadly spurred, apex obtuse to subacute. Cyme corymbiform, 1–3-flowered; bracts linear-oblong to oblanceolate-oblong. Flowers equally or unequally 5-merous; pedicel 1.5–3 mm. Sepals suboblong to narrowly ovate, 3–4.6 mm, base spurless, apex subacute. Petals yellow, suboblong, 3.8–5 mm, base slightly narrowed, apex obtuse. Stamens 5 or 10; antesepalous ones (when present) 2.5–3.8 mm; antepetalous ones ca. 2 mm, inserted 1–1.1 mm from petal base. Nectar scales linear to ± club-shaped, 0.8–1 mm, apex obtuse. Carpels divergent. Styles ca. 0.8 mm. Follicles free, broadly ovoid, 2.5–4 mm, 4- or 5-seeded. Seeds oblong, 1–1.1 mm, ramentaceous, basal appendage stomach-shaped; funicle long. Fl. Jul, fr. Aug.

• Rocks along trails on alpine ridges; ca. 4500 m. W Sichuan.

59. *Sedum trichospermum* K. T. Fu, Acta Phytotax. Sin. 12: 68. 1974.

毛籽景天 *mao zi jing tian*

Herbs annual, glabrous. Roots fibrous. Stems simple or branched, erect or ascending, 2.5–5 cm. Leaf blade linear to linear-lanceolate, 2.5–7.1 mm, base spurred, apex subacute. Cyme corymbiform, few to many flowered. Flowers unequally 5-merous; pedicel 1–2.5

mm. Sepals suboblong, ca. 3 mm, base spurless, apex obtuse. Petals suboblong, 4–4.5 mm, base free to subconnate, apex obtuse and ± helmet-shaped. Stamens 10; antesepalous ones ca. 3.5 mm; antepetalous ones inserted 0.8–1 mm from petal base. Nectar scales linear to sublinear-spatulate, apex obtuse. Carpels divergent, base connate. Follicles oblong, 2- or 3-seeded; placenta lunulate. Seeds hairlike, basal appendage stomach-shaped; funicle long. Fl. Aug–Sep, fr. Sep–Oct.

• Alpine grasslands by trails; 4000–4600 m. W Sichuan.

60. *Sedum prasinopetalum* Fröderström, Acta Horti Gothob. 15: 20. 1942.

绿瓣景天 *lu ban jing tian*

Herbs annual, yellowish green when dry, glabrous. Stems simple or branched, erect or ascending, 3–7 cm. Leaf blade narrowly oblong to broadly lanceolate, 3–5 mm, basal spur obtuse or ± lobed, apex obtuse to subacute. Cyme corymbiform, few flowered; bracts broadly oblanceolate. Flowers unequally 5-merous, long pedicellate. Sepals yellowish green, oblong, 3–4.6 mm, veins 3–5, blackish, base spurless, apex obtuse. Petals ± free, yellow, greenish yellow when dry, subovate, 5–6 mm, apex obtuse and incurved. Stamens 10; antepetalous ones inserted 1.5–2 mm from petal base. Nectar scales linear-spatulate, 0.4–0.8 mm, apex obtuse. Carpels erect, base broad. Follicles green when dry, 4–5 mm, 12–14-seeded. Seeds obovoid, 0.5–0.7 mm, minutely mammillate, basal appendage stomach-shaped; funicle long. Fl. Aug–Sep, fr. Sep–Oct.

• Rocks in thickets, alpine grasslands; 4100–4500 m. S Qinghai (Jigzhi Xian, Zhidoi Xian), W Sichuan (Dawu Xian, Kangding Xian).

61. *Sedum forrestii* Raymond-Hamet, Notes Roy. Bot. Gard. Edinburgh 5: 118. 1912.

川滇景天 *chuan dian jing tian*

Herbs biennial, glabrous. Stems branched from base, erect or ascending, 2–4 cm. Leaf blade oblong to subovate, 4.5–10 mm, base truncately spurred, apex obtuse. Cyme corymbiform, dense, many flowered; bracts oblong to subovate. Flowers unequally 5-merous; pedicel ca. 3.5 mm. Sepals oblong to obovate, 3.2–6.5 mm, base obtusely to truncately spurred, apex obtuse. Petals free, yellow, oblong to suboblong, 5.5–6 mm, apex obtuse. Stamens 10; antepetalous ones inserted 0.5–1.5 mm from petal base. Nectar scales linear to sublinear-spatulate, 1.6–1.8 mm, apex obtuse. Carpels basally connate for 0.5–1 mm. Follicles oblong, 5–6.5 mm, 3–5-seeded. Seeds oblong, minutely mammillate, basal appendage tobacco pipe-shaped; funicle long. Fl. Jul–Aug, fr. Aug–Sep.

• Grasslands, broad pastures, summits, exposed rocks, rock crevices on slopes, talus on alpine slopes; 3300–4300 m. NW Yunnan (Lijiang Naxi Zu Zizhixian, Zhongdian Xian).

62. *Sedum perrottii* Raymond-Hamet, Bull. Soc. Bot. France 71: 157. 1924.

甘肃景天 *gan su jing tian*

Sedum anthoxanthum Fröderström.

Herbs annual, glabrous. Roots shortly fibrous. Stems branched from base, erect, 2–6 cm. Leaf blade linear-lanceolate to linear-obovate, 4–8 mm, base obtuse and shortly spurred, apex subacute to subobtuse. Cyme corymbiform, ± dense, 5–15-flowered; bracts linear-obovate to linear-lanceolate. Flowers unequally 5-merous; pedicel 3–4 mm. Sepals oblong to linear-lanceolate, 2.5–4.5 mm, base obtuse and shortly spurred, apex subacute. Petals free, yellow, ± narrowly oblong to subobovate-oblong, 4–6 mm, apex obtuse. Stamens 10; antepetalous ones inserted 1–1.5 mm from petal base. Nectar scales linear-spatulate, 0.5–0.7 mm, apex subobtuse. Carpels erect, base connate for 0.6–1.6 mm. Styles long. Follicles lanceolate, 4.5–5 mm, 4- or 5-seeded; placenta subfalcate. Seeds ovoid, ca. 1.2 mm, mammillate; funicle long. Fl. Jul, fr. Aug.

• Thickets in meadows, grasslands, alpine meadows; 4000–4300 m. SW Gansu, SE Qinghai (Baima Xian), N Sichuan.

63. *Sedum longifuniculatum* K. T. Fu, Acta Phytotax. Sin. 12: 70. 1974.

长珠柄景天 *chang zhu bing jing tian*

Herbs annual, glabrous. Stems simple or branched at base, erect to ± arched, 5–12 cm. Proximal stem leaf blade linear-oblong, 3–12 mm, base shortly spurred, apex obtuse. Cyme corymbiform, many flowered; bracts linear-oblong. Flowers unequally 5-merous; pedicel 1.5–5 mm. Sepals linear-oblong, unequal, 5.5–6.5 mm, base obtuse and shortly spurred, apex obtuse. Petals yellow, suboblong, 7–7.2 mm, base connate for 0.4–0.5 mm, apex shortly mucronate. Stamens 10; antesepalous ones 5–5.2 mm; antepetalous ones 4–4.1 mm, inserted 1.8–2 mm from petal base. Nectar scales broadly linear-spatulate, apically expanding into a transversely oblong to suborbicular appendage 0.4–0.5 mm. Carpels erect, base connate for ca. 2 mm. Styles ca. 1.5 mm. Follicles oblong, 7.3–7.5 mm, usually ca. 7-seeded. Seeds obovoid, 1.1–1.4 mm, minutely mammillate; funicle long. Fl. Aug, fr. Aug–Sep.

• Grassy places on mountain summits; ca. 4200 m. NC Sichuan (Li Xian).

64. *Sedum didymocalyx* Fröderström, Acta Horti Gothob. 15: 21. 1942.

双萼景天 *shuang e jing tian*

Herbs annual, glabrous. Roots fibrous. Stems branched at base, erect, 1–3 cm. Proximal stem leaf blade subovate and 3–3.5 mm, others oblanceolate and 5–5.5 mm, base obtuse and shortly spurred, apex obtuse. Cyme 1–3-flowered; bracts oblanceolate. Flowers unequally 5-merous or equally 4- or 5-merous. Sepals of lateral flowers in 1 series, those of terminal flower in 2 series; outer sepals subovate, 6–6.5 mm, base obtusely spurred, apex obtuse; inner sepals broadly lanceolate, apex subacute. Petals ± free, yellow, oblong, 5.5–6 mm, apex obtuse. Stamens 10; antesepalous ones ca. 4 mm; antepetalous ones inserted ca. 2 mm from

petal base. Nectar scales linear, slightly contracted at middle, ca. 8 mm, apex obtuse. Carpels divergent, base subconnate. Styles ca. 1 mm. Follicles suboblong, 4.8–5 mm, many seeded. Seeds obovoid, ca. 1 mm, mammillate; funicle curved, very long. Fl. Aug, fr. Sep.

• Alpine grasslands, rock crevices; 4400–4700 m. W Sichuan.

65. *Sedum erici-magnusii* Fröderström, Acta Horti Gothob. 15: 22. 1942.

大炮山景天 da pao shan jing tian

Herbs annual, glabrous. Stems branched from base, erect, 1–3 cm. Leaf blade oblong, 1.5–3.5 mm, basal spur entire and subtruncate or ± 2-cleft, apex acuminate to spinose-cuspidate. Cymes terminal or axillary, 1- or 2-flowered; bracts broadly lanceolate, apex subacute. Flowers unequally 4- or 5-merous or irregular, shortly pedicellate. Sepals oblong, unequal, 2.8–3.2 mm, base obtusely spurred, apex cuspidate. Petals free, yellowish, subovate, 2–2.3 mm, apex obtuse. Stamens 8–10; antesealous ones 1.8–2 mm; antepetalous ones inserted ca. 0.5 mm from petal base. Nectar scales linear-spatulate, ca. 1 mm, apex obtuse. Carpels 3 or 4 (or 5), ovoid, 2–2.8 mm, base subconnate, apex abruptly narrowed. Styles short. Follicles 4–8-seeded. Seeds subovoid, ca. 0.8 mm, smooth or minutely papillate. Fl. Aug, fr. Aug–Sep.

• Pastures on slopes, granite in glacial valleys, gravelly places, sandy beaches, rock crevices on slopes; 3800–4900 m. W Gansu, W Sichuan, E Xizang.

1a. Basal spur of leaf blade ± 2-cleft; seeds minutely papillate 65a. subsp. *erici-magnusii*

1b. Basal spur of leaf blade entire, subtruncate; seeds smooth 65b. subsp. *chilianense*

65a. *Sedum erici-magnusii* subsp. *erici-magnusii*

大炮山景天(原亚种) da pao shan jing tian (yuan ya zhong)

Sedum erici-magnusii var. *subalpinum* Fröderström.

Basal spur of leaf blade ± 2-cleft. Seeds minutely papillate. Fl. Aug, fr. Aug–Sep.

• Pastures on slopes, granite in glacial valleys, gravelly places, sandy beaches, rock crevices on slopes; 3800–4900 m. W Sichuan, E Xizang.

65b. *Sedum erici-magnusii* subsp. *chilianense* K. T. Fu, Acta Bot. Boreal.-Occid. Sin. 11: 170. 1991.

祈连山景天 qi lian shan jing tian

Basal spur of leaf blade entire, subtruncate. Seeds smooth.

• Slopes. W Gansu (Qilian Shan).

66. *Sedum bergeri* Raymond-Hamet, Bull. Mus. Hist. Nat. (Paris) 15: 488. 1909.

长丝景天 chang si jing tian

Herbs perennial, glabrous. Sterile stems 2.5–3.5 cm. Flowering stems branched, erect, 10–28 cm. Proximal stem leaves verticillate, others alternate or subverticillate; leaf blade linear-spatulate, 0.8–3.5 mm, base obtusely spurred, apex subacute. Cyme corymbiform, dense; bracts leaflike. Flowers shortly

pedicellate, unequally 5-merous. Sepals adaxially brown spotted, linear to suboblong, 3.2–6 mm, base spurless, apex subacute and mammillate. Petals ± free, yellow, oblong, 6–8 mm, base slightly narrowed, apex shortly mucronate. Stamens 10; antesealous ones 4.8–6.5 mm; antepetalous ones inserted 1.7–2.5 mm from petal base. Nectar scales subquadrangular, apically slightly widened, 0.3–0.5 mm. Carpels erect, base connate for 1.3–1.6 mm. Styles 1.7–1.8 mm. Follicles oblong, 5–7 mm, many seeded; placenta subfalcate. Seeds obovoid, 0.6–0.7 mm, shallowly mammillate. Fl. Sep–Oct, fr. Nov.

• Rocks on slopes; 3000–3500 m. E Yunnan.

67. *Sedum chauveaudii* Raymond-Hamet, Notul. Syst. (Paris) 1: 137. 1910.

轮叶景天 lun ye jing tian

Herbs perennial, glabrous. Sterile stems 3–6 cm. Flowering stems ascending, ± stout or slender, 8–18 cm; basal nodes with adventitious roots. Leaves 3-verticillate or alternate, subsessile; leaf blade adaxially brown spotted, spatulate, 0.8–2.2 × 3–5 mm, adaxially papillate, basal spur obtuse or slightly 2-cleft, apex obtuse. Cyme corymbiform, lax, many flowered; bracts leaflike. Flowers shortly pedicellate, unequally 5-merous. Sepals adaxially rust-colored spotted, linear-spatulate, unequal, 4.5–6.5 mm, adaxially mammilliform, basal spur broad and obtuse, apex rounded to obtuse. Petals yellow, lanceolate to oblong, 8–10 mm, base connate for ca. 1.5 mm, apex shortly mucronate. Stamens 10; antepetalous ones ca. 4.5 mm, inserted 2–3 mm from petal base. Nectar scales quadrangular to oblong, apically slightly widened, 0.5–0.6 mm. Carpels basally connate for ca. 1.5 mm, adaxially slightly gibbous or not. Styles long. Follicles oblong, ca. 7.5 mm, many seeded. Seeds ovoid, ca. 0.8 mm, basally papillate. Fl. Aug–Nov, fr. Oct–Dec.

Rocks in mixed and *Picea* forests, shady moist ravine banks, valleys near water, and on sunny slopes, rock crevices in alpine zone, edges of rocky slopes; 1700–3800 m. NW Guizhou, SW Sichuan, E Yunnan [Nepal].

1a. Flowering stems slender; leaves alternate; carpels adaxially slightly gibbous 67b. var. *margaritae*

1b. Flowering stems ± stout; leaves 3-verticillate; carpels adaxially not gibbous 67a. var. *chauveaudii*

67a. *Sedum chauveaudii* var. *chauveaudii*

轮叶景天(原变种) lun ye jing tian (yuan bian zhong)

Sedum triphyllum Praeger.

Flowering stems ± stout. Leaves 3-verticillate. Carpels adaxially not gibbous. Fl. Sep–Nov, fr. Oct–Dec.

Rocks in *Picea* forests, shady moist ravine banks, and on sunny slopes, edges of rocky slopes; 2500–3800 m. SW Sichuan, E Yunnan [Nepal].

67b. *Sedum chauveaudii* var. *margaritae* (Raymond-Hamet) Fröderström, Acta Horti Gothob. 6(App.): 55. 1931.

互生叶景天 hu sheng ye jing tian

Sedum margaritae Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 142. 1910.

Flowering stems slender. Leaves alternate. Carpels adaxially slightly gibbous. Fl. Aug.

•Rocks in mixed forests and valleys near water, rock crevices in alpine zone; ca. 1700 m. NW Guizhou, SW Sichuan, NE Yunnan.

68. *Sedum tsonanum* K. T. Fu, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 1980(6): 41. 1980.

错那景天 *cuo na jing tian*

Herbs perennial, glabrous. Sterile stems 1–3 cm. Flowering stems ascending, 8–10 cm; basal nodes with adventitious roots. Leaves 3-verticillate; leaf blade adaxially green and sometimes reddish brown spotted, sublinear-spatulate, 5–20 × 1–4 mm, base obtusely spurred, apex obtuse. Cyme corymbiform, lax, many flowered; bracts leaflike. Flowers shortly pedicellate, unequally 5-merous. Sepals adaxially reddish brown spotted, linear-lanceolate, subequal, 3.5–5 mm, base spurless, apex rounded to obtuse. Petals yellow, linear-lanceolate, 9–11 × ca. 2 mm, base connate for 2–3 mm, apex subacute. Stamens 10; antepetalous ones inserted in cleft between petals; antepetalous ones inserted ca. 4 mm from petal base. Nectar scales suboblong, apically slightly widened, 0.3–0.4 mm. Carpels basally connate for 1.2–1.3 mm. Styles ca. 2 mm. Follicles oblong, ca. 7 mm, 8–10-seeded. Seeds narrowly ovoid, ca. 0.8 mm, minutely mammillate. Fl. Sep, fr. Oct.

•Rocks on slopes in valleys; 2900–3500 m. S Xizang (Cona Xian).

69. *Sedum dielsii* Raymond-Hamet, Malpighia 26: 57. 1913.

乳瓣景天 *ru ban jing tian*

Sedum angustipetalum Fröderström; *S. leblancae* Raymond-Hamet var. *dielsii* (Raymond-Hamet) Fröderström.

Herbs perennial, glabrous. Rootstock sometimes very stout; nodes with adventitious roots. Flowering stems simple or many branched, erect or ascending, 6–18 cm. Leaves 3- or 4-verticillate; leaf blade obovate to suboblong, 1–2 cm, base obtuse and shortly spurred. Cyme corymbiform; bracts subobovate. Flowers unequally 5-merous. Sepals broadly linear to obovate-linear, unequal, 3–5 mm, base spurless, apex obtuse and long papillate. Petals ± free, yellow, narrowly lanceolate, 7–10 mm, apex subobtuse, helmet-shaped, mucronate, and papillate. Stamens 10; antepetalous ones 3.5–4.5 mm, inserted 2–3 mm from petal base. Nectar scales broadly spatulate, ca. 1 mm, apex retuse. Carpels erect, base connate for 1–1.5 mm. Styles 1.5–1.7 mm. Follicles ovoid to subovoid-globose, many seeded; placenta linear. Seeds broadly obovoid, ca. 0.8 mm, densely and minutely papilliferous. Fl. Sep–Oct, fr. Nov.

•Rocks; 700–1900 m. S Gansu, W Hubei (Shennongjia Linqiu), N Sichuan.

70. *Sedum leblancae* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 311. 1910.

钝萼景天 *dun e jing tian*

Herbs biennial, glabrous. Rootstock ± woody, rooting at nodes. Stems branched from base, erect, 5–16 cm, sometimes apically mammillate. Proximal stem leaves 4-verticillate, others alternate; leaf blade obovate-linear, 4–18 mm, basal spur obtuse, margin mammillate, apex obtuse. Cyme corymbiform, many flowered; bracts leaflike. Flowers unequally 5-merous; pedicel 2–6 mm. Sepals adaxially sometimes reddish brown striped toward apex, linear to linear-oblong, unequal, 3.1–3.8 mm, base spurless, apex obtuse and long papillate. Petals yellow, oblong, 3.6–7 mm, base connate for 0.2–0.7 mm, apex subacute and mucronate. Stamens 5 or 10; antepetalous ones 1.8–4.2 mm, inserted 1–1.7 mm from petal base. Nectar scales broadly linear-spatulate to subquadrangular, 0.4–0.6 mm, apex retuse. Carpels basally connate for 1.1–1.3 mm. Styles ca. 1.8 mm. Follicles ovoid-oblong, 3.2–6 mm, many seeded. Seeds ovoid, 0.6–0.7 mm, minutely papilliferous. Fl. Sep–Nov, fr. Oct–Dec.

•Rocks in *Picea* forests, among mosses on limestone rocks in alpine zone, rocks in valleys, rock walls; 1500–3500 m. SW Sichuan, NW Yunnan.

71. *Sedum tsiangii* Fröderström, Sinensia 3: 199. 1933.

安龙景天 *an long jing tian*

Herbs annual, glabrous. Stems branched, suberect, 10–15 cm. Leaves alternate or 3- or 4-verticillate; leaf blade oblanceolate, 1–1.5 cm, sparsely papillate-hairy, base obtuse and shortly spurred, apex subobtuse. Cyme corymbiform, lax, few flowered; bracts subobovate. Flowers shortly pedicellate, unequally 5-merous. Sepals lanceolate to linear, unequal, 3.5–4.2 mm, base spurless, apex subobtuse and papillate. Petals yellow, oblong to broadly ovate, 4.5–5 mm, base subconnate to free, apex mucronate. Stamens 10; antepetalous ones 1.8–2.2 mm, inserted 0.5–1.2 mm from petal base. Nectar scales quadrangular or linear-spatulate, slightly constricted at middle, ca. 0.5 mm, apex truncate. Carpels erect, base connate for 0.8–1.2 mm. Styles ca. 0.5 mm. Follicles subovoid, 3.5–4.5 mm, many seeded; placenta linear. Seeds ovoid, ca. 0.5 mm, mammillate. Fl. Sep–Oct, fr. Oct–Nov.

•Rocks on slopes or cliffs; 400–2700 m. W Guizhou, E Yunnan.

- 1a. Leaves alternate, sometimes basally verticillate; petals oblong; nectar scales quadrangular 71a. var. *tsiangii*
1b. Leaves 3- or 4-verticillate; petals broadly ovate; nectar scales linear-spatulate 71b. var. *torquatium*

71a. *Sedum tsiangii* var. *tsiangii*

安龙景天(原变种) *an long jing ting* (yuan bian zhong)

Leaves alternate, sometimes basally verticillate. Petals oblong. Nectar scales quadrangular. Fl. Sep–Oct, fr. Oct–Nov.

•Moist rocks on slopes or cliffs; 400–2700 m. W Guizhou (Hezhang Xian, Shuicheng Tequ), NE Yunnan (Zhenxiong Xian).

71b. *Sedum tsiangii* var. *torquatum* (Fröderström) K. T. Fu in S. H. Fu & K. T. Fu, Fl. Reipubl. Popularis Sin. 34(1): 126. 1984.

珠节景天 *zhu jie jing tian*

Sedum leblancae Raymond-Hamet var. *torquatum* Fröderström, Acta Horti Gothob. 6(App.): 76. 1931.

Leaves 3- or 4-verticillate. Petals broadly ovate. Nectar scales linear-spatulate.

• Rocks on slopes; ca. 2600 m. SE Yunnan (Funing Xian).

72. *Sedum chuhsingense* K. T. Fu, Bull. Bot. Res., Harbin 7 (1): 68. 1987.

楚雄景天 *chu xiong jing tian*

Herbs perennial. Roots fibrous. Stems erect, gray, stout, subquadrangular, 8–10 mm, to 4 mm thick when dry;

apical nodes branched. Leaves 4-verticillate; leaf blade linear-lanceolate, 4–16 × 1.5–2 mm, basal spur rounded or ± lobed, apex acute. Cyme scorpioid, often 4-branched, many flowered. Flowers sessile or subsessile, unequally 5-merous. Sepals broadly ovate to suboblong, equal, ca. 1.5 × 1.2 mm, base subconnate and spurless, apex obtuse or acute. Petals yellow, lanceolate-ovate, 5–5.5 × 1.8–2 mm, base subconnate, apex ± helmet-shaped. Stamens 10; antesealous ones 3.5–4 mm; antepetalous ones 2.5–3 mm, inserted ca. 1 mm from petal base. Nectar scales oblong-spatulate, ca. 0.2 mm, apex retuse. Carpels free, narrow. Styles ca. 1.8 mm. Follicles broadly ovoid, ca. 4 mm, 12–14-seeded. Seeds ovoid, ca. 0.3 mm. Fl. Oct, fr. Oct–Nov.

• C Yunnan (Chuxiong Xian).

3. *Sedum* sect. *Sedum*

景天组 *jing tian zu*

Leaf base sessile or narrowed into a petiole, spurred. Inflorescence branches often scorpioid, rarely corymbiform. Flowers mostly sessile, basal flower sometimes pedicellate. Sepals spurred or spurless. Petals yellow. Carpels mostly subdivergent to spreading stellately at maturity, sometimes erect, adaxially gibbous, base connate. Follicles usually spreading-divergent, sometimes erect, adaxially gibbous. Seeds mostly papillate, sometimes smooth. More than 60 species: Asia, Europe; 49 species (34 endemic) in China.

1a. Plants erect, rarely prostrate; leaves usually spurless (shortly spurred in *S. leptophyllum*).

2a. Pseudopetiole conspicuous.

3a. Carpels 4; follicles many seeded 75. *S. tetractinum*

3b. Carpels 5; follicles 1–3-seeded.

4a. Bracts orbicular to suborbicular; leaves rhombic-elliptic, 3–6 cm, apex attenuate or retuse to emarginate 73. *S. oligospermum*

4b. Bracts linear-spatulate; leaves ovate to suborbicular, 1.5–3 cm, apex rounded 74. *S. wilsonii*

2b. Pseudopetiole inconspicuous, leaves tapered toward base.

5a. Carpels and nectar scales 3; seeds few.

6a. Leaves verticillate or opposite, spatulate-oblong 76. *S. triactina*

6b. Leaves alternate, rarely verticillate, oblanceolate to linear-lanceolate 77. *S. leptophyllum*

5b. Carpels and nectar scales 4; seeds numerous.

7a. Leaves narrowly oblanceolate, 1–2.5 cm; sepals triangular to narrowly elliptic; petals 4–4.5 mm, apex shortly mucronate 78. *S. hakonense*

7b. Leaves oblanceolate, 2.5–4.5 cm; sepals narrowly triangular; petals ca. 7 mm, apex acute 79. *S. dongzhiense*

1b. Plants subprostrate, ascending, or decumbent; leaves usually spurred; sepals spurred, rarely spurless.

8a. Rootstock with root shoots or white, globose latent bulbs.

9a. Rootstock ascending, root shoots present.

10a. Plants 5–20 cm tall; leaves spatulate to broadly obovate, 12–20 mm 80. *S. leucocarpum*

10b. Plants ca. 7 cm tall; leaves ovate, 3–4 mm 81. *S. wenchuanense*

9b. Rootstock slender, white, globose latent bulbs present.

11a. Leaves alternate, 3–15 × ca. 2 mm; sepals 1.5–7 mm 82. *S. tianmushanense*

11b. Leaves opposite at base of stem, 4-verticillate at middle, alternate at apex, 12–30 × 1–2 mm; sepals 2–2.5 mm 83. *S. latentibulbosum*

8b. Rootstock absent, roots slender.

12a. Sepals equaling or longer than petals or, if shorter than the petals, all sepals equal.

13a. Plants annual; petals triangular, apex acute 84. *S. woronowii*

13b. Plants perennial; petals oblong-ovate, apex long mucronate 85. *S. multicaule*

12b. Sepals shorter than petals or, if longer than petals, sepals unequal.

14a. Plants suffrutescent, tufted; sepals 1/4–1/3 as long as petals 86. *S. polytrichoides*

14b. Plants mostly not tufted, leathery; sepals to 1/2 as long as petals.

- 15a. Leaves usually verticillate (sometimes opposite or less often alternate in *S. erythrospermum*).
- 16a. Leaves usually 1.5–3 cm.
- 17a. Leaves oblanceolate to oblong 117. *S. sarmentosum*
- 17b. Leaves linear to linear-oblanceolate.
- 18a. Petal apex not mucronate 118. *S. lineare*
- 18b. Petal apex long mucronate 119. *S. grammophyllum*
- 16b. Leaves 0.5–1.4 cm.
- 19a. Leaves opposite or 3- or 4-verticillate.
- 20a. Plants annual; sterile stems absent 113. *S. erythrospermum*
- 20b. Plants perennial; sterile stems present.
- 21a. Leaves 3-verticillate and linear on flowering stems, 3-verticillate and obovate on sterile stems; sepals linear-obovate 111. *S. jiulongshanense*
- 21b. Leaves on flowering stems and sterile stems 3- or 4-verticillate, broadly linear to lanceolate; sepals broadly linear to suboblong 112. *S. onychopetalum*
- 19b. Leaves 4- or 5-verticillate.
- 22a. Leaves 4- or 5-verticillate, differently shaped basally and apically on stem ... 116. *S. kiangnanense*
- 22b. Leaves 4-verticillate, similarly shaped basally and apically on stem.
- 23a. Leaf apex acute; nectar scales spatulate-oblong; anthers blackish 114. *S. phyllanthum*
- 23b. Leaf apex obtuse; nectar scales oblong-cuneate; anthers not blackish 115. *S. yvesii*
- 15b. Leaves usually alternate or opposite (verticillate or verticillate and alternate in *S. cryptomerioides*, *S. dimorphophyllum*, and *S. subtile*).
- 24a. Leaves verticillate and alternate apically on stems, verticillate basally on old stems 87. *S. dimorphophyllum*
- 24b. Leaves alternate or opposite (verticillate apically on stems in *S. cryptomerioides* and occasionally in *S. subtile*).
- 25a. Leaves usually conspicuously pseudopetiolate.
- 26a. Leaf base spurred; sepals equal; bracts very large, resembling stem leaves 120. *S. concarpum*
- 26b. Leaf base spurless; sepals unequal; bracts very small, mostly obscure 121. *S. engleri*
- 25b. Leaves inconspicuously pseudopetiolate.
- 27a. Leaves opposite (sometimes alternate or less often verticillate in *S. actinocarpum*).
- 28a. Stems 3–7 cm 110. *S. baileyi*
- 28b. Stems 10–25 cm.
- 29a. Leaf apex emarginate 108. *S. emarginatum*
- 29b. Leaf apex truncate.
- 30a. Stems erect; carpels suboblong to ovoid, ca. 2.5 mm; follicles horizontally spreading 107. *S. actinocarpum*
- 30b. Stems basally prostrate; carpels lanceolate, ca. 5 mm; follicles obliquely spreading 109. *S. makinoi*
- 27b. Leaves alternate (opposite basally on stems in *S. bulbiferum* and occasionally in *S. formosanum*).
- 31a. Plants pubescent throughout.
- 32a. Leaves obovate; sepals ovate 88. *S. giajiae*
- 32b. Leaves spatulate; sepals spatulate 89. *S. lungtsuanense*
- 31b. Plants glabrous throughout.
- 33a. Bulbils usually present in leaf axils 90. *S. bulbiferum*
- 33b. Bulbils absent in leaf axils.
- 34a. Sterile stems absent.
- 35a. Sepals wider at base than at middle.
- 36a. Sepals triangular 100. *S. microsepalum*
- 36b. Sepals linear-ovate 101. *S. hangzhouense*
- 35b. Sepals narrower at base than at middle.
- 37a. Leaves 0.6–1 cm; seeds minutely papillate or reticulate.
- 38a. Leaves ca. 6 × 1.5 mm; seeds reticulate 102. *S. morrisonense*
- 38b. Leaves 6–10 × 3–5 mm; seeds papillate 103. *S. nokoense*
- 37b. Leaves 1.2–3 cm; seeds smooth.
- 39a. Flowering stems branched from base 104. *S. formosanum*
- 39b. Flowering stems simple, rarely apically branched.

- 40a. Leaves oblanceolate to narrowly elliptic-lanceolate; sepals 1.5–3 × ca. 0.5 mm; seeds yellow 105. *S. parvisepalum*
- 40b. Leaves linear-cuneate, spatulate, or obovate; sepals 3–5 × 1–1.5 mm; seeds brown 106. *S. alfredii*
- 34b. Sterile stems present.
- 41a. Leaves of flowering stems terete or ± flat.
- 42a. Leaves of flowering stems very crowded, 0.3–0.5 cm; sepals to 3 mm 91. *S. uniflorum*
- 42b. Leaves of flowering stems ± remote, 7–10 cm; sepals to 4 mm 92. *S. japonicum*
- 41b. Leaves of flowering stems flat.
- 43a. Leaves of flowering stems minutely papillate on distal margin; sepals minutely papillate; follicles stellately subhorizontally spreading 93. *S. planifolium*
- 43b. Leaves of flowering stems not minutely papillate on margin; sepals not minutely papillate; follicles stellately divaricate but not horizontally spreading.
- 44a. Sepals spurless; leaves of sterile stems rosulate 95. *S. sekiteiense*
- 44b. Sepals spurred; leaves of sterile stems not rosulate.
- 45a. Leaves opposite or 3–6-verticillate basally on stem or verticillate and crowded apically on stem.
- 46a. Leaves opposite or 3–6-verticillate basally on stem 96. *S. subtile*
- 46b. Leaves verticillate and crowded apically on stem 99. *S. cryptomerioides*
- 45b. Leaves all alternate.
- 47a. Sepals subequal; seeds smooth 94. *S. hengduanense*
- 47b. Sepals unequal; seeds papillate.
- 48a. Petals narrowly elliptic-lanceolate 97. *S. tosaense*
- 48b. Petals oblong-lanceolate 98. *S. nanchuanense*

73. *Sedum oligospermum* Maire in Maire & Weiller, Bull. Soc. Hist. Nat. Afrique N. 30: 278. 1939.

大苞景天 *da bao jing tian*

Sedum bracteatum Diels, Bot. Jahrb. Syst. 29: 362. 1900, not Viviani (1824); *S. amplibracteatum* K. T. Fu; *S. amplibracteatum* var. *emarginatum* (S. H. Fu) S. H. Fu; *S. bracteatum* var. *emarginatum* S. H. Fu.

Herbs annual. Stems 15–50 cm. Proximal stem leaves alternate and deciduous, others 3-verticillate and usually aggregate below inflorescences; pseudopetiole to 1 cm; leaf blade rhombic-elliptic, 3–6 × 1–2 cm, tapered toward both ends, apex attenuate or emarginate to retuse. Cyme corymbiform, often 3-branched, each branch 1–4-flowered; bracts ± orbicular, slightly longer or subequaling flower. Flowers sessile, unequally 5-merous, less often equally 5-merous. Sepals broadly triangular, 0.5–0.7 mm, apex obtuse. Petals yellow, oblong, 5–6 × 1–1.5 mm, midvein inconspicuous, apex subacute. Stamens 10 or 5, slightly shorter than petals. Nectar scales suboblong to oblong-spatulate, 0.7–0.8 mm. Carpels divergent, ca. 5 mm, base connate for ca. 2 mm. Styles long. Follicles 1- or 2-seeded. Seeds fusiform, 2–3 mm, minutely mammillate. Fl. Jun–Sep, fr. Aug–Nov.

Shady moist slopes in forests, rocks on forested mountain slopes; 1100–2800 m. Gansu, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan [Myanmar].

The typical form of this species has the leaf apex attenuate. Collections from Sichuan with the leaf apex emarginate to retuse were treated in FRPS as *Sedum amplibracteatum* var. *emarginatum*.

74. *Sedum wilsonii* Fröderström, Acta Horti Gothob. 10(App.): 166. 1935.

兴山景天 *xing shan jing tian*

Herbs annual. Roots fibrous. Flowering stems branched near base, erect or ascending, to 20 cm. Pseudopetiole ca. 6 mm; leaf blade ovate to orbicular, 1.5–3 × ca. 1.5 cm, base broadly cuneate, apex rounded, minutely papillate. Cyme large, many flowered; involucre absent; bracts linear-subspatulate, 3–3.5 × ca. 0.6 mm, apex acute and apiculate. Flowers unequally 5-merous. Sepals ovate, ca. 1 mm, base spurless, apex subacute. Petals yellow, ovate-oblong, 3.5–4.5 × 1.5–1.8 mm, base subconnate, apex subacute. Stamens 10, ca. 3.5 mm; antepetalous ones inserted near petal base. Nectar scales quadrangular-subspatulate, ca. 0.6 × 0.4 mm, apex subemarginate. Carpels erect, ovoid-lanceolate, 1.2–2 mm, base connate for ca. 4 mm. Styles 1–1.2 mm. Follicles 2- or 3-seeded. Seeds subovoid-oblong, 1–1.3 mm, smooth, winged at both ends.

• Hubei (Xingshan Xian).

75. *Sedum tetractinum* Fröderström, Acta Horti Gothob. 6 (App.): 103. 1931.

四芒景天 *si mang jing tian*

Flowering stems simple or branched, erect or prostrate, 9–15 cm. Leaves alternate or 3-verticillate, pseudopetiolate, usually deciduous; leaf blade ovate to orbicular, 1.5–3.2 × 1–1.3 cm, base abruptly and narrowly cuneate, apex rounded, minutely papillate. Cyme scorpioid, pedunculate; bracts shortly petiolate,

orbicular, 4–5 mm, apex minutely papilliferous. Flowers unequally 4-merous. Sepals narrowly triangular, ca. 0.8 mm, apex obtuse. Petals lanceolate-oblong, 3.5–5 × ca. 1 mm, apex obtuse. Stamens 8, slightly shorter than petals; antepetalous ones inserted ca. 0.8 mm from petal base. Nectar scales broadly spatulate, ca. 0.7 × 0.4 mm, apex obtuse. Carpels 4, divergent, 4–5 mm, base connate. Styles ca. 0.8 mm. Follicles many seeded. Seeds ovoid, 1–1.2 mm, mammillate. Fl. Aug–Sep.

• Among rocks near streams; 500–1000 m. Anhui, Guangdong, Guizhou, Jiangxi.

76. *Sedum triactina* A. Berger in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 18a: 460. 1930.

三芒景天 san mang jing tian

Triactina verticillata J. D. Hooker & Thomson, J. Linn. Soc. 2: 103. 1858; *Sedum verticillatum* (J. D. Hooker & Thomson) Raymond-Hamet (1912), not Linnaeus (1753).

Herbs slender, weak. Flowering stems 7–35 cm. Leaves often 3-verticillate or opposite, inconspicuously pseudopetiolate, usually persistent around middle of stem; leaf blade spatulate-oblong, 0.7–3.5 × ca. 0.7 cm, base narrowly cuneate, apex emarginate to obtuse. Cyme corymbiform, lax; bracts obovate-orbicular to suborbicular, 5–10 × ca. 6 mm. Flowers 5-merous. Sepals narrowly triangular-oblong, ca. 1 × 0.3–0.4 mm, apex obtuse. Petals yellow, narrowly oblong, 4–6.5 × 2–3 mm, apex obtuse. Stamens 10, slightly shorter than petals; antepetalous ones inserted 0.5–0.8 mm from petal base. Nectar scales 3, linear or linear-spatulate, 0.6–1 mm, apex emarginate or obtuse. Carpels 3, divergent, ca. 5 mm, base connate for 1.5–2.5 mm. Styles ca. 1 mm. Follicles divergent, 1- or 2-seeded. Seeds oblong-ovoid, ca. 0.6 mm, minutely mammillate. Fl. Jun–Jul, fr. Aug.

Rocks in mixed forests and valleys near water, mossy rocks in alpine *Rhododendron* thickets, shady moist rocks in valleys, rock crevices in alpine zone; 2200–3700 m. W Sichuan, E Xizang, Yunnan [Bhutan, Nepal, Sikkim].

- 1a. Leaf blade 0.7–3.5 cm; nectar scales linear, 0.6–0.7 mm, apex obtuse 76a. subsp. *triactina*
1b. Leaf blade less than 1 cm; nectar scales linear-spatulate, ca. 1 mm, apex emarginate 76b. subsp. *leptum*

76a. *Sedum triactina* subsp. *triactina*

三芒景天(原亚种) san mang jing tian (yuan ya zhong)
Flowering stems 7–35 cm. Leaf blade 0.7–3.5 cm. Nectar scales linear, 0.6–0.7 mm, apex obtuse. Fl. Jun–Jul, fr. Aug.

Rocks in mixed forests and valleys near water, rock crevices in alpine zone; 2200–3600 m. SW Sichuan, E Xizang, Yunnan [Bhutan, Nepal, Sikkim].

76b. *Sedum triactina* subsp. *leptum* Fröderström, Acta Horti Gothob. 15: 28. 1942.

小三芒景天 xiao shan mang jing tian

Flowering stems 9–14 cm. Leaf blade less than 1 cm. Nectar scales linear-spatulate, ca. 1 mm, apex emarginate.

• Mossy rocks in alpine *Rhododendron* thickets, shady moist rocks in valleys; 3200–3700 m. W Sichuan (Kangding Xian, Xiaojin Xian).

77. *Sedum leptophyllum* Fröderström in Handel-Mazzetti, Symb. Sin. 7: 412. 1931.

薄叶景天 bo ye jing tian

Herbs perennial. Roots short, fibrous. Sterile shoots slender, weak, ca. 8.5 cm; leaves 6 or 7, crowded apically. Flowering stems arising from base of plant, 10–20 cm, basally leafless. Leaves alternate, less often verticillate; leaf blade narrowly linear-lanceolate to oblanceolate, 2–2.3 × 1–2 mm, base shortly spurred, apex obtuse. Cyme corymbiform, ca. 8 cm in diam.; branches scorpioid; bracts resembling stem leaves, 0.5–2 cm. Flowers subsessile, 5-merous. Sepals slightly spreading, narrowly triangular, ca. 1 × 0.4 mm, apex obtuse. Petals narrowly lanceolate, 4–4.5 × ca. 1.2 mm, apex mucronate. Stamens 10; antepetalous ones 3.3–3.5 mm; antepetalous ones 2.5–2.7 mm, inserted ca. 0.7 mm from petal base. Nectar scales 3, broadly spatulate-oblong, 0.8–1 mm. Carpels 3, lanceolate to oblong, ca. 4 mm, base connate for ca. 1 mm, apex slightly divergent. Styles ca. 1 mm. Follicles 2–5-seeded. Fl. Jul–Aug, fr. Sep–Oct.

• About 1300 m. S Anhui (Huang Shan), SE Hubei, Hunan, NW Zhejiang (Tianmu Shan).

78. *Sedum hakonense* Makino, Bot. Mag. (Tokyo) 15: 35. 1901.

本州景天 ben zhou jing tian

Sterile stems suberect, rather stout, 6–8 cm. Flowering stems basally ascending or prostrate but apically erect, ± tufted, 5–10 cm. Leaves alternate; leaf blade narrowly oblanceolate, flat, 1–2.5 × (0.1–)0.2–0.3 cm, apex ± obtuse. Cyme usually 3-branched, corymbiform, lax, many flowered; bracts 4–10 mm. Flowers sessile, unequally 4-merous. Sepals triangular to narrowly elliptic, unequal, 0.5–1 mm, apex very obtuse. Petals yellow, suboblong to broadly lanceolate, 4–4.5 mm, apex shortly mucronate. Stamens 8, slightly shorter than or equaling petals. Nectar scales broadly spatulate, shortly clawed, apex obtuse. Carpels subdivergent, 4.5–5.5 mm, base connate for 2–2.5 mm. Styles short. Follicles many seeded. Seeds lanceolate, 1–1.3 mm. Fl. Aug, fr. Sep.

Forests on mountain summits; 1600–1700 m. N Guangdong (Renhua Xian) [Japan].

79. *Sedum dongzhiense* D. Q. Wang & Y. L. Shi, Bull. Bot. Res., Harbin 10(3): 48. 1990.

东至景天 dong zhi jing tian

Herbs perennial. Roots red, fibrous. Rootstock prostrate. Stems erect or arched, 14–25 cm. Leaves alternate, pseudopetiolate; leaf blade oblanceolate, 2.5–4.5 × 0.6–0.8 cm, base cuneate to tapered, apex obtuse. Cyme 3-branched, 2–12 cm in diam., many flowered; branches 2-forked; bracts oblanceolate to subrhomboid, 0.2–4.5 cm, apex obtuse to suboblique. Flowers unequally 4-merous; pedicel of central flower 2–6 mm or absent. Sepals narrowly triangular, 1–1.2 mm, apex obtuse. Petals yellow, linear-lanceolate, ca. 7 × 1.5 mm, apex acute. Stamens 8; antepetalous ones ca. 5 mm; antepetalous ones ca. 4 mm, inserted ca. 1 mm from petal base; anthers purplish red. Nectar scales subtriangular, ca. 0.5 × 0.4 mm, apex retuse. Carpels divergent, narrowly ellipsoid, ca. 5 mm, base connate for 1.3–1.5 mm. Styles 1.5–2 mm. Follicles stellately divergent, many seeded. Seeds narrowly ovoid, brown papilliferous. Fl. Jun–Jul, fr. Jul.

• S Anhui (Dongzhi Xian).

80. *Sedum leucocarpum* Franchet, J. Bot. (Morot) 10: 288. 1896.

白果景天 *bai guo jing tian*

Sedum variicolor Praeger.

Herbs perennial. Roots numerous, fibrous. Sterile shoots present. Stems 5–20 cm. Leaves alternate, less often 3-verticillate, ± crowded, sessile, spatulate to broadly obovate, 1.2–2 × 0.4–0.7 cm, base cuneate and shortly spurred, apex obtuse and apiculate. Cyme 3-branched, corymbiform, 5–7.5 cm in diam., minutely papillate; branches usually 2-forked. Flowers sessile, 4- or 5-merous. Sepals oblong-linear, oblong-lanceolate, or oblong-spatulate, unequal, 3–10 mm, base slightly widened and spurless, apex obtuse. Petals deep yellow, ovate- to lanceolate-oblong, 5–7 × 1.3–1.5 mm, apex acuminate and mucronate. Stamens 8–10, ca. 4 mm; antepetalous ones inserted near petal base. Nectar scales 4 or 5, subquadrangular, 0.6–0.8 × 0.5–0.6 mm, apex emarginate. Carpels 4 or 5, ca. 4 mm. Styles 1.5–1.8 mm. Follicles initially erect but later divergent. Seeds brown, oblong, ca. 0.3 mm, minutely mammillate.

• Rocks in valleys; 1600–2800 m. SW Sichuan, NW Yunnan.

81. *Sedum wenchuanense* S. H. Fu, Acta Phytotax. Sin., Addit. 1: 116. 1965.

汶川景天 *wen chuan jing tian*

Sedum japonicum Siebold ex Miquel f. *rugosum* Fröderström; *S. uniflorum* Hooker & Arnott subsp. *rugosum* (Fröderström) K. T. Fu.

Herbs perennial. Rhizome short, basally with fibrous roots, apically with numerous shoots. Sterile shoots present. Stems erect, ca. 7 cm, basally leafless. Leaves alternate, imbricate, sessile, ovate, 3–4 × 1.5–2 mm,

base rounded and spurred, apex obtuse to acute. Cyme corymbiform, ca. 1.5 cm in diam.; bracts linear.

Flowers sessile, unequally 5-merous. Sepals ovate to lanceolate, 2.5–3 × ca. 1.2 mm, base spurred, apex obtuse to acute. Petals lanceolate, 3–3.5 × ca. 1 mm, apex mucronate. Stamens 10, shorter than petals; antepetalous ones inserted ca. 1 mm from petal base; filaments ca. 2 mm; anthers yellow. Nectar scales quadrangular, ca. 0.4 × 0.6 mm, apex obtuse. Carpels divergent, ovoid-lanceolate, subequalling stamens. Styles slender, ca. 0.8 mm. Follicles stellately horizontally spreading, 10–12-seeded, base connate for ca. 0.5 mm. Fl. Jun.

• Exposed poor soils; 1300–2400 m. NC Sichuan (Maowen Qiang Zu Zizhixian, Wenchuan Xian).

82. *Sedum tianmushanense* Y. C. Ho & F. Chai, Bull. Bot. Res., Harbin 9(4): 32. 1989.

天目山景天 *tian mu shan jing tian*

Herbs perennial. Rhizome short; underground nodes with globose dormant bulbils. Flowering stems branched from base, erect, 5–12 cm. Leaves alternate; leaf blade linear to linear-lanceolate, 3–15 × ca. 2 mm, base spurred, apex obtuse. Cyme 2–7-branched, corymbiform, lax, 1.5–3.5 cm, few flowered; bracts resembling stem leaves. Flowers sessile, unequally 5-merous. Sepals obovate-lanceolate, unequal, 1.5–7 mm, base shortly spurred, apex obtuse. Petals yellowish, narrowly ovate, ca. 4 mm, base connate for ca. 0.5 mm, apex subacute. Stamens 10, shorter than petals; antepetalous ones ca. 2 mm, inserted ca. 1.5 mm from petal base. Nectar scales subquadrangular, ca. 0.5 mm. Carpels ovoid-lanceolate, ca. 3.5 mm, base connate for ca. 1 mm. Follicles stellately divergent, 5–7-seeded. Seeds brown, oblong-ovoid, ca. 1 mm, minutely mammillate. Fl. May, fr. Jun.

• Shady moist areas on forested slopes; ca. 1000 m. NW Zhejiang (Tianmu Shan).

83. *Sedum latentibulbosum* K. T. Fu & G. Y. Rao, Acta Bot. Boreal.-Occid. Sin. 8: 122. 1988.

潜茎景天 *qian jing jing tian*

Herbs perennial. Roots fibrous. Rhizome slender; nodes with dormant bulbs; bulbs white, oblong to globose, 5–8 × 4–5 mm, bulb leaves scalelike, 12–18 cm, delicate. Flowering stems erect, slender, 1–1.6 cm. Leaves opposite proximally on stem, 4-verticillate at middle, alternate at apex; leaf blade narrowly linear, 1.2–3 × 0.1–0.2 cm, base shortly spurred, apex obtuse. Cyme 3-branched, few flowered; bracts linear, longer than flowers. Flowers sessile, unequally 5-merous. Sepals brown spotted, narrowly triangular-lanceolate, 2–2.5 × 0.8–1 mm, base very shortly spurred, apex obtuse to acute. Petals linear-lanceolate, 6–7 × ca. 1 mm, base somewhat broad, apical mucro ca. 0.3 mm. Stamens 10;

antesealous ones 4.5–5 mm; antepetalous ones ca. 3.5 mm, inserted ca. 1 mm from petal base; anthers oblong-ovoid, ca. 1 mm, apex obtuse. Nectar scales sub-spatulate, ca. 0.4 mm, apex rounded. Carpels divergent, oblong, base connate for ca. 1.5 mm. Follicles many seeded. Seeds oblong, basal appendage saccate. Fl. Apr–Jun, fr. Jul–Aug.

• Rocky cliffs, rocks with mosses; 800–900 m. N Jiangxi (Lu Shan).

84. *Sedum woronowii* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 315. 1910.

长萼景天 *chang e jing tian*

Herbs annual. Roots fibrous. Flowering stems simple, erect, ± slender and weak, ca. 12 cm. Leaves alternate. Cyme lax, ca. 6 × 9 cm, many flowered. Flowers unequally 5-merous. Sepals linear-obovate, unequal, 4–8.8 × 2–2.3 mm, base connate and spurless, apex obtuse. Petals linear-triangular, 4–4.4 × 1.4–1.6 mm, margin entire, apex acute. Stamens 10; antesealous ones 3–3.3 mm; antepetalous ones inserted below middle of petals, adnate for ca. 1 mm; anthers ca. 0.4 mm. Nectar scales linear, 0.8–1.1 × ca. 0.2 mm, apex obtuse. Carpels divergent, 4–4.7 mm, base connate for 1.2–1.5 mm. Styles 0.8–1 mm. Follicles divaricate, many seeded. Seeds obovoid, ca. 0.6 mm, minutely mammillate. Fr. Nov.

• W Yunnan (Dali Xian).

85. *Sedum multicaule* Wallich ex Lindley, Bot. Reg. 26 (misc.): 58. 1840.

多茎景天 *duo jing jing tian*

Herbs perennial. Stems basally branched, 5–15 cm, smooth or rugose when dry. Leaves alternate, imbricate; leaf blade linear, 1–1.5 × 0.1–0.2 cm, base shortly spurred, apex acuminate and apiculate. Cymes with several scorpioid branches. Flowers sessile or very shortly pedicellate, unequally 5-merous. Sepals linear, linear-lanceolate, sublanceolate, or narrowly suboblong, unequal or equal, 5–6.5 mm, base spurless, apex acuminate and apiculate or spinose. Petals yellow, oblong-ovate, 5–6 mm, apex long mucronate. Stamens 10, slightly shorter than petals. Nectar scales spatulate-quadrangular or transversely oblong, minute, ca. 0.5 × 0.5 mm, apex emarginate. Carpels initially erect, horizontally spreading in fruit. Follicles 4–6 mm. Seeds ovoid, 0.5–0.7 mm. Fl. Jul–Aug, fr. Aug–Sep.

Rocks on forested slopes, rock crevices, rock walls; 1300–3500 m. Gansu, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal, Pakistan, Sikkim].

1a. Stems smooth when dry; sepals linear to linear-lanceolate, unequal, apex acuminate and apiculate; nectar scales spatulate-quadrangular 85a. subsp. *multicaule*

1b. Stems rugose when dry; sepals sublanceolate to narrowly suboblong, equal, apex spinose-

acuminate; nectar scales transversely oblong 85b. subsp. *rugosum*

85a. *Sedum multicaule* subsp. *multicaule*

多茎景天(原亚种) *duo jing jing tian* (yuan ya zhong)

Sedum dolosum K. T. Fu; *S. mekongense* Praeger.

Stems smooth when dry. Sepals linear to linear-lanceolate, unequal, apex acuminate and apiculate. Nectar scales spatulate-quadrangular. Fl. Jul–Aug, fr. Aug–Sep.

Rocks on forested slopes, rock crevices, rock walls; 1300–3500 m. Gansu, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal, Pakistan, Sikkim].

85b. *Sedum multicaule* subsp. *rugosum* K. T. Fu, Acta Bot. Boreal.-Occid. Sin. 6: 105. 1986.

皱茎景天 *zhou jing jing tian*

Stems rugose when dry. Sepals sublanceolate to narrowly suboblong, equal, apex spinose-acuminate. Nectar scales transversely oblong. Fr. Sep.

• Rock crevices on slopes; 2200–2300 m. SE Xizang (Zayu Xian), NW Yunnan (Weixi Xian).

86. *Sedum polytrichoides* Hemsley in F. B. Forbes & Hemsley, J. Linn. Soc. Bot. 23: 286. 1887.

藓状景天 *xiang zhuang jing tian*

Herbs perennial. Sterile shoots numerous. Stems ascending, tufted, slender, 5–10 cm, woody. Leaves alternate; leaf blade linear to linear-lanceolate, 5–11 × 1–2 mm, base spurred, apex acute. Cyme 2–4-branched, many flowered. Flowers shortly pedicellate, unequally 5-merous. Sepals lanceolate-ovate, equal, 1.5–2.5 mm, base spurless, apex acute. Petals yellow, narrowly lanceolate, 5–7 mm, apex acuminate. Stamens 10, slightly shorter than petals. Nectar scales minute, base cuneate, apex broadly rounded. Carpels ± erect. Follicles stellately divergent, ovoid-oblong, 4.5–5 mm, many seeded, base connate for ca. 1.5 mm, apical beak erect, ca. 1.5 mm. Seeds oblong, less than 1 mm. Fl. Jul–Aug, fr. Aug–Sep.

Rocky slopes; ca. 1000 m. Anhui, Heilongjiang, Henan, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Zhejiang [Japan, Korea].

87. *Sedum dimorphophyllum* K. T. Fu & G. Y. Rao, Acta Bot. Boreal.-Occid. Sin. 8: 117. 1988.

二型叶景天 *er xing ye jing tian*

Herbs perennial. Sterile branches 2–4 cm. Flowering stems ascending, 5–12 cm, base usually prostrate. Basal leaves verticillate, deciduous on old stems; leaf blade acicular-spinose to linear, 0.8–2 cm, base spurred. Distal leaves alternate and persistent; leaf blade lanceolate, 8–10 × 2–3 mm, apex obtuse. Cyme simple or 2-branched, few flowered; bracts leaflike, 6–6.5 × 1–1.5 mm, spurred. Flowers sessile, unequally 5-merous. Sepals narrowly triangular to lanceolate, unequal, 2.5–4.3 × 0.8–1 mm, base connate and spurless, apex obtuse. Petals free, yellow, oblong-lanceolate, 4.5–5.3 × 1.2–1.5 mm, apex mucronate. Stamens 10; antesealous ones 3.2–3.5 mm; antepetalous ones 2.4–2.6 mm, inserted ca. 0.6 mm from petal base; anthers yellowish.

Nectar scales transversely oblong, ca. $0.4 \times 0.7\text{--}0.9$ mm, apex truncate to retuse. Carpels free, oblong-lanceolate, 3–3.5 mm; ovules many. Styles 0.8–1 mm. Follicles stellately divergent. Seeds subovoid, ca. 0.8 mm, longitudinally minutely papillate. Fl. Jul–Aug.

• Shady moist rocks, along trails near ravines; 2800–2900 m. W Sichuan (Daocheng Xian).

88. *Sedum gjajae* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 313. 1910.

柔毛景天 *rou mao jing tian*

Herbs perennial, pubescent on stems and leaves. Roots fibrous. Sterile stems 8–20 cm; leaves alternate, obovate, $4.5\text{--}5.5 \times$ ca. 2.6 mm, base enlarged and spurred, apex obtuse. Flowering stems simple, erect, 5–16 cm, villous. Leaves alternate; leaf blade obovate-oblong, $8\text{--}15 \times 3\text{--}5$ mm, hairy, base slightly narrowed and spurred, margin ciliate, apex obtuse. Cyme corymbiform, lax, $3.5\text{--}6 \times 4\text{--}8$ cm; bracts ovate-linear, $3\text{--}4 \times 1.5\text{--}1.8$ mm, spurred. Flowers unequally 5-merous; pedicel 1–1.5 mm. Sepals ovate, $2.3\text{--}2.5 \times 1.3\text{--}1.5$ mm, base spurless. Petals yellow, ovate, $4.8\text{--}5 \times 1.7\text{--}2$ mm, apex obtuse. Stamens 10, 3–4 mm. Nectar scales quadrangular-spatulate, 0.3–0.5 mm. Carpels 1.8–2 mm, base connate. Styles 1.5–2 mm. Follicles divergent, many seeded. Fl. Aug.

• Rocks in valleys, trailsides; 2600–3000 m. W Sichuan (Kangding Xian).

89. *Sedum lungtsuanense* S. H. Fu, Acta Phytotax. Sin., Addit. 1: 115. 1965.

龙泉景天 *long quan jing tian*

Herbs annual. Roots fibrous. Flowering stems branched, erect, 5–6 cm; branches divaricate, sparsely pubescent. Leaves sparsely pubescent, base obscurely spurred, apex acute. Flowers shortly pedicellate, unequally 5-merous. Sepals lanceolate to spatulate, ca. $2 \times 0.8\text{--}1$ mm, sparsely puberulent, basal spur inconspicuous, apex acute. Petals lanceolate, $4.5\text{--}5 \times$ ca. 1 mm, base slightly narrowed, apex mucronate. Stamens 10, shorter than petals; antepetalous ones inserted ca. 1 mm from petal base. Nectar scales quadrangular-spatulate, ca. 0.3 mm. Carpels erect, 3–3.5 mm, glabrous, base connate for ca. 1 mm. Fl. Jun.

• Fujian, SW Zhejiang (Longquan Xian).

90. *Sedum bulbiferum* Makino, Ill. Fl. Jap. 1(10): 2. 1891.

珠芽景天 *zhu ya jing tian*

Sedum alfredii Hance var. *bulbiferum* (Makino) Fröderström; *S. jinianum* X. H. Guo.

Herbs perennial. Roots fibrous. Stems 7–22 cm; bulbils in leaf axils white, globose, viviparous. Proximal stem leaves opposite; leaf blade ovate-spatulate. Distal stem leaves alternate; leaf blade spatulate-oblong, $10\text{--}15 \times 2\text{--}4$ mm, base tapered, apex obtuse. Cyme 3-

branched, many flowered; branches 2-forked. Flowers unequally 5-merous. Sepals free, lanceolate to oblanceolate, $3\text{--}4 \times$ ca. 1 mm, base shortly spurred, apex obtuse. Petals free, yellow, lanceolate, $4.5\text{--}5 \times$ ca. 1.2 mm, apex mucronate. Stamens 10, ca. 3 mm. Nectar scales obovate, ca. 0.6 mm. Carpels basally connate for ca. 1 mm, apically divergent. Styles ca. 1 mm. Fl. Apr–Jul.

Shade of trees on mountains or plains; near sea level to 1000 m.

Anhui, Fujian, Guangdong, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang [Japan].

No original material of *Sedum jinianum* has been seen by the present authors, but the differences from *S. bulbiferum*, as indicated in the protologue (Acta Bot. Yunnan. 18: 297. 1996), do not seem adequate to justify the recognition of a distinct species.

91. *Sedum uniflorum* Hooker & Arnott, Bot. Beechey Voy. 263. 1841.

梳花佛甲草 *shu hua fu jia cao*

Sedum sasakii Hayata.

Herbs perennial. Roots fibrous, borne in basal nodes of stem. Flowering stems many branched, tufted, prostrate, 5–7 cm. Leaves alternate, very crowded; leaf blade narrowly cylindrical-oblong, $3\text{--}5 \times$ ca. 2 mm, margin laevigate. Cyme 1-branched, racemelike, 1(–6)-flowered. Flowers sessile, unequally 5-merous. Sepals oblong-linear, ca. 3×1 mm, base slightly narrowed, apex rounded to obtuse. Petals ovate-spatulate, ca. 3.5×1.5 mm, base slightly narrowed, apex acute. Stamens 10; antepetalous ones shorter than petals; anthers ellipsoid, ca. 0.5 mm, apex obtuse to subobtuse. Carpels narrowly ovoid, 2–4 mm, base connate, apex acuminate. Follicles divaricate, stellately divergent at maturity. Seeds yellow, ca. 0.5 mm. Fl. May.

Sandy places near seashores. N Taiwan [Japan].

92. *Sedum japonicum* Siebold ex Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 156. 1965.

日本景天 *ri ben jing tian*

Sedum chrysastrum Hance; *S. uniflorum* Hooker & Arnott subsp. *japonicum* (Siebold ex Miquel) H. Ohba.

Herbs perennial, creeping. Sterile shoots 2–4 cm. Flowering stems many branched, ascending, slender, 10–20 cm. Leaves alternate, remote, sessile, linear-spatulate, terete to \pm flat, $7\text{--}10 \times 0.2\text{--}0.3$ cm, base shortly spurred, apex obtuse. Cyme 3-branched, corymbiform, 4–8 cm in diam. Flowers unequally 5-merous; pedicel thick, short. Sepals linear-oblong to subtriangular, 2–4 mm, base shortly spurred, apex obtuse. Petals yellow, oblong-lanceolate, $6\text{--}7 \times$ ca. 1.5 mm, apex acuminate. Stamens 10; antepetalous ones subequaling or longer than petals; antepetalous ones slightly shorter than petals, inserted ca. 1.2 mm from petal base. Nectar scales minute, base broadly cuneate, apex rounded-truncate. Carpels lanceolate, ca. 5 mm, base connate for ca. 2 mm. Styles ca. 1 mm. Follicles horizontally stellately divergent. Fl. May–Jun, fr. Jul–Aug.

Shady moist places on slopes; below 1000 m. Anhui, Guangdong, Hunan, Jiangxi, Taiwan, Zhejiang [Japan].

Sedum jiaodongense Y. M. Zhang & X. D. Chen (Bull. Bot. Res., Harbin 10(1): 43. 1990), described from E Shandong (Rongcheng Xian: Longxu Island), may possibly be synonymous with this species.

93. *Sedum planifolium* K. T. Fu, Fl. Tsinling. 1(2): 606. 1974.

平叶景天 ping ye jing tian

Herbs perennial. Roots fibrous. Sterile shoots ascending, to 10 cm. Flowering stems branched at base, arched ascending, 6–15 cm, usually fleshy, densely leafy.

Leaves alternate, imbricate; leaf blade linear-ob lanceolate, flat, 8–22 × 2–3.5 mm, basal spur truncate to rounded, margin apically minutely mammillate, apex obtuse. Cyme 3-branched, often scorpioid, many flowered. Flowers shortly pedicellate, unequally 5-merous. Sepals linear-lanceolate, unequal, 2.8–3.8 × 0.8–0.9 mm, base spurless, margin apically minutely mammillate, apex obtuse. Petals free, yellow, oblong-lanceolate, 7.5–7.8 × 1.5–1.8 mm, apex acuminate and mucronate. Stamens 10, shorter than petals; antepetalous ones inserted ca. 0.5 mm from petal base. Nectar scales suborbicular to suboblong, 0.3–0.5 mm, apex rounded and emarginate. Carpels divergent, ovoid-lanceolate, ca. 5 mm, base connate for ca. 1 mm; ovules 10–12. Follicles subhorizontally stellately divergent. Seeds dark brown, obovoid-oblong, ca. 0.7 mm, densely and minutely mammillate. Fl. Jun–Jul, fr. Aug.

• Beaches in valleys, rocks on slopes; 1000–1600 m. Gansu, Shaanxi.

94. *Sedum hengduanense* K. T. Fu, Acta Bot. Boreal.-Occid. Sin. 6: 105. 1986.

横断山景天 heng duan shan jing tian

Herbs perennial. Roots fibrous. Sterile stems 1.3–1.5 cm. Flowering stems simple or many branched, erect, slender, 3–6 cm. Leaves alternate; leaf blade linear-lanceolate, oblanceolate, subspatulate, narrowly obovate, or obovate, flat, 5–9 × 1–2 mm, base obtusely spurred, apex subacute. Cyme 2- or 3-branched, corymbiform, often scorpioid, 2–3 cm, 10- or more flowered. Flowers 5-merous; pedicel 1–1.5 mm or obscure. Sepals usually 3-marked, suboblong to oblanceolate, subequal, 4–5 × ca. 1 mm, base spurred, apex subacute. Petals yellow, oblong-lanceolate, 3.5–4 × ca. 1 mm, base subconnate, apex acuminate. Stamens 10; antesepalous ones 2.8–3 mm; antepetalous ones 1.8–2 mm, inserted ca. 0.3 mm from petal base; anthers yellowish. Nectar scales 5, broadly cuneate, ca. 0.3 mm, apex subrounded. Carpels 5, subovoid, ca. 3.5 mm. Styles ca. 0.8 mm. Follicles stellately divaricate. Seeds subovoid, 0.5–0.6 mm, smooth. Fl. Jul, fr. Aug.

• Thickets on slopes near river banks, rocks on dry grassy slopes, rock crevices; 2100–2900 m. SW Sichuan, SE Xizang, NW Yunnan.

95. *Sedum sekiteiense* Yamamoto, Icon. Pl. Formos. Suppl. 2: 24. 1926.

石碇佛甲草 shi ding fu jia cao

Herbs smooth. Sterile shoots rosulate; rosette leaves alternate, pseudopetiolate. Flowering stems basally creeping or decumbent and rooting at nodes, apically suberect, 6–18 cm, apex sometimes 2-cleft. Stem leaves subopposite, crowded near stem apex; leaf blade narrowly spatulate, 1–2.5 × 0.4–0.6 cm, base tapered, apex obtuse to subobtusate. Cyme cymose. Flowers sessile, (4 or)5-merous. Sepals spatulate to linear-ob lanceolate, unequal, 2.8–4 × 1–2 mm, base attenuate to truncate, apex obtuse. Petals linear-lanceolate, equal, 1-veined. Stamens 8–10; antepetalous ones inserted slightly above petal base; filaments ca. 3 mm; anthers oblong. Nectar scales 4 or 5, long, apex emarginate. Carpels 4 or 5, base connate. Styles ca. 1 mm. Follicles stellately divergent, ca. 7 mm in diam., many seeded. Seeds brown, oblong, ca. 0.6 mm, minutely mammillate. Fl. Jun, fr. Nov.

• Mountainous areas. N Taiwan (Taibei, Yilan Xian).

96. *Sedum subtile* Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 156. 1865.

细小景天 xi xiao jing tian

Herbs perennial. Sterile shoots arising from base. Flowering stems 5–10 cm. Proximal stem leaves opposite or 3–6-verticillate; leaf blade obovate, 5–15 × 3–5 mm. Distal stem leaves alternate; leaf blade oblanceolate-linear, 5–20 × 1–2 mm, apex obtuse. Cyme 2- or 3-branched, lax; branches 3- to several flowered; bracts linear. Flowers unequally 5-merous. Sepals broadly linear to narrowly lanceolate, unequal, 3–7 mm, base shortly spurred, apex obtuse. Petals yellow, broadly lanceolate, ca. 5 mm, apex acute. Stamens 10; antesepalous ones ca. 4 mm; antepetalous ones inserted slightly above petal base. Nectar scales broadly cuneate, ca. 0.4 × 0.5 mm, apex truncate. Carpels erect, lanceolate, ca. 5 mm, base connate for ca. 2 mm. Styles slender, ca. 2 mm. Follicles stellately divergent at maturity. Fl. Apr–Jun, fr. Jul–Aug.

Shady moist rocks on low mountains; 1000–1500 m. Jiangsu, Jiangxi, Shanxi [Vietnam].

The plants from China have also been treated as *Sedum subtile* subsp. *chinense* H. Ohba (J. Jap. Bot. 61: 227. 1986). *Sedum wannanense* X. H. Guo et al. (Acta Bot. Yunnan. 21: 25. 1999) and *S. wannanense* var. *incarnatum* X. H. Guo et al. (loc. cit.: 26), both described from SE Anhui (Ningguo Xian), may possibly be synonymous with *S. subtile*.

97. *Sedum tosaense* Makino, Bot. Mag. (Tokyo) 6: 52. 1892.

土佐景天 tu zuo jing tian

Sedum tosaense subsp. *sinense* K. T. Fu & G. Y. Rao. Herbs perennial. Sterile shoots present; leaves with blade obovate-spatulate, base cuneate. Flowering stems prostrate when young, later erect, weak, to 15 cm. Leaf blade linear-spatulate, 1.2–2 × 0.5–1 cm, tapered toward base, apex rounded and retuse. Cyme sometimes several branched, many flowered; bracts resembling stem leaves. Flowers unequally 5-merous. Sepals unequal, base spurred. Petals yellow, narrowly

elliptic-lanceolate, apex mucronate. Carpels compressed, divergent at maturity, base connate. Styles short. Follicles many seeded. Seeds mammillate. Fl. May–Jul.

N Zhejiang (Lin'an Xian) [Japan].

98. *Sedum nanchuanense* K. T. Fu & G. Y. Rao, Acta Bot. Boreal.-Occid. Sin. 8: 116. 1988.

金佛山景天 jin fu shan jing tian

Herbs perennial. Sterile stems suberect, 3–5 cm.

Flowering stems erect or basally prostrate, 5–10 cm, densely leafy; basal nodes with fibrous roots. Leaves alternate; leaf blade oblong to obovate, 5–8 × 2.5–1 mm, base shortly spurred, apex rounded-obtuse. Cyme usually 3-branched, corymbiform, often scorpioid, many flowered. Sepals free, unequal, broadly linear to triangular, 1–2.5 × 0.7–1 mm, base spurred, apex obtuse. Petals yellow, oblong-lanceolate, 4.5–6.5 × 1–1.5 mm, base connate, apex mucronate. Stamens 10; antesealous ones 3.2–4.6 mm; antepetalous ones inserted ca. 1 mm from petal base; anthers yellowish brown. Nectar scales ± flabellate, ca. 0.5 mm. Carpels ovoid-lanceolate, 3.5–5 mm, base connate; ovules many. Styles 1–1.5 mm. Follicles stellately divergent. Seeds subovoid, ca. 0.6 mm, minutely mammillate. Fl. Jun–Jul.

• Rocks on slopes; ca. 1200 m. SE Sichuan (Nanchuan Xian).

99. *Sedum cryptomerioides* Bartlet & Yamamoto, J. Soc. Trop. Agric. 4: 485. 1932.

杉叶佛甲草 shan ye fu jia cao

Herbs perennial. Roots many. Stems tufted, 6–10 cm. Leaves many, verticillate and crowded apically on stem; leaf blade oblanceolate to linear-spatulate, 10–15 × 2.5–3 mm, ca. 1 mm thick, base attenuate-cuneate and spurless, apex subobtuse. Cyme 2- or 3-branched, lax. Flowers pedicellate, unequally 5-merous. Sepals green, narrowly elliptic, 3–4 × ca. 0.9 mm, apex obtuse. Petals lanceolate-boat-shaped, 4–6 × ca. 1.2 mm, margin membranous, apex mucronate. Stamens 10; antepetalous ones ca. 4 mm. Nectar scales obovate. Carpels lanceolate, ca. 3 × 0.6 mm. Seeds narrowly oblong, ca. 0.6 mm × ca. 0.2 mm. Fl. Jun–Jul.

• Talus on steep slopes; 2000–3500 m. C Taiwan.

100. *Sedum microsepalum* Hayata, Icon. Pl. Formos. 3: 111. 1913.

小萼佛甲草 xiao e fu jia cao

Sedum triangulisepalum T. S. Liu & N. J. Chung; *S. truncatistigmum* T. S. Liu & N. J. Chung.

Herbs ?perennial. Stems erect or ascending, 10–20 cm, base prostrate and rooting at nodes, apex few branched. Leaves alternate, sessile, narrowly elliptic to oblanceolate, 1–4 × 0.4–1 cm, base attenuate, apex obtuse to rounded. Cyme divaricately branched; bracts lanceolate-linear, ca. 1.5 mm, apex obtuse. Flowers sessile, unequally 5-merous. Sepals triangular, subequal, 1.5–2 × 0.5–1.8 mm, connate to at least middle, apex obtuse. Petals yellow, equal, linear-lanceolate, ca. 6 × 2

mm, apex acuminate. Stamens 10, 3–5 mm; anthers yellow, locules extrorse. Nectar scales opposite carpels, ca. 1.2 × 1.2 mm, apex retuse. Carpels ca. 5 mm, base connate for ca. 2 mm. Styles 1.5–2 mm. Follicles ca. 7 mm, leathery, many seeded. Fl. Jul–Aug.

• Alpine zone; 1700–3000 m. NC Taiwan.

101. *Sedum hangzhouense* K. T. Fu & G. Y. Rao, Acta Bot. Boreal.-Occid. Sin. 8: 119. 1988.

杭州景天 hang zhou jing tian

Herbs annual. Roots fibrous. Flowering stems branched from near base, erect or ascending, 8–20 cm. Leaves alternate; leaf blade narrowly obovate to spatulate-oblong, 20–30 × 0.3–0.7 mm, base narrowly cuneate and spurred, apex obtusely rounded. Cyme large, many flowered; bracts leaflike, 6–20 × 2–5 mm. Flowers sessile, unequally 5-merous. Sepals broadly linear-ovate, subequal, 1.5–2.4 × 0.3–0.6 mm, base spurred, apex obtuse. Petals yellow, linear-lanceolate, 4–4.5 × 0.8–1.2 mm, base connate for ca. 0.5 mm. Stamens 10; antesealous ones 3.5–4.5 mm; antepetalous ones 2–3 mm, inserted ca. 1.2 mm from petal base; anthers orange. Nectar scales subspatulate, ca. 0.4 mm. Carpels ovoid-lanceolate, 4–4.5 mm, base connate for 1.2–1.5 mm; ovules 10–20. Follicles stellately divaricate. Seeds oblong, ca. 0.5 mm, minutely mammillate, conspicuously ridged. Fl. May–Jun.

• Forested slopes, shady moist rock crevices, rocks along trails. N Zhejiang (Hangzhou Shi).

102. *Sedum morrisonense* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25(19): 94. 1908.

玉山佛甲草 yu shan fu jia cao

Herbs perennial, erect, 8–10 cm. Flowering stems branched from base. Leaves ± imbricate; leaf blade oblong-oblanceolate, ca. 6 × 1.5 mm, base shortly spurred, apex obtuse. Cyme often 3-branched, corymbiform, many flowered; bracts resembling stem leaves, shorter than flowers. Flowers sessile, unequally 5-merous, campanulate, ca. 7 mm. Sepals oblong-linear, unequal, ca. 1/2 as long as petals, fleshy, apex obtuse. Petals oblong, 4–6.5 × ca. 1.2 mm, abaxially slightly keeled, apex obtuse. Stamens 10, shorter than or subequaling petals. Nectar scales suboblong, small. Follicles erect or divergent, oblong, ca. 6 mm. Seeds oblong, small, veins minutely and obscurely netted. Fl. Jul–Aug, fr. Oct–Nov.

• Mountainous areas; 2500–3900 m. Taiwan.

103. *Sedum nokoense* Yamamoto, Icon. Pl. Formos. Suppl. 2: 21. 1926.

能高佛甲草 neng gao fu jia cao

Sedum taiwanianum S. S. Ying.

Herbs perennial. Stems 9–20 cm, base prostrate and rooting at nodes, apex branched. Leaves alternate; leaf blade spatulate, 6–10 × 3–5 mm, base rounded and spurred, apex obtuse. Cyme branched, corymbiform. Flowers sessile, unequally 5-merous. Sepals oblanceolate, subspatulate, or linear-lanceolate, unequal,

ca. 3 × 1 mm, base slightly narrowed, apex obtuse. Petals linear-lanceolate, equal, ca. 5 × 1.5 mm, abaxially keeled, apex subacuminate. Stamens 10; filaments ca. 4 mm; anthers yellow, ca. 0.8 × 0.5 mm, base cordate, apex obtuse. Nectar scales transversely broadened, apex emarginate. Carpels oblong, ca. 2 × 1.5 mm, base connate, apically attenuate and divergent. Follicles stellately divergent, many seeded. Seeds brownish yellow, oblong, ca. 0.8 × 0.3 mm, minutely mammillate. Fl. Jul, fr. Aug–Oct.

•Rocks in mountainous areas; 2500–3900 m. Taiwan.

104. *Sedum formosanum* N. E. Brown, Gard. Chron. 26: 134. 1885.

台湾佛甲草 tai wan fu jia cao

Herbs perennial. Stems 2- or 3-branched from base, erect, tufted, ± stout, 10–15 cm, densely leafy. Leaves alternate or opposite; leaf blade spatulate, obovate, or suborbicular, ca. 1.5 × 0.8–1.2 cm, apex obtusely rounded. Cyme corymbiform, 5–8 cm in diam., many flowered; bracts leaflike. Flowers sessile, unequally 5-merous, ca. 1 mm in diam. Sepals linear-lanceolate, unequal, 2–3 mm, apex obtuse. Petals yellow, narrowly lanceolate, 6–7 mm, apex sharply pointed. Stamens 10; anthers yellow, shorter than petals. Nectar scales opposite carpels. Carpels broadly lanceolate, 5–6 mm, apex shortly acuminate. Styles ca. 1 mm. Follicles erect, many seeded. Seeds narrowly ellipsoid, ca. 0.4 mm. Fl. Mar–May, fr. Jun–Jul.

Seashores. Taiwan [Japan, Philippines].

105. *Sedum parvisepalum* Yamamoto, Icon. Pl. Formos. Suppl. 2: 22. 1926.

尖萼佛甲草 jian e fu jia cao

Herbs perennial. Stems simple, prostrate at base and rooting at nodes, apically suberect, 17–25 cm. Leaves alternate; leaf blade oblanceolate to narrowly elliptic-lanceolate, 2–2.5 cm × ca. 0.5 mm, base narrowed, apex obtuse. Flowers sessile, unequally 5-merous. Sepals green, linear-oblanceolate to linear, unequal, 1.5–3 × ca. 0.5 mm, apex obtuse. Petals linear-lanceolate, ca. 6 × 2 mm, apex acuminate. Stamens 10; anthers yellow, base subcordate, apex obtuse. Nectar scales opposite carpels. Carpels connate, apical beak ca. 2 mm. Follicles 4–5 × ca. 0.1 mm, leathery. Seeds yellow. Fl. Aug, fr. Oct.

•Mountainous areas; 1800–3000 m. C Taiwan.

106. *Sedum alfredii* Hance, J. Bot. 8: 7. 1870.

东南景天 dong nan jing tian

Herbs perennial. Stems simple or apically branched, ascending, 10–20 cm. Leaves alternate proximally on stem, usually deciduous, crowded distally on stem; leaf blade linear-cuneate, spatulate, or obovate, 1.2–3 × 0.2–0.6 cm, base narrowly cuneate and spurred, apex obtuse and sometimes emarginate. Cyme corymbiform, 5–8 mm in diam., many flowered; bracts leaflike, small. Flowers sessile, unequally 5-merous, ca. 1 mm in diam.

Sepals linear-spatulate, 3–5 × 1–1.5 mm, base spurred. Petals yellow, lanceolate to lanceolate-oblong, 4–6 × 1.6–1.8 mm, base connate, apex mucronate. Stamens 10; antesealous ones ca. 4 mm; antepetalous ones ca. 2.5 mm, inserted 1–1.5 mm from petal base. Nectar scales spatulate-quadrangular, ca. 1.2 mm, apex obtusely truncate. Carpels erect, ovoid-lanceolate, ca. 4 mm, base connate. Styles ca. 1 mm. Follicles obliquely divergent. Seeds numerous, brown, ca. 0.6 mm. Fl. Apr–May, fr. Jun–Aug.

Shady moist rocks on forested slopes; 2000–3000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang [Japan, Korea].

Sedum shitaiense Y. Zheng & D. C. Zhang (in Y. Zheng et al., Bull. Bot. Res., Harbin 20: 246. 2000), described from Anhui, is known to the present authors only from the protologue. It was compared to *S. emarginatum* and *S. kiangnanense*, from which it was separated by its mostly alternate leaves, although these and other features suggest a closer relationship to *S. alfredii*, from which it may be separable by its larger (ca. 1 × 0.5 mm), tuberculate seeds.

107. *Sedum actinocarpum* Yamamoto, Icon. Pl. Formos. Suppl. 2: 17. 1926.

星果佛甲草 xing guo fu jia cao

Herbs ?perennial. Stems simple or apically 2- or 3-branched, erect, slender, 10–18 cm. Leaves alternate, sometimes opposite, less often verticillate; leaf blade spatulate, 0.8–2.7 × 0.4–1.1 cm, basal spur obtuse, apex rounded to obtuse. Cyme sessile, often 3-branched, less often 2-branched, corymbiform. Flowers sessile, unequally 5-merous. Sepals spatulate, oblanceolate, or linear-oblanceolate, unequal, 2.5–4.5 × 2–3 mm, base attenuate, apex obtuse. Petals yellow, narrowly elliptic to lanceolate, ca. 4 × 1.5 mm, midvein conspicuous, base somewhat narrowed, apex acuminate. Stamens 10; anthers oblong, ovoid, or subglobose, ca. 0.4 mm. Nectar scales suboblong, ca. 0.5 × 0.3 mm. Carpels suboblong to ovoid, ca. 2.5 × 8 mm, base connate, apex acuminate and with a beak ca. 0.2 mm. Follicles horizontally spreading. Seeds brown, narrowly oblong, ca. 0.8 mm, tuberculate. Fl. Feb–Mar, fr. Apr–May.

•Mountainous areas; 300–2500 m. Taiwan.

108. *Sedum emarginatum* Migo, J. Shanghai Sci. Inst., Sect. 3, 3: 224. 1937.

凹叶景天 ao ye jing tian

Sedum makinoi Maximowicz var. *emarginatum* (Migo) S. H. Fu.

Herbs perennial. Stems slender, 10–15 cm. Leaves opposite; leaf blade spatulate-obovate to broadly obovate, 1–2 × 0.5–1 cm, base attenuate and shortly spurred, apex rounded and emarginate. Cyme usually 3-branched, 3–6 mm in diam., many flowered. Flowers sessile, unequally 5-merous. Sepals lanceolate to narrowly oblong, 2–5 × 0.7–2 mm, base shortly spurred, apex obtuse. Petals yellow, linear-lanceolate to

lanceolate, 6–8 × 1.5–2 mm. Nectar scales oblong, ca. 0.6 mm, apex obtuse. Carpels oblong, 4–5 mm, base connate. Follicles divergent. Seeds brown, minute. Fl. May–Jun, fr. Jul.

• Shady and moist slopes; 600–1800 m. Anhui, Gansu, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

This species is used medicinally.

109. *Sedum makinoi* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg, Sér. 3, 32: 487. 1888.

圆叶景天 *yuan ye jing tian*

Sedum alfredii Hance var. *makinoi* (Maximowicz)

Fröderström.

Herbs perennial. Stems basally prostrate and rooting at nodes, apically erect, 15–25 cm. Leaves opposite, pseudopetiolate; leaf blade obovate to obovate-spatulate, 1.7–2 × 0.6–0.8 cm, base tapered and shortly spurred, apex obtuse. Cyme 2-branched, 8–18 cm in diam.; bracts resembling stem leaves but smaller. Flowers sessile, unequally 5-merous. Sepals linear-spatulate, 2–3 × 0.7–0.8 mm, base shortly spurred, apex obtuse. Petals yellow, lanceolate, ca. 4.5 × 1.2 mm, apex obtusely acuminate. Stamens 10; antesealous ones subequalling petals; antepetalous ones shorter than petals. Nectar scales oblong-spatulate, ca. 0.6 mm. Carpels lanceolate, ca. 5 mm, base connate for ca. 1 mm. Styles ca. 1 mm. Follicles obliquely divergent. Seeds ovoid, small, minutely mammillate. Fl. Jun–Jul.

Shady moist forests in low mountain valleys. Anhui, Zhejiang [Japan].
110. *Sedum baileyi* Praeger, Proc. Roy. Irish Acad., B, 35: 4. 1919.

对叶景天 *dui ye jing tian*

Herbs perennial. Roots fibrous. Rhizome prostrate, long. Stems 3–7 cm. Leaves opposite; leaf blade obovate-spatulate, ca. 1.5 × 0.6 cm, base cuneate and shortly spurred, apex subacute. Cyme corymbiform, few flowered; bracts resembling stem leaves but obovate and smaller. Flowers unequally 5-merous. Sepals oblong-linear, 1.5–2 × ca. 1 mm, basal spur broad and obtuse. Petals lanceolate, 4–5 × ca. 1.5 mm, apex mucronate. Stamens 10, shorter than petals. Nectar scales oblong-spatulate, ca. 0.6 mm, apex obtuse. Follicles divergent, many seeded, base connate for ca. 2 mm. Fl. Apr, fr. Jul.

• Rock crevices on slopes; ca. 900 m. Guangdong, Guangxi, Hunan, Jiangxi.

111. *Sedum jiulongshanense* Y. C. Ho, Bull. Bot. Res., Harbin 9(4): 31. 1989.

九龙山景天 *jiu long shan jing tian*

Herbs perennial. Sterile stems creeping, slender, rooting at nodes. Flowering stems erect, slender, 8–10 cm. Leaves 3-verticillate or apical ones opposite; leaf blade linear, 5–10 mm, base shortly spurred, apex obtuse and retuse. Cyme usually 3-branched, corymbiform, 3–5 cm, few flowered; bracts leaflike, linear. Flowers sessile, unequally 5-merous. Sepals linear-ovate, 2–3 mm, base shortly spurred, apex obtuse and retuse. Petals yellow,

ovate-lanceolate, 5–6 × 1–1.5 mm. Stamens 10, shorter than petals; antepetalous ones inserted ca. 1 mm from petal base; anthers brown. Nectar scales subquadrangular, ca. 0.6 mm. Carpels ovoid-lanceolate, ca. 6 mm, base connate for ca. 2 mm, apex divergent; ovules ca. 10. Styles ca. 2 mm. Follicles divaricate. Seeds dusky, oblong, ca. 0.8 mm, minutely mammillate. Fl. Apr–May.

• Moist forested slopes; 800–900 m. W Zhejiang (Jiulong Shan).

112. *Sedum onychopetalum* Fröderström, Sinensia 3: 199. 1933.

爪瓣景天 *zhao ban jing tian*

Herbs perennial, ± purplish. Roots fibrous. Sterile shoots suberect, slender, 2–4 cm, leafy. Flowering stems several, suberect, tufted, 5–12(–22) cm. Leaves 3- or 4-verticillate; leaf blade broadly linear to lanceolate, 6–11 × 1–1.5 mm, base shortly spurred, apex obtuse. Cyme scorpioid, many flowered; bracts suboblong, ca. 5 mm, apex obtuse. Flowers sessile, unequally 5-merous. Sepals broadly linear to suboblong, ca. 2.5 × 0.8 mm, base spurless, apex obtuse. Petals yellow, lanceolate, ca. 5 × 1.2 mm, apex mucronate. Stamens 10; antesealous ones ca. 4 mm; antepetalous ones ca. 3 mm, inserted 0.5–0.8 mm from petal base. Nectar scales subquadrangular, ca. 0.5 × 0.4 mm, apex emarginate. Carpels ca. 5 mm, base connate for ca. 1 mm, apex divergent. Styles ca. 1 mm. Follicles many seeded. Seeds subovoid, ca. 0.5 mm, minutely mammillate. Fl. Apr–May, fr. May–Jun.

• Shady moist rocks in open places; ca. 200 m. Anhui, Jiangsu, Zhejiang.

113. *Sedum erythrospermum* Hayata, Icon. Pl. Formos. 3: 110. 1913.

红籽佛甲草 *hong zi fu jia cao*

Sedum arisanense Yamamoto; *S. brachyrhynchum* Yamamoto.

Herbs annual. Stems branched at base, ca. 8 cm; branches diffuse. Leaves opposite or 3-verticillate, less often alternate; leaf blade obovate-spatulate, 7–12 × 3–6 mm, base attenuate and spurred, apex obtuse to rounded. Cyme 2-branched, divaricate, lax. Flowers sessile, unequally 5-merous. Sepals oblanceolate, ca. 3.5 × 2 mm, apex acuminate. Stamens 10; anthers yellow, globose, ca. 0.3 × 0.2 mm, base subcordate, apex truncate. Nectar scales opposite carpels. Carpels divergent at a definite angle at maturity, oblong, ca. 3 × 2 mm, base connate. Seeds yellow, narrowly oblong, ca. 0.6 mm. Fl. May–Aug, fr. Sep–Dec.

• Mountainous areas; 2000–3500 m. Taiwan.

114. *Sedum phyllanthum* H. Léveillé & Vaniot, Bull. Soc. Agric. Sarthe 39: 318. 1904.

叶花景天 *ye hua jing tian*

Sedum quaternatum Praeger.

Herbs perennial. Stems ascending, robust, to 6 cm, rooting at base. Leaves (3 or)4-verticillate; leaf blade narrowly lanceolate, 8–14 × 2–2.5 mm, base spurred, apex acute. Cyme 3-branched, scorpioid, ca. 4 cm in diam.; branches 2-forked. Flowers sessile, unequally 5-merous. Sepals narrowly lanceolate-oblong, unequal, 3–5 × ca. 1 mm, base spurless, apex obtuse. Petals yellow, apex mucronate. Stamens 10; antepetalous ones ca. 3 mm, inserted ca. 1.5 mm from petal base; anthers blackish, ca. 1 mm. Nectar scales spatulate-oblong, ca. 0.4 × 0.3 mm, base slightly narrowed, apex obtuse. Carpels stellately divergent at maturity, narrowly lanceolate, 3–3.5 mm. Fl. May, fr. Jun–Jul.

• Rocks, moist slopes; 400–800 m. Guizhou, Henan, Shaanxi.

115. *Sedum yvesii* Raymond-Hamet, Repert. Spec. Nov. Regni Veg. 8: 27. 1910.

短蕊景天 duan rui jing tian
Sedum obtusolineare Hayata.

Herbs perennial. Roots fibrous. Sterile shoots 4–8 cm. Flowering stems branched at base, erect, 7–13 cm. Leaves 4-verticillate, sessile, broadly linear to oblanceolate-linear, 5–10 × 1–2 mm, base spurred, apex obtuse. Cyme 0.8–1.5 × 1.5–2.5 cm, few flowered; bracts resembling stem leaves. Flowers unequally 5-merous; pedicel 1–1.5 mm. Sepals broadly linear to oblanceolate, unequal, 3–6 × 1–1.4 mm, apex obtuse. Petals yellow, oblong-ovate, ca. 5 × 2 mm. Stamens 10; antepetalous ones ca. 3 mm; antepetalous ones ca. 2 mm, inserted slightly above petal base. Nectar scales oblong-cuneate, ca. 0.4 mm, apex subtruncate to emarginate. Carpels oblong, ca. 3 mm, base connate for 0.5–1 mm. Styles ca. 1 mm. Follicles divergent, many seeded. Seeds brown, lanceolate-oblong, ca. 1 mm, minutely mammillate. Fl. Apr–May, fr. May.

• Shady moist rocks in ravines; 1000–1300 m. Guizhou, Hubei, Sichuan, Taiwan.

116. *Sedum kiangnanense* D. Q. Wang & Z. F. Wu, Bull. Bot. Res., Harbin 10(3): 46. 1990.

江南景天 jiang nan jing tian
Herbs perennial, 10–20 cm tall. Sterile stems erect; leaves 4- or 5-verticillate; leaf blade basally on stem linear-spatulate to oblanceolate, base shortly spurred, apex obtuse to acute; leaf blade distally on stem spatulate to broadly so, base cuneate, apex retuse. Flowering stems suberect. Leaves 4- or 5-verticillate proximally on stem, usually alternate apically; leaf blade broadly linear to oblanceolate, 1–1.8 × 1.5–2.5 cm, base shortly spurred, apex acute. Cyme 3- or 4-branched, scorpioid, 4–6 cm in diam., many flowered; bracts leaflike. Flowers unequally 5-merous; pedicel absent, rarely 0.5–2 mm. Sepals linear-oblong, unequal, 2–10 × 0.5–2 mm, base spurless, apex acute. Petals yellow, broadly lanceolate to narrowly ovate, 6–9 × 2–3 mm, apex acuminate. Stamens 10; antepetalous ones ca.

6 mm; antepetalous ones ca. 4.5 mm, inserted ca. 1.5 mm from petal base; anthers red, pollen yellow. Nectar scales ± flabellate, ca. 0.4 × 0.5 mm, base slightly narrowed. Carpels lanceolate, ca. 1 mm, base connate for 0.6–0.7 mm. Follicles divergent, many seeded. Seeds ovoid, 0.8–1 mm, tuberculate. Fl. Apr, fr. Apr–May.

• 200–800 m. S Anhui (Huang Shan, Jiuhua Shan).

117. *Sedum sarmentosum* Bunge, Mém. Acad. Imp. Sci. St.-Petersbourg Divers Savans 2: 104. 1838.

垂盆草 chui pen cao

Sedum angustifolium Z. B. Hu & X. L. Huang; *S. kouyangense* H. Léveillé & Vaniot; *S. sarmentosum* f. *majus* Diels; *S. sheareri* S. Moore.

Herbs perennial. Sterile and flowering stems creeping and rooting at nodes toward inflorescences, slender, 10–25 cm. Leaves 3-verticillate; leaf blade oblanceolate to oblong, 1.5–2.8 × 0.3–0.7 cm, base abruptly narrowed and spurred, apex subacute. Cyme 3–5-branched, corymbiform, 5–6 cm diam., few flowered. Flowers sessile, unequally 5-merous. Sepals lanceolate to oblong, 3.5–5 mm, base spurless, apex obtuse. Petals yellow, lanceolate to oblong, 5–8 mm, apex ± long mucronate. Stamens 10, shorter than petals. Nectar scales cuneate-quadrangular, ca. 0.5 mm, apex subemarginate. Carpels divergent, oblong, 5–6 mm. Styles long. Seeds ovoid, ca. 0.5 mm. Fl. May–Jul, fr. Aug.

Shady places, rocks on slopes; below 1600 m. Anhui, Fujian, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Japan, Korea, N Thailand].

Sedum angustifolium, in its protologue (in Z. B. Hu et al., Acta Phytotax Sin. 19: 311. 1981), was separated from *S. sarmentosum* primarily by having narrower leaves and a different chemical profile, but the described morphology falls within the range of the latter species as recognized here.

Sedum sarmentosum is used medicinally, as an ornamental, and sometimes as a vegetable.

118. *Sedum lineare* Thunberg in Murray, Syst. Veg., ed. 14, 430. 1784.

佛甲草 fu jia cao

Sedum anhuiense S. H. Fu & X. W. Wang.

Herbs perennial. Sterile stems present. Flowering stems erect, 10–20 cm. Leaves 3(or 4)-verticillate, sessile, linear, 2–2.5 × ca. 0.2 cm, base shortly spurred, apex subacute. Cyme 2- or 3-branched, lax, 4–8 cm in diam.; branches 2-forked. Flowers sessile (but dichasial central flower shortly pedicellate), unequally 5-merous. Sepals linear-lanceolate, unequal, 1.5–7 mm, base spurless or sometimes spurred, apex obtuse. Petals yellow,

lanceolate, 4–6 mm, base slightly narrowed, apex acute. Stamens 10, shorter than petals. Nectar scales broadly cuneate to subquadrangular, ca. 0.5×0.5 – 0.6 mm. Follicles divergent, 4–5 mm, apex shortly beaked. Seeds small. Fl. Apr–May, fr. Jun–Jul.

Low mountains, rocks on grassy slopes, plains. Anhui, Fujian, Gansu, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [Japan].

This species is used medicinally.

119. *Sedum grammophyllum* Fröderström, Acta Horti Gothob. 10(App.): 164. 1935.

禾叶景天 *he ye jing tian*

Sterile stems small. Flowering stems ascending, weak, 14–20 cm; basal nodes rooting. Leaves 3-verticillate on proximal and middle parts of stem; leaf blade linear to oblanceolate, 2–3 \times 3–4 mm, base broadly spurred, apex subacute and minutely papillate. Cyme scorpioid, lax, few flowered; bracts 1–1.5 cm. Flowers unequally 5-merous. Sepals broadly lanceolate, unequal, 4–5 \times ca. 1 mm, base shortly spurred, apex subacute. Petals free, yellow, lanceolate, ca. 6 \times 1.2 mm, apex acuminate and long mucronate. Stamens 10, 4–5 mm; antepetalous ones inserted 1.5–2 mm from petal base; anthers broad, apex obtuse. Nectar scales subspatulate-quadrangular, ca. 0.5×0.5 mm, apex subretuse. Carpels substellate, 4.5–5.5 mm. Styles ca. 1 mm. Seeds subovoid, small, ca. 0.4 mm. Fl. May.

• C and W Guangdong, E Guangxi.

This species is very close to *Sedum lineare*, and the two may in fact be conspecific.

120. *Sedum concarpum* Fröderström, J. Wash. Acad. Sci. 25: 122. 1935.

合果景天 *he guo jing tian*

Sedum concarpum var. *hupehense* S. H. Fu.

Herbs perennial. Sterile shoots erect, 3–5 cm; leaves pseudopetiolate; leaf blade oblong-orbicular, 0.5–2.5 \times 0.5–0.8 cm, apex rounded to emarginate. Flowering stems 8–20 cm, rarely more. Pseudopetiole to 1.5 cm; leaf blade obovate, 0.5–1.5 \times ca. 1.2 cm, base shortly spurred, apex obtuse. Cyme corymbiform, dense; bracts resembling stem leaves, very large. Flowers unequally 5-merous. Sepals oblanceolate, equal, 5–6 \times ca. 1 mm, base spurless, apex subobtuse and papillate. Petals free, yellow, lanceolate, 7–8 \times ca. 2 mm, apex obtuse and mucronulate. Stamens 10; antepetalous ones ca. 4 mm, inserted ca. 2 mm from petal base. Nectar scales linear-spatulate, ca. 1.1 mm, apex rounded. Carpels erect, 5–6 mm, base connate for ca. 3 mm. Styles ca. 1 mm. Follicles erect. Seeds brown, oblong, 1–1.7 mm, smooth. Fl. Aug, fr. Sep.

• Grassland slopes; 2800–3400 m. SW Hubei (Hefeng Tujia Zu Zizhixian), SW Yunnan.

121. *Sedum engleri* Raymond-Hamet, Bot. Jahrb. Syst. 44 (Beibl. 101): 31. 1910.

粗壮景天 *cu zhuang jing tian*

Herbs perennial. Sterile stems present. Flowering stems simple, erect, thick, 25–35 cm, apically minutely mammillate. Leaves alternate; pseudopetiole 3–13 mm; leaf blade oblong, 2–5 \times 1–3 cm, base attenuate and spurless, margin entire or remotely dentate, apex obtuse. Cyme branched, corymbiform, scorpioid, ca. 4 cm in diam., many flowered; bracts mostly obscure, sessile, obovate-oblong, 3.5–5.3 \times 1–2 mm, margin minutely mammillate. Flowers unequally 5-merous. Sepals unequal, 3 linear and 1.7–2 mm, 2 oblong-linear and 2.5–3 mm, base connate. Petals yellow, oblong-lanceolate, 3.6–4 mm, apex mucronate. Stamens 10, 2.5–3 mm. Nectar scales suboblong-quadrangular, 0.3–0.4 mm. Carpels ovoid-lanceolate, 2.3–2.6 mm, base connate. Styles ca. 1 mm. Follicles divergent, many seeded. Seeds oblong, ca. 0.6 mm, minutely mammillate. Fl. Sep, fr. Oct.

• Rocks on slopes in *Pinus* forests, rocky caves near houses; 1900–3600 m. SW Hubei, SW Sichuan, NW Yunnan.

1a. Leaf margin entire 121a. var. *engleri*
1b. Leaf margin remotely dentate 121b. var. *dentatum*

121a. *Sedum engleri* var. *engleri*

粗壮景天(原变种) *cu zhuang jing tian (yuan bian zhong)*

Sedum engleri Raymond-Hamet var. *forrestii* Raymond-Hamet.

Leaf margin entire. Fl. Sep, fr. Oct.

• Rocks on slopes in *Pinus* forests, rocky caves near houses; 1900–3600 m. SW Sichuan, NW Yunnan.

121b. *Sedum engleri* var. *dentatum* S. H. Fu, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 1980(6): 74. 1980.

远齿粗壮景天 *yuan chi cu zhuang jing tian*

Leaf margin remotely dentate.

• SW Hubei (Xianfeng Xian).

