

## NOTES ON THE FLORA OF TAIWAN (6)—

### The Sedoideae (Crassulaceae)<sup>(1)</sup>

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**Abstract:** A total of two genera and fifteen species of Taiwan Sedoideae are revised. One new genus *Hylotelephium* elevated by Ohba is accepted; one new record *Sedum bulbiferum* Makino, and three new synonyms *S. triangulisepalum* Liu & Chung, *S. truncatistigma* Liu & Chang, (both are *syn.* of *S. microsepalum*), *S. taiwaniana* Ying (*syn.* of *S. nokoense*) are proposed; three species, *S. formosanum* N.E. Br., *S. cryptomerioides* Bart. & Yamamoto. and *S. parvisepalum* Yamamoto., are reconfirmed.

### INTRODUCTION

This paper is an attempt to summarize our current knowledge about the genera and the species, including native and naturalized taxa of Taiwan Sedoideae. Because Sedoideae is quite fascinated in its taxonomy, which depends on the obscure of stableness and variability of significant characters, so the authors tried to use extra-morphological characters and its geographical distribution to find the relationship among the taxa.

The specimens examined in taxonomic treatment were partly collected by the authors and mostly from the herbaria cited below, and which are added the herbarium acronym except TAI-herbarium.

NCAI: Herbarium of National Chiayi Institute of Agriculture

NTUF: Herbarium of Department of Forestry, National Taiwan University

TAI: Herbarium of Department of Botany, National Taiwan University

TAIF: Herbarium of Taiwan Forestry Research Institute

TCF: Herbarium of Department of Forestry, National Chungshing University

TI: Herbarium of Tokyo University, Japan

### TAXONOMIC TREATMENT

CRASSULACEAE A. P. de Candolle

#### Subfamily Sedoideae Berger

Sedoideae Berger in Engl. & Prantl, Nat. Pfl. fam. 2 Aufl. 18a: 440. 1930.

Leaves flated or cylindrical, alternate, opposite or rosulate. Flowers on terminal, 5-6(-12) merous, rarely 3-4; stamens 2-whorled and twice the petals, sometimes 1-whorled; petals distinct or somewhat connate.

Two genera and 15 species in Taiwan.

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### Key to the genera

1. Ovary attenuate at base; carpels distinct; leaves serrate; petals green-purple ..... 1. *Hylotelephium*
1. Ovary not attenuate at base; carpels almost connate; leaves entire; petals yellow or white.....2. *Sedum*

#### 1. *Hylotelephium* H. Ohba

*Hylotelephium* H. Ohba in Bot. Mag. Tokyo 90: 46. 1977.

*Sedum* L., Pl. ed. 1, 430. 1753, *pro parte, excl.* no. 4-15.

*Sedum* sect. *Telephium* S.F. Gray, Nat. Arr. Brit. Pl. 2: 539. 1821. (cited Ohba, 1977); Berger in Engl. et Prantl, Nat. Pfl.-fam. 2 Aufl. 18a: 443. 1930, *excl.* S. *Rosthornianum* Diels; Ford. in Acta. Hort. Gothob. 5: append. 54. 1930.

*Sedum* subgenus *Telephium* (S.F. Gray) R. T. Clausen. *Sedum* N. Amer. 70, 1975.

A perennial herb, glabrous, rosulate. Stem stout, stort-rounded, sometimes woody. Leaves alternate, opposite or 3-4-5 whorled, fleshy, waxy. Inflorescence cymose, umbellate-paniculate, compound-umbellate, teminal. Flowers bisexual, solitary, 5-merous, blossom in summer and autumn; sepals fleshy, green, connect at base; petals longer than sepals, membranous, green-purple; stamens 10, 2-whorled, anthers connate at base, purple, rarely white; glands usually oblong, oblong, ascending, white; pistil distinct, ovary simple, 1-celled, almost erect, stipitate or attenuate at base, the abdomen side swelling, the placentation marginal; style usually shorter than ovary, acuminate; stigma acute and opaque; ovules elliptical, erect or ascending, inverted. Follicle erect, many-seeded, elliptical, brown, striped.

About 28 species in the temperate regions of northern hemisphere, one species in Taiwan.

Note: This new genus elevated by Dr. H. Ohba in 1977 is accepted.

1. *Hylotelephium subcapitatum* (Hayata) Ohba in Bot. Mag. Tokyo 90: 52. 1977. *Sedum subcapitatum* Hayata, Icon. Pl. Formos. 3: 112. 1913. & Gen. Ind. Fl. Formos. 27. 1917; Sasaki, List Pl. Formos. 206. 1928; Kudo & Masam. in Ann. Rep. Taih. Bot. Gard. 2: 110. 1932; Suzuki in Masam., Short Fl. Formos. 80. 1936; Masam., List Vasc. Pl. Taiwan 62. 1954; Liu & Chung, Fl. Taiwan 3: 20-21. 1977. (Isotype, Mori s. n. Oct. 9. 1906, Yushan, TAIF!) 穗花八寶 Fig. 1.

A perennial herb. rhizomatous; aerial stem erect, 10-14 cm high, tetragonal. Leaves rosulate-alternate, obovate-rounded, 28 mm long, 20 mm wide, rounded at apex, abruptly attenuate at base, irregularly denticulate or nearly entire. Flowers in terminal capitate-umbel; sepals 5, linear, 1.4 mm long, obtuse at apex; petals 5, oblong, 3.5-4 mm long; carpels 5, distinct, lanceolate-fusiform, 3 mm long, 0.7 mm wide, acute at apex, attenuate at base. Follicle 5, whorled. Seeds obovoid-fusiform. 1.4 mm long, with longitudinal minute reticulations on surface. Flower and fruit periods from July to August.

Endemic. On high mountain at altitudes from 3,000 to 3,900 m.

Specimens cited:

Hsinchu Co.: Tapachienshan, Sasaki s. n. July 19, 1932, M. T. Kao 8544, H. J. Chang 2032, S. S. Ying 1847 (NTUF).

Taichung Co.: Hsuchshan, Mori s. n. July 22, 1932, Hosokawa s. n. July 15, 1931, T. C. Huang & C. F. Hsieh 7216, 7235, C. M. Kuo 4029, G. Masamune 1254, W. S. Tang et al. 1809, 1810, S. S. Ying 3851, 3861, 3907, 3971 (NTUF),





Fig. 1. *Hylotelephium subcapitatum* (Hayata) Ohba. 1. Habit; 2. Leaf; 3. Spike; 4. Flower; 5. Stamen; 6. Pistil with glands; 7. Lateral view of pistil; 8. Ventral view of pistil; 9. Seed.

Tahsuehshan, S. Suzuki s. n. July 5, 1934. Chihchiyangtashan, S. Suzuki 5246. Chungyangchienshan. Fukuyama & Suzuki 16263.

Nantou Co.: Yushan, Sasaki s. n. Oct. 9, 1909. (TAIF). F. Y. Lu & C. H. Ou 3746, 3696. (TCF). Hohuanshan, M. T. Kao 8825, H. Y. Liu & H. H. Chiou s. n. May 18, 1969.

Chiayi Co.: Yushan, I. Kasakara & S. Fujisaki s. n. Aug. 13, 1935. (NCAI). T. Kawakami & U. Mori s. n. Oct. 20, 1906. (TAIF).

Kaohsiung Co.: Kuanshan, C. H. Ou 1337 (TCF), S. S. Ying 2732 (NTUF).

Pingtung Co.: Tawushan, Matsuda s. n. July 8, 1919 & Nov. 20, 1918. (TAIF).

Hualien Co.: Konankuan, C. C. Chuang & M. T. Kao 4252. Hohuanshan, S. S. Ying 1564 (NTUF). Chihlainanshan, Sasaki s. n. Aug. 24, 1929 (TAIF). Suzuki s. n. Aug. 24, 1929.

Ilan Co.: Hanhutashan, T. Yamazaki & F. Yamazaki s. n. Sept. 21, 1919. T. C. Huang 7819, S. Suzuki 2347, Kudo & Mori 2242, C. M. Kuo 5148, N. J. Chung 200 (NTUF)

2. *Sedum* L.

*Sedum* Tourn. ex L., Sp. Pl. 430. 1753.

Herb, glabrous, rarely hairy, annual or perennial, rarely low undershrubby, fleshy. Leaves simple, alternate or rosulate, rarely opposite or verticillate, entire or toothed, rarely spine-tipped, flat or cylindric, usually sessile. Flowers bisexual, rarely unisexual by abortion, sometimes dioecious, in terminal cymes or solitary, rarely in spikes, yellow or white; sepals 4-5, distinct or few connate at base; petals as many as sepals, free, persistent; stamens as twice as sepals, perigynous, the filaments subulate or filiform, often adnate to petals; nectariferous glands 5 or 4, minute; carpels 5, sometimes 4, free or shortly connate at base; style short, with stigma at apex; ovules rather many. Follicle 4-5, free, mostly with many seeds.

About 350 species in the temperate regions and higher mountains in the Tropics of the Old World, also in N. and S. America; 14 species in Taiwan.

## Key to the species

- |  |                                   |
|--|-----------------------------------|
| 1. Plants with glandular hair .....  | 2                                 |
| 1. Plants without glandular hair .....                                     | 3                                 |
| 2. Petals white .....  | 4. <i>Sedum drymarioides</i>      |
| 2. Petals yellow .....   | 13. <i>Sedum stellariaefolium</i> |
| 3. Sterile branches present .....  | 4                                 |
| 3. Sterile branch absent .....   | 5                                 |
| 4. Leaves 4-verticillate on sterile branches .....                         | 7. <i>Sedum mexicanum</i>         |
| 4. Leaves rosulate on sterile branches .....                               | 12. <i>Sedum sekiteiense</i>      |
| 5. Leaves less than 1 cm long .....  | 6                                 |
| 5. Leaves more than 1 cm long .....  | 7                                 |
| 6. Flowers 1, occasionally up to 2-10 .....                                | 14. <i>Sedum uniflorum</i>        |
| 6. Flowers more than 10 .....  | 9. <i>Sedum morrisonense</i>      |
| 7. Leaves oblong or oblong-lanceolate .....                                | 8                                 |
| 7. Leaves spathulate .....   | 9                                 |
| 8. Leaves oblong; sepals equal in length, 1.5 mm long .....                | 8. <i>Sedum microsepalum</i>      |
| 8. Leaves oblong-lanceolate; sepals unequal in length, 1.5-3 mm long ..... | 11. <i>Sedum parvisepalum</i>     |
| 9. Leaves scale spathulate .....   | 3. <i>Sedum cryptomarioides</i>   |
| 9. Leaves not scale spathulate .....                                       | 10                                |
| 10. Axillary bulblets present .....  | 2. <i>Sedum bulbiformum</i>       |
| 10. Axillary bulblets absent .....   | 11                                |
| 11. Stem with glandular spots; cymes spike-like .....                      | 10. <i>Sedum nokoense</i>         |
| 11. Stem without glandular spot; cymes not spike-like .....                | 12                                |
| 12. Carpels erect when mature .....  | 6. <i>Sedum formosanum</i>        |
| 12. Carpels spreading when mature .....                                    | 13                                |
| 13. Carpels horizontally spreading when mature: seeds white .....          | 1. <i>Sedum actinocarpum</i>      |
| 13. Carpels spreading at a definite angle when mature; seeds red .....     | 5. <i>Sedum erythrospermum</i>    |

1. *Sedum actinocarpum* Yamamoto, Suppl. Icon. Pl. Formos. 2: 17. 1926; Sasaki, List Pl. Formos. 205. 1928; Kudo & Masam. in Ann. Rep. Taih. Bot. Gard. 2: 109. 1932; Masam., List Vasc. Pl. Taiwan 61. 1954. Liu & Chung, Fl. Taiwan 3: 16. 1977.

星果佛甲草 Fig. 2.

An annual fleshy herb; stem slender, erect, simple, dichotomously or rarely trichotomously branched upwards, branches glabrous. Leaves alternate, occasionally opposite, spatulate, 8-27 mm long, 4-11 mm wide, rounded or obtuse at apex, obtuse at base, entire. Flowers in cymes, sessile; sepals 5, unequal in length, spatulate or oblanceolate or linear-oblanceolate, 2.5-4.5 mm long, 2-3 mm wide, obtuse or acute at apex, cuneate at base, glabrous, greenish; petals 5, elongate-oblong or lanceolate, 4 mm long, 1.5 mm wide, acuminate at apex, somewhat cuneate at base, 1-nerved, yellow; stamens 10, perigynous; anthers suborbicular or oblong or ovate, 0.4 mm long, subretuse at apex, emarginate at base; glands 5, 0.5 mm long, 0.3 mm wide; carpels 5 (rarely 4), connate at base, free upward, suboblong or ovate, 2.5 mm long, acuminate-rostrate at apex, stellate-spreading when mature, 8 mm in diameter, triangular, beak 0.2 mm long. Seeds very small,

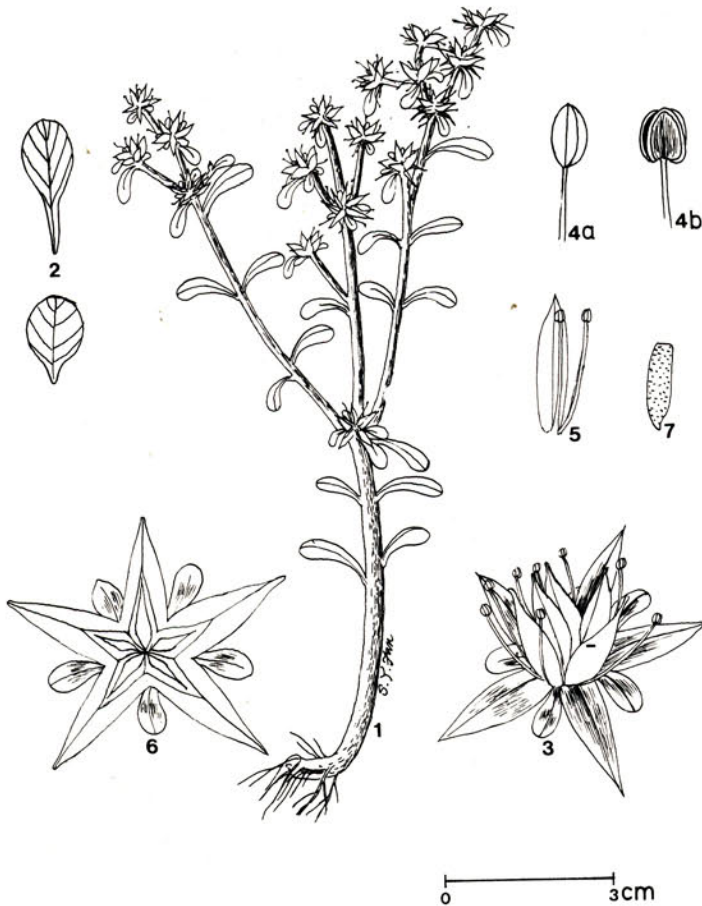


Fig. 2. *Sedum actinocarpum* Yamamoto. 1. Habit; 2. Leaves; 3. Flower; 4a. Immature stamen; 4b. Mature stamen; 5. Petal and stamens; 6. Follicle; 7. Seed.



elongate-oblong, 0.8 mm long; embryo elongate-oblong; cotyledons oblong. Flower and fruit periods from February to May.

Endemic. On mountain at altitudes from 200 to 2,500 m.

Specimens cited:

Taipei Co.: Wulai, Yamamoto s. n. Mar. 12, 1929, C. M. Kuo 9364, Liu et al. s. n. Feb. 1, 1955, S. Suzuki 10129, S. N. Lin 495, H. N. Yang s. n. Feb. 25, 1979, W. S. Tang 1733, 1735, N. J. Chung 269 (NTUF). Shihing, W. S. Tang 1727, 1728, 1729, 1730, N. J. Chung 266 (NTUF). Pinglin, N. J. Chung 251 (NTUF). Shunshikou, H. Simada H993.

Keelung City: Hopingtao, C. L. Chang 91.

Kaohsiung Co.: Kuaiku, F. Y. Lu & C. H. Ou 3303, 3312 (TCF).

Taitung Co.: Chihmou, N. J. Chung 287 (NTUF). Litao to Tienlongchiao, Wang, Yang & Huang s. n. Apr. 5, 1987.

Hualien Co.: Fushan, M. T. Kao & C. N. Huang 6918. Lintienshan, Hsieh, Lin & Lin s. n. Apr. 6, 1987. Hoping logging track, W. S. Tang 1753, 1755, 1759.

Ilan Co.: Chuntao, N. J. Chung 262 (NTUF).



Fig. 3. *Sedum bulbiferum* Makino. 1. Habit; 2. Leaf; 3. Leaf with a bud; 4. Flower; 5. A part of flower, with a petal, a stamen, a gland a carpel; 6. Stamens.

2. *Sedum bulbiferum* Makino in Bot. Mag. Tokyo 17:145. 1903. 珠芽佛甲草 Fig. 3.

A biennial fleshy herb; stem 20–60 cm long, ascending or erect. Leaves alternate, sessile, spatulate-oblongate, 10–15 mm long, 2–4 mm wide, rounded or obtuse at apex, stiped at base, entire; axillary bulblets 4–6, rarely 2 or 8–10. Flowers in terminal cymes, 5-merous; sepals free, lanceolate to oblanceolate, 2–4 mm long, greenish, ascending at the blossom; petals free, linear-oblongate to narrow-oblongate, 4–5 mm long, acute at apex, flat-spreading at blossom, yellow; stamens shorter than petals, dark yellow at mature, almost no pollen grains; glands obovate, 0.6 mm long, semi-hyaline, white; pistils 3–4 mm long; ovary 2.5–3 mm long, connate about 1 mm at base; style 1 mm long. Flower period from April to June, usually no seed; asexual reproduction by axillary buds.

Southern China & Japan (Fu, 1984); Taiwan only found in Chitou, naturalized species. A new record.

Specimens cited:

Nantou Co.: Chitou, W. S. Tang 1776, 1800, 1807.

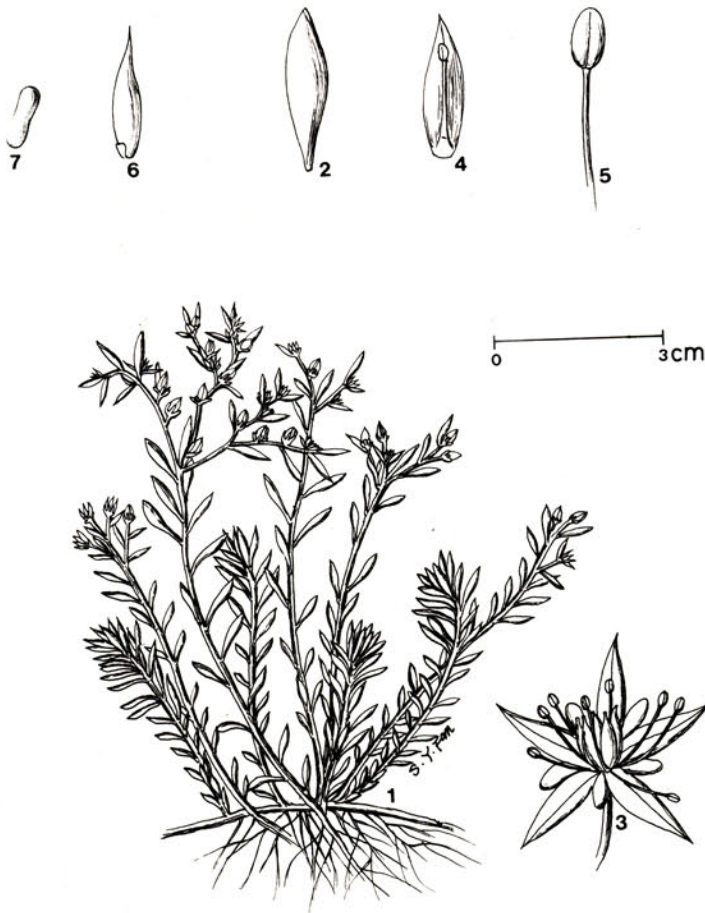


Fig. 4. *Sedum cryptomerioides* Bart. & Yamamoto. 1. Habit; 2. Leaf; 3. Flower; 4. Petal and stamen; 5. Stamen; 6. Pistil with a gland; 7. Seed.

3. *Sedum cryptomerioides* Bart. & Yamamoto in Journ. Soc. Trop. Agr. 4: 485. 1932.  
*Sedum morrisonense sensu Liu & Chung*, Fl. Taiwan 3: 19. 1977, *pro parte*; non  
 Hayata. 杉葉佛甲草 Fig. 4.

A fleshy herb, rhizomatous; aerial stem clumped at base, with many leaves at the terminal, 6-10 cm high. Leaves densely verticillate, scale-spathulate, 10-15 mm long, 2.5-3 mm wide, 1 mm thick, nearly obtuse at apex, round-attenuate at base, entire, glabrous. Flowers in cymes, terminal; sepals 5, oblong, green, 3-4 mm long, 0.9 mm wide, obtuse at apex; petals 5, lanceolate, 4-6 mm long, 1.2 mm wide, mucronate at apex, membranous at margin, yellow; stamens 10, 4 mm long, 2-whorled; glands 5, obovate; carpels 5, lanceolate, 3 mm long, 0.6 mm wide. Seeds oblong, 0.6 mm long, 0.2 mm wide in diameter. Flower and fruit periods from June to September.

Endemic. Growing on the rocky place of central mountain at altitudes from 2,000 to 3,500 m.

Specimens cited:

Shinchu Co.: Kuanwu, K. C. Yang s.n. July 6, 1987, F. L. Lu & C. H. Ou 1971 (TCF). Loshan, Yang & Wang s.n. July 24, 1987. Tapachienshan. Wang & Yang s.n. July 24, 1987, Suzuki s.n. July 5, 1934.

Taichung Co.: Pilushi, F. Y. Lu & C. H. Ou 3607 (TCF).

Nantou Co.: Tsuifeng to Sungkang, Wu, Leu & Chiu 7697, Hohuanshan, C. C. Hsu 3819, Tunyuan to Yunhai, Suzuki 2649, Yushan, Y. Hashioka s.n. July 10, 1933, Tungpu to Paiyunshanchuang, S. S. Ying 1389, 1403 (NTUF).

Chiayi Co.: Yushan, Takida s.n. July 23, 1940.

Hualien Co.: Tzuen, C. C. Chuang & M. T. Kao 4394, Hohuanshan, C. C. Kuo 2662 (NTUF).

Ilan Co.: Nanhutashan, Y. C. Jeng 2004, C. C. Hsu 5921.

Note: This is a reconfirmed species.

4. *Sedum drymarioides* Hance in Journ. Bot. 3: 379-380. 1865; Hayata, Icon. Pl. Formos. 3: 110. 1913; Yamamoto, Suppl. Icon. Pl. Formos. 2: 21. 1926; Sasaki, List Pl. Formos. 205. 1928; Kudo & Masam. in Ann. Rep. Taih. Bot. Gard. 2: 109. 1932; Masam., List Vasc. Pl. Taiwan 61. 1954; Liu & Chung, Fl. Taiwan 3: 16. 1977, *excl. specimen pro parte*.

*Sedum uraiense* Hayata, Icon. Pl. Formos. 6: 20. 1916 & Gen. Ind. Fl. Formos. 27. 1917; Sasaki, List Pl. Formos. 206. 1928. 大葉火焰草 Fig. 5.

An annual fleshy herb; stem creeping at base, with glandular hairs throughout the whole plant, ca. 10 cm high. Leaves membranaceous, somewhat thick, opposite or rarely verticillate, ovate or rounded-ovate, 1.5-2 cm long, 1.3-1.5 cm wide, obtuse at apex, suddenly cuneate at base, entire; petioles 5-8 mm long. Flowers in cymes, pedicellate; pedicels 2-5 mm long; sepals 5, oblong-triangular, 1.5 mm long, 0.7 mm wide, densely hairy outside, glabrous inside, obtuse at apex; petals 5, lanceolate, 3-3.5 mm long, 0.7-1 mm wide, acuminate at apex, truncate at base, white; stamens 10; filaments filiform, 2 mm long, glabrous; anthers globose, 0.25 mm in diameter; glands 5, opposite with carpels, rectangular, 0.2 mm long; carpels 5, lanceolate, glandular-hairy; styles cuneate at apex. Follicles 5, elliptic, acute; seeds ovoid, elliptic, truncate on both sides, about 0.5 mm long, with 8-13 deep grooves; testa hard, darkbrown. Flower and fruit periods from April to May.



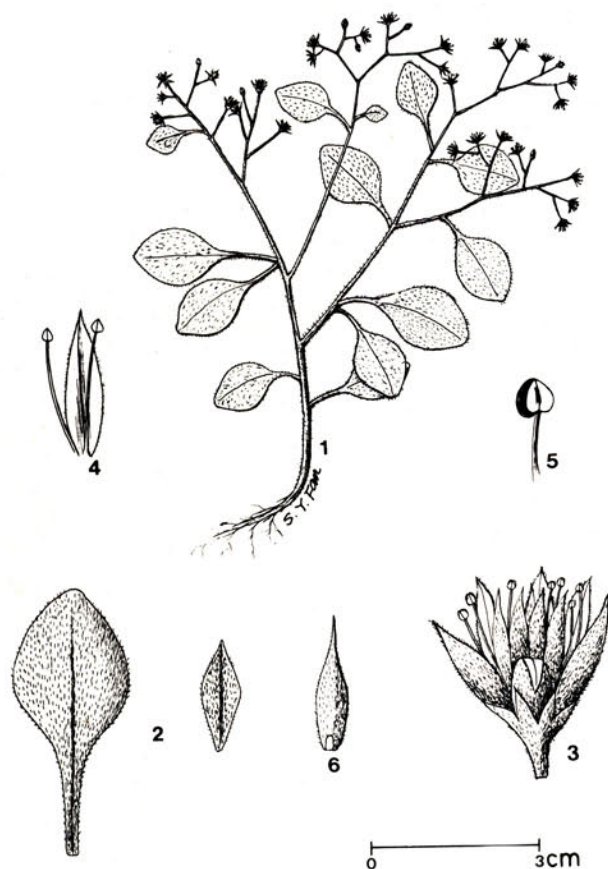


Fig. 5. *Sedum drymarioides* Hance. 1. Habit; 2. Leaves; 3. Flower; 4. Petal and stamens; 5. Stamen; 6. Pistil with a gland.

Southern part of China. This is a rare species in Taiwan, only found in Wulai.

Specimens cited:

Taipei Co.: Wulai, M. T. Kao 7169, T. Y. Chiang 1148, S. Susuki s.n. Mar. 28, 1932, W. S. Tang 1734, 1792, N. J. Chung 268 (NTUF), Shimada s.n. Apr. 1, 1918 (TAIF), Kanehira & Sasaki s.n. May 9, 1919 (TAIF).

5. *Sedum erythrosporum* Hayata, Icon. Pl. Formos. 3: 110. 1913; Liu & Chung, Fl. Taiwan 3: 17. 1977.

*Sedum arisanensis* Yamamoto, Suppl. Icon. Pl. Formos. 2: 19. 1926.

*Sedum brachryhinchum* Yamamoto, l.c. 2: 19. 1926.

紅子佛甲草 Fig. 6.

An annual fleshy and glabrous herb, 6-8 cm high, diffuse at base, branches slightly green. Leaves verticillate or opposite, rarely alternate, obovate-spathulate, 7-12 mm long, 3-6 mm wide, rounded or obtuse at apex, elongate-obtuse at base, thick, glabrous, entire. Flowers in cymes, sessile; cymes dichotomously divaricate; sepals 5, unequal in length, oblanceolate or nearly spathulate; petals 5, lanceolate, 3.5 mm long, 2 mm wide, acute at apex, narrowly truncate at base, yellow; stamens



Fig. 6. *Sedum erythrospermum* Hayata. 1. Habit; 2. Leaf; 3. Flower; 4. Petal and stamen; 5. Stamen; 6. Pistil; 7. Seed.

10; anthers yellow, rounded, 0.3 mm long, 0.2 mm wide, truncate at apex, submarginate at base; glands 5; carpels 5, glabrous, connate at base, nearly oblong, 3 mm long, 2 mm wide, spreading at a definite angle when mature. Seeds elongate-oblong, 0.6 mm long; testa red. Flower and fruit periods from July to October.

Endemic. On high mountain at altitudes from 2,500 to 3,500 m.

Specimens cited:

Hsinchu Co.: Luchungtashan, Suzuki *s.n.* Dec. 27, 1930, N. Fukuyama *s.n.* July 8, 1932. Chiouchiushanchuang, C.F. Hsieh 1304. Chiouchiushanchuang to Tapa portal, S.S. Ying *s.n.* May 3, 1973 (NTUF). Tapachienshan, Sasaki *s.n.* July 20, 1932, T. Hosokawa *s.n.* July 13, 1931, C. S. Kuoh 3302, H. J. Chang 2022.

Taichung Co.: Pashienshan, T. C. Huang 1314. Wuling to Chika, N. J. Chung 240 (NTUF). Chika to 369, T. C. Huang & C. F. Hsieh 7132, 7156, C. C. Hsu 14738, 369 to Hsuehshan, Mori *s.n.* Oct. 20, 1938, T. C. Huang 7225, Wang & Yang *s.n.* July 7, 1987, W. S. Tang 1811, 1846, N. J. Chung 242 (NTUF), S. S. Ying 5017, 5114 (NTUF). Pilushi, Y. C. Liu & C. H. Ou 3611 (TCF).



Nantou Co.: Tungpu to Paiyunshanchung, *T. C. Huang 4559, 4604, T. C. Huang, C. F. Hsieh & M. T. Kao s.n.* Aug. 11, 1971. Tsuifeng to Sukang, *Wu, Leu & Chiu 7691*. Yunhai to Tunyuan, *W. S. Tang 1831*.

Chiayi Co.: Alishan, *Faurie s.n.* June 1914 (TAIF), *W. S. Tang 1837, 1839*. Tatachia, *S. Suzuki s.n.* July 10, 1933, *Y. Hashioka s.n.* July 9, 1933. Yushan, *C. C. Chuang & M. T. Kao s.n.* July 13, 1957, *Suzuki s.n.* July 10, 1933, *S. Sasaki s.n.* Aug. 1935, *Kanehira & Sasaki s.n.* Oct. 10, 1913 & Oct. 21, 1918 (NTUF), *S. S. Ying 1386 & 1961 (NTUF)*, *Chuan & Kao s.n.* July 13, 1957, *F. Y. Lu C. H. Ou 3669, 3678 (TCF)*.

Pingtung Co.: Tawushan, *Suzuki s.n.* Dec. 27, 1930.

Hualien Co.: Chungyangchienshan, *T. Suzuki & N. Fukuyama s.n.* July 31, 1936. Hoping, *N. J. Chung 281 (NTUF)*. Fengshan, *Liu, Chen & Kao s.n.* Aug. 10, 1956. Chinshuishan, *Nakamura s.n.* Sept. 9, 1930. Lanshan, *C. H. Ou 1727 (TCF)*.

Ilan Co.: Nanhutashan, *Yamazaki 81, Y. C. Jeng 2004, Masamune, Fukuyama & Nakamura 3036, C. C. Hsu 5921*. Ssuyuanyakou, *S. Suzuki 5020*.

6. *Sedum formosanum* N. E. Br. in Gard. Chron. 26: 134. 1885; Forb. & Hemsl. in Journ. Linn. Soc. Bot. 23: 285. 1887; Matsum. & Hay. in Journ. Coll. Sci. Univ. Tokyo 135. 1906.

*Sedum alfredi* sensu Liu & Chung, Fl. of Taiwan 3: 16. 1977; *non* Hance.

臺灣佛甲草 Fig. 7.

A green annual fleshy herb; stem tufted, 10-15 cm high, erect, rather stout, densely leaved, branching dichotomously or trichotomously. Leaves alternate, occasionally opposite, spatulate to obovate, 10-15 mm long, 8-12 mm wide, broadly rounded at apex, obtuse to cuneate at base. Cymes rather large, 5-8 cm across, many-flowered. Flowers sessile, about 1 cm across, yellow; bracts leaf-like; sepals 5, unequal in length, linear-lanceolate, 2-3 mm long, obtuse at apex; petals 5, narrowly lanceolate, acuminate at apex, 6-7 mm long, yellow; stamens 10, shorter than the petals; anthers yellow; carpels 5, erect when mature, broadly lanceolate, 5-6 mm long, shortly acuminate at apex, terminated by a style about 1 mm long. Seeds many, oblong, 0.4 mm long. Flower and fruit periods from March to June.

Japan, the Ryukyus and Philippines. Taiwan, along the seashores.

Specimens cited:

Taipei Co.: Tanshui, *T. C. Huang 2280, T. Tanaka & Y. Shimada 10963 (NTUF)*. Chinshan, *Masamune & Suzuki s.n.* July 2, 1932. Fukueichueh, *Suzuki s.n.* July 7, 1930. Kuaninshan, *Fukuyama & Miara s.n.* May 26, 1940. Homei, *N. J. Chung 273 (NTUF)*. Shihmen, *H. N. Yang 2551, J. C. Wang 3349, C. M. Wang 3349, C. M. Kuo 10939, S. H. Lin 692, W. S. Tang 1806*. Dingpayen, *W. S. Tang 1757*. Padotse to Fulung, *W. S. Tang 1477*.

Keelung city: Hopingtao, *C. M. Kuo 9805*. Keelung, *Sasaki s.n.* May 19, 1912 & Apr. 27, 1910 (TAIF), *Kawakami & Sasaki s.n.* May 8, 1910 (TAIF).

Pingtung Co.: Hengchuan, *Kawakami & Sasaki s.n.* June 1912. Hsiaoryukyu, *Masamune s.n.* May 28, 1939. Shihting, *T. Y. Yang s.n.* Mar. 30, 1985.

Taitung Co.: Lanyu, *Sata 1286, C. Y. Chung & C. C. Hsu 2384, T. C. Huang et al. 9179, 9205, 9440, 10554, 10635, S. Sasaki s.n.* May 1924, *S. F. Huang 2742, Hosokawa 9896, Kawakami & Nakahira s.n.* Mar. 1906 (TAIF). *M. C. Ho & H. C. Huang 25 (NTUF)*, *C. H. Ou 3611 & 2311 (TCF)*.



Fig. 7. *Sedum formosanum* N. E. Br. 1. Habit; 2. Leaves; 3. Flower; 4. Stamen; 5. Pistil; 6. Follicles; 7. Seed.

Ilan Co.: Tungao, *Yasukawa s.n.* Mar. 1, 1923. Kueishantao, C. C. Hsu 7273.  
Tali, W. S. Tang 1313. Wushihbi, W. S. Tang 1795, 1798, 1803.

Note: This is a reconfirmed species.

*Sedum mexicanum* Britt. Bull. New York Bot. Gard. 1: 257. 1899.

*Sedum lineare sensu* Liu & Chung, Fl. Taiwan 3: 19. 1977; *non* Thunb.

*Sedum obtuso-lineare* Hayata Icon. Pl. Formos. 3: 111. 1913. 松葉佛甲草 Fig. 8.

Basal stem decumbent, rooting, weakly, 10-15 cm high. Sterile branches erect, slender branched, densely leafy, 2-8 cm long, the leaves 4-ranked, spreading. Floriferous branches ascending, loosely leafy, up to 20 cm long, the leaves very long and narrow, short-spurred, linear-lanceolate, subterete 5-20 mm long. Flowers sessile, spreading along the slender, long peduncles; bracts lanceolate, subobtusate at apex, 3-4 mm long; sepals 5, blunt spurred, lanceolate, subobtusate at apex, unequal in length, 3.2-5 mm long; petals 5, lanceolate, subobtusate and short mucronate at apex, 5-6 mm long, golden-yellow; stamens 10, 4-5 mm long; anthers



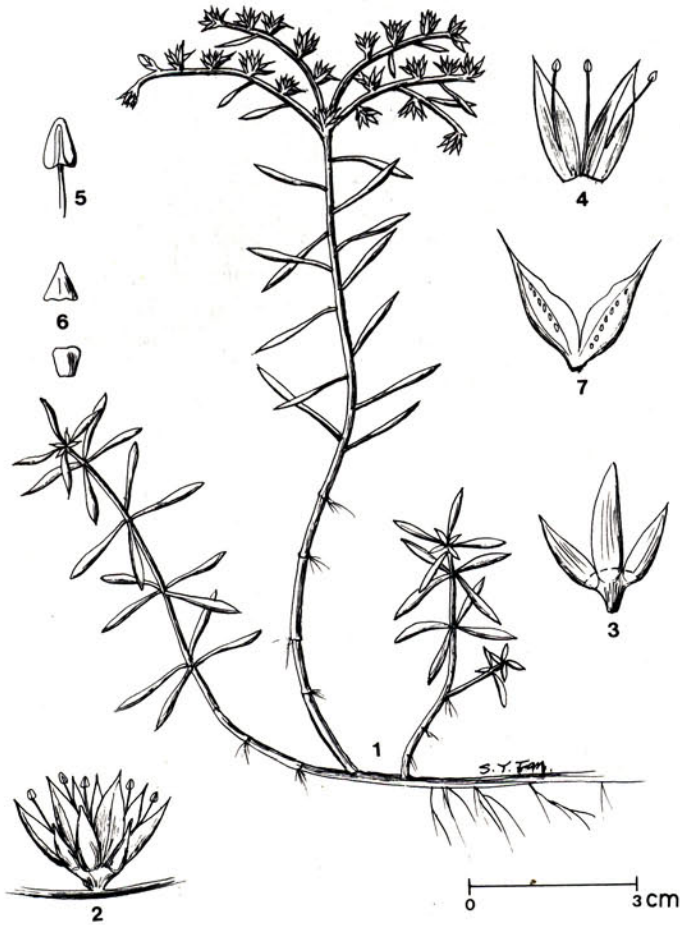


Fig. 8. *Sedum mexicanum* Britt. 1. Habit; 2. Flower; 3. Sepals; 4. Petals and stamens; 5. Stamen; 6. Glands; 7. Follicle.

narrow, reddish; glands spathulate-subquadrate, emarginate at apex, thick,  $1 \times 0.8$  mm, yellow; young carpels turgid, 5 mm long. Flower and fruit periods from May to June.

Mexico and America (Forderstron, 1935). Naturalized.

Specimens cited:

Taipei Co.: Tanshui, S. Sasaki s.n. Mar. 28, 1932, Tanaka ex Shimada s.n. Apr. 20, 1932 (NTUF). Shihing, N. J. Chung 265 (NTUF). Tatumshan, K. C. Yang 1384. Chutzuhu, W. S. Tang 1392, 1475, 1756.

Taoyuan Co.: Chungli, C. M. Kuo 6127, 6145.

8. *Sedum microsepalum* Hayata, Icon. Pl. Formos. 3: 111. 1913; Liu & Chung, Fl. Taiwan 3: 19. 1977, *pro parte*. (Isotype, Kawakami & Mori 2019, Yushan, TAIF!)  
小萼佛甲草 Fig. 9.

*Sedum triangulisepalum* Liu & Chung, l.c. 3: 21. 1977, *syn. nov.* (Holotype, N. J. Chuang 280, Lomawangshan, NTUF!)

*Sedum truncatistigma* Liu & Chung, *l.c.* 3: 23. 1977, *syn. nov.* (Holotype, *N.J. Chuang 276*, Lomawangshan, NTUF!)

A glabrous herb; stem erect, decumbent at base, rooting at nodes, suberect, upward, loosely branched above, 10-20 cm high. Leaves alternate, sessile, oblong, 2-2.5 cm long, 0.5 mm wide, obtuse at apex, cuneate at base, entire. Flowers in cymes, sessile; cymes loosely branched; sepals 5, equal in length, triangular, ca. 1.5 mm long and wide, acute at apex; petals 5, equal in length, linear-lanceolate, 6 mm long, 2 mm wide, acuminate at apex, yellow; stamens 10, 3-5 mm long; anthers yellow, extrose; glands 5, 1.2 mm, retuse; carpel 5, connate at base, free upward, 5 mm long. Follicles 5, coriaceous, 7 mm long; seeds many. Flower and fruit periods from May to July.

Endemic. On high mountain at altitudes from 1,700 to 3,000 m.

Specimens cited:

Taipei Co.: Lopeishan, *C.F. Hsieh et al. s.n.* Apr. 5, 1986, *s.n.* July 14, 1987 & *s.n.* Aug. 14, 1987.

Nantou Co.: Nankeng, *Suzuki 2037*.

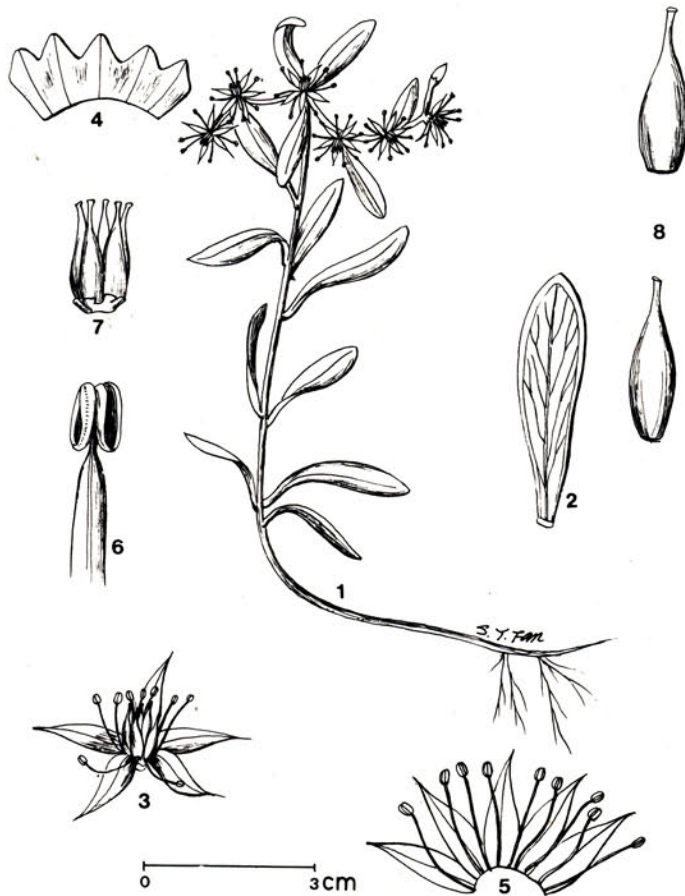


Fig. 9. *Sedum microsepalum* Hayata. 1. Habit; 2. Leaf; 3. Flower; 4. Calyx; 5. Petals and stamens; 6. Stamen; 7. Pistils with glands; 8. Follicles.



Taitung Co.: Lilung, Yamamoto & Mori s. n. Aug. 2, 1923.

Hualien Co.: Mukuashan, M. T. Kao 4192. Chinshuishan, C. C. Liao 406 (NTUF).

Ilan Co.: Chituan, C. M. Kuo 8732.

9. *Sedum morrisonense* Hayata in Journ. Coll. Sci. Univ. Tokyo 25: 94. 1908 & Icon. Pl. Formos. 2: 12. 1912; T. Ito, Fl. Alp. Formos. 58. f. 115. 1929; Liu & Chung, Fl. Taiwan 3: 19. 1977, *pro parte*. (Paratype, Kawakami & Mori 2281, Yushan, TAIF!)  
玉山佛甲草 Fig. 10.

*Sedum japonicum sensu* Yamamoto, Suppl. Icon. Pl. Formos. 2: 21. 1926; Liu & Chung, l. c. 3: 17. 1977; non Sieb. *ex* Miq.

An erect perennial herb, nearly 8 cm high, basiramosely branched, reddish, glabrous. Leaves approximately oblong-lanceolate, obtuse at apex. 6 mm long, 1.5 mm wide. Cymes trichotomous, many-flowered, bracteate; bracts leafy, shorter than flowers. Flowers sessile, small, 7 mm long, campanulate; sepal 5, unequal in length, oblong-linear, obtuse at apex, half as long as petals, thick; petals 5, oblong-linear, obtuse at apex, 6.5 mm long, yellow; stamens 10, as long as petals; anthers

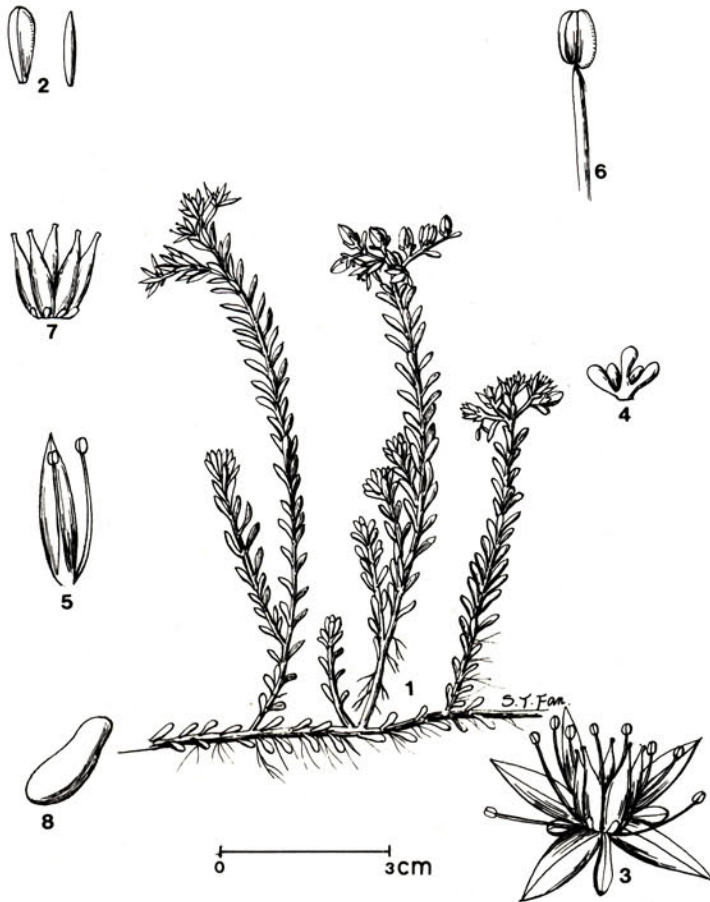


Fig. 10. *Sedum morrisonense* Hayata. 1. Habit; 2. Leaves; 4. Flower; 5. Petal and stamens; 6. Stamen; 7. Pistil with glands; 8. Seed.

oblong; glands 5, hypogynous, minute, broadly quadrate; style 6 mm long; stigma pointed. Follicles 5, membranaceous, shortly connate at base, erect or patent oblong; seeds oblong, obscurely striate, with striations very minutely muriculate. Flower and fruit periods from June to September.

Endemic. On high mountain above 2,500 m.

Specimens cited:

Hsinchu Co.: Itsushan, *Simozawa s.n.* July 11, 1934. Tapachienshan, *Fukuyama s.n.* July 26, 1932, *S. S. Ying 1827, 1861, 3945* (NTUF).

Taichung Co.: Hsuehshan, *T. C. Huang & C. F. Hsieh 7239, Y. C. Jeng 1477, C. M. Kuo 4019, 3949, 3953, T. Hosokawa s.n.* July 15, 1931, *Simada s.n.* Oct. 8, 1925 (NTUF), *N. J. Chung 241* (NTUF), *Mori s.n.* Oct. 24, 1936, *W. S. Tang 1847*. Wuling to Chika, *T. C. Huang 7106*. Chika to 369, *C. C. Hsu 14638, 14658*. Taoshan, *T. Hosokawa s.n.* July 12, 1931. Chungyangchienshan, *Fukuyama & Suzuki 15132, 16242*.

Nantou Co.: Chungyangshanmai, *U. Mori s.n.* Dec. 16, 1908 (TAIF), *Tungpu, C. C. Chuang 2891, Y. C. Jeng 2374, F. Y. Lu & C. H. Ou 3673* (TCF). Tungpu to Yushanchienshan, *C. C. Hsu 4014, C. C. Hsu et al. 3966, 9186 & 9226*, *Yushan, S. Sasaki s.n.* Oct. 9, 1909, *Kikuchi s.n.* Oct. 1908, *C. C. Hsu 6289, C. C. Chuang & M. T. Kao 4517*. Tungpu to Paiyuanshanchuang, *T. C. Huang 4557*. Nengkaoshan, *G. Masamune & K. Mori s.n.* July 15, 1931. *M. T. Kao 16*. Yunhai, *W. S. Tang 1834*. Wanghsiang, *F. Y. Lu & C. H. Ou 3921* (TCF). Jenlun, *C. H. Ou et al. 1372, 5399* (TCF). Tashuikushan, *Yasukawa s.n.* Mar. 8, 1923. *Kunyang, S. S. Ying 1234* (NTUF).

Chiayi Co.: Alishan, *Tsukahara s.n.* July 25, 1940, *T. Kasakara & S. Fujisaki s.n.* Aug. 4, 1935 (NACI). Tatachia to Paiyunshanchuang, *Kanehira & Sakaki s.n.* Oct. 21, 1918 (TAIF), *T. Shimizu s.n.* Jan. 3, 1961, *C. C. Hsu s.n.* Sept. 5, 1969, *C. M. Kuo 11769*. Paiyunshanchuang, *C. C. Hsu 9226, S. S. Ying 1389, 1403* (NTUF). *Yushan, Y. Kakuchi s.n.* Nov. 19, 1912 (TAIF), *U. Mori 18968* (TAIF), *F. Y. Lu & C. H. Ou 3921* (TCF). Hsinkaokou, *T. C. Huang s.n.* Feb. 18, 1956. *Yushanchienshan, Jen & Kao s.n.* July 13, 1957.

Kaohsiung Co.: Kuanshanyakou, *C. H. Ou 1337* (TCF). Tienchi, *W. S. Tang 1700*.

Pingtung Co.: Peitawushan, *H. J. Chung 288* (NTUF).

Taitung Co.: Lilung, *Yamazaki & Mori s.n.* Aug. 2, 1937.

Hualien Co.: Hohuanshan, *M. T. Kao 7799, M. T. Kao et al. 7052, T. C. Huang 4557, C. C. Hsu 3819, W. S. Tang 1715, C. M. Kuo 6859, 6933, S. S. Ying 1507, 4807 & 4818* (NTUF). Chilaishan, *Saito & Kikuchi s.n.* Nov. 15, 1925, *Kudo & Mori 2241*.

Ilan Co.: Nanhutashan, *Sasaki s.n.* July 24, 1922 (TAIF). *Suzuki et al. s.n.* July 17, 1937, *Fukuyama & Shimada s.n.* July 9, 1937, *T. Yamazaki & F. Yamazaki s.n.* Sept. 21, 1969, *Fukuyama, Masamune & Nakamura 2914, M. T. Kao 5258, S. S. Ying 2048* (NTUF).

10. *Sedum nokoense* Yamamoto, Suppl. Icon. Pl. Formos. 2: 21. 1936.; Liu & Chung, Fl. Taiwan 3: 20. 1977.

*Sedum taiwaniana* Ying in Q. Journ. Chin. For. 19(2): 101-102. 1986. syn. nov. (Holotype, *S. S. Ying s.n.* Oct. 26, 1985, Chinshan to Kukuan, NTUF!)

能高佛甲草 Fig. 11.

A fleshy herb, 9-20 cm high, decumbent at base, rooting at nodes, branched



above, with glandular spots. Leaves alternate, spatulate, 6–10 mm long, 3–5 mm wide, obtuse at apex, entire. Flowers in cymes, sessile; cymes spike-like, terminal; sepals 5, unequal in length, oblanceolate or subspathulate or linear-lanceolate, 3 mm long, 1 mm wide, obtuse at apex, cuneate at base, green; petals 5, equal in length, linear-lanceolate, 5 mm long, 1.5 mm wide, subacuminate at apex, 1-nerved, yellow; stamens 10, perigynous, 2-whorled; filament 4 mm long; anthers yellow, obtuse at apex, cordate at base, 0.8 mm long, 0.5 mm wide; glands 5; carpels 5, oblong, 2 mm long, 1.5 mm wide, acuminate-beaked at apex. Follicles 5, stellate-spreading; seeds many, oblong, 0.8 mm long, 0.3 mm wide, embryo glabrous, oblong, 0.5 mm long, 0.25 mm wide. Flower and fruit periods from July to September, sometimes to November.

Endemic. On mountain at altitudes from 1,500 to 3,500 m.

Specimens cited;

Taipei Co.: Chulu, *H. Y. Liu* 2002.

Hsinchu Co.: Chingchuan to Kuanku, *S. Sasaki s.n.* July 16, 1932 (TAIF).

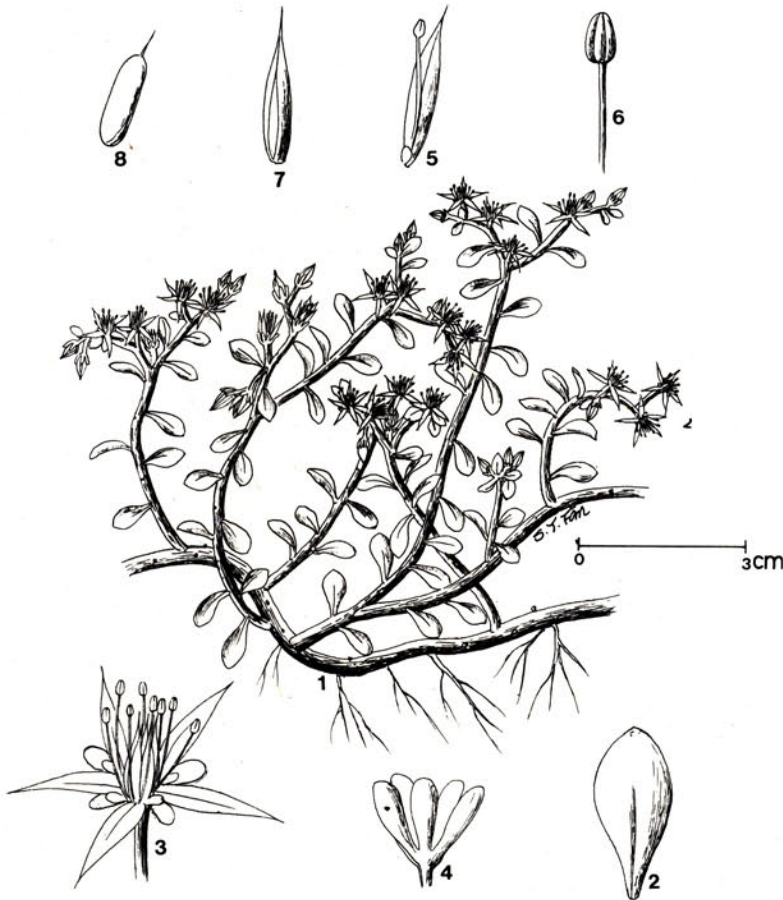


Fig. 11. *Sedum nokoense* Yamamoto. 1. Habit; 2. Leaf; 3. Flower; 4. Sepals; 5. Petal and stamen with a gland; 6. Stamen; 7. Follicle; 8. Seeds.



- Taichung Co.: Kukuan, *C. H. Ou* 4403 (TCF). Chinshan to Pahsinlu, *W. S. Tang* 1203 & 1782. Pashienshan, *Liu et al.* 320, *M. T. Kao et al.* 2640. Poai, *M. T. Kao* 9489. Chinshan to Kukuan, *T. C. Huang et al.* 9663. Lishan, *F. Y. Lu & C. H. Ou* 3541 (TCF). Pilushi, *F. Y. Lu & C. H. Ou* 3540, 3591 (TCF).
- Nantou Co.: Tunyuan, *T. Suzuki s.n.* Aug. 26, 1929. Tunyuan to Yunhai, *T. C. Huang et al. s.n.* Aug. 11, 1971, *T. Suzuki* 2699, *W. S. Tang* 1827, 1828, 1829. Kuantaoshi, *H. J. Chang* 2200.
- Taitung Co.: Yenping logging track, *C. H. Ou* 1968 (TCF).
- Hualien Co.: Talukou, *Suzuki & Fukuyama s.n.* Aug. 11, 1936, *Suzuki s.n.* Aug. 12, 1932, *Sasaki s.n.* June 1, 1933. Nengkaoyueh, *Sasaki s.n.* Aug. 19, 1932.
- Ilan Co.: Boboshan, *M. T. Kao* 5705.

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

*Sedum microsepalum sensu* Liu & Chung, Fl. Taiwan 3: 10. 1977, *pro parte*; non Hayata. 尖萼佛甲草

A fleshy herb; stem glabrous, decumbent at base, rooting at nodes, erect upwards, non-branched, 17-25 cm high. Leaves alternate, oblanceolate, or oblong-lanceolate, 20-25 mm long, 0.5 mm wide, obtuse at apex, cuneate at base, entire. Flowers in cymes, sessile; sepals 5, unequal in length, linear or linear-lanceolate, 1.5-3 mm long, 0.5 mm wide, obtuse at apex, green, glabrous; petals 5, linear-lanceolate, 6 mm long, 0.2 mm wide, acuminate at apex, yellow; stamens 10, 2-whorled; anthers yellow, subcordate at base, obtuse at apex; glands 5, opposite to carpels 5, connate at base, stigma beak-like, 2 mm long. Follicles 5, coriaceous, 4-5 mm long, 0.1 mm wide; tests yellow. Flower and fruit periods from August to October.

Endemic. On mountain at altitudes from 1,800 to 3,000 m.

Specimens cited:

Nantou Co.: Yushan, *Kawakami & Mori s.n.* Oct. 1906 (TAIF). Fengfunshan, *C. C. Hsu* 6204. Chitou, *N. J. Chung* 211 (NTUF).

Chiayi Co.: Alishan, *M. T. Kao* 7719, *T. C. Huang & M. T. Kao* 1779, *W. S. Tang* 1670, 1850, *C. C. Hsu & M. T. Kao* 6872, *S. Sasaki s.n.* Dec. 7, 1933, *T. I. Chen* 200 (NTUF), *F. Y. Lu & C. H. Ou* 1441 (TCF). Yushanchiense, *C. C. Hsu* 9186.

Taitung Co.: Chihmou, *N. J. Chung* 286 (NTUF).

Ilan Co.: Taipingshan, *Suzuki s.n.* Aug. 9, 1928.

Note: This is a reconfirmed species.

12. *Sedum sekiteiense* Yamamoto, Suppl. Icon. Pl. Formos. 2: 24. 1926.; Liu & Chung, Fl. Taiwan 3: 20. 1977. 石碇佛甲草 Fig. 12.

A fleshy herb, glabrous, creeping and decumbent below, suberect upward, 6-12 cm high, with sterile branches, the leaves of sterile branches rosulate. Leaves alternate, long-spathulate, 10-25 mm long, 4-6 mm wide, obtuse or nearly so at apex, attenuate-petiolate at base, entire. Flowers in cymes, sessile; sepals 5, unequal in length, spathulate or linear-oblanceolate, 2.8-4 mm long, 0.9 mm wide, obtuse at apex, narrowly truncate at base, glabrous, greenish; petals 5, linear-lanceolate, yellow; stamens 10; anthers yellow, oblong, 0.7 mm long, 0.5 mm wide, obtuse at apex, subcordate at base; glands 5, opposite with carpels; carpels 5,



Fig. 12. *Sedum sekiteiense* Yamamoto. 1. Habit; 2. Leaf; 3. Flower; 4. Sepals; 5. Petal and stamen; 6. Stamen; 7. Pistil with glands; 8. Follicle; 9. Seed.

connate at base, free upward, rostrate at apex, stellate-spreading later. Follicles 5, coriaceous, 5 mm long; seeds many, oblong, 0.6 mm long, 0.3 mm wide; testa yellow; embryo oblong, 0.4 mm long, dull-white or yellowish. Flower and fruit periods from April to June.

Endemic. On mountain at altitudes from 200 to 1,500 m.

Specimens cited:

Taipei Co.: Shihting, *N. J. Chung* 267 (NTUF). Pingshi, *W. S. Tang* 1797 & 1799. Tatanunshan, *R. C. Li* s. n. June 10, 1987.

13. *Sedum stellariaefolium* Franch. in *Nouv. Arch. Mus. Hist. Nat. Paris* II. 7: 10. 1883.

*Sedum drymarioides sensu* Yamamoto, *Suppl. Icon. Pl. Formos.* 2: 21. 1926; Liu & Chung, *Fl. Taiwan* 3: 16. 1977, *pro parte; non* Hance. 火焰草 Fig. 13.

An annual or biennial fleshy herb, with glandular hairs; stem erect, brownish, somewhat ligneous, 10-15 cm high, branched at middle and low. Leaves alternate,

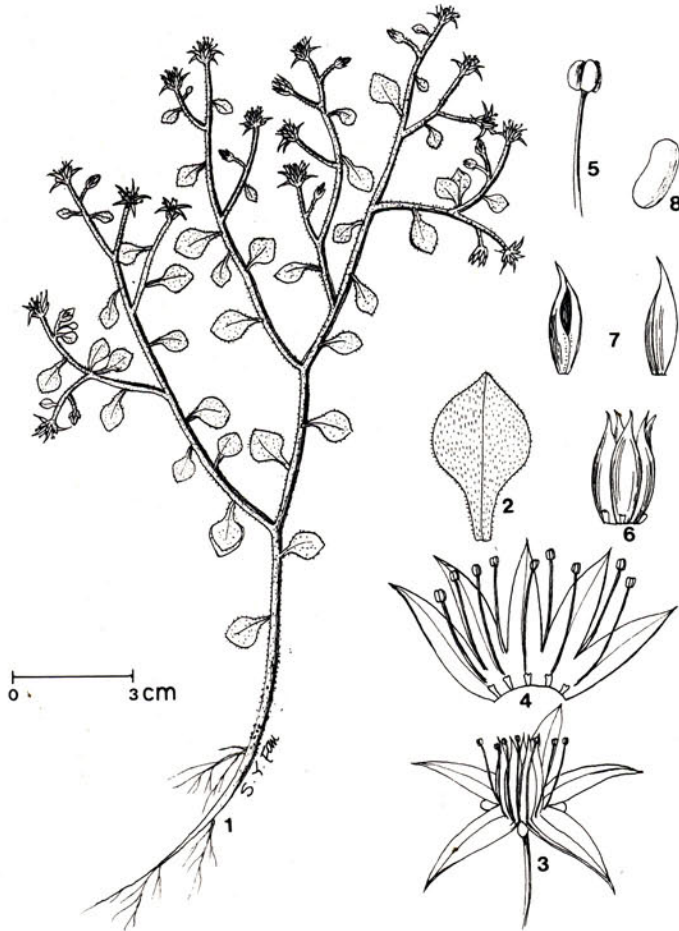


Fig. 13. *Sedum stellariaefolium* Franch. 1. Habit; 2. Leaf; 3. Flower; 4. Petals and stamens with glands; 5. Stamens; 6. Pistil with glands; 7. Follicle; 8. Seed.

obovate-rhomboided, 7-15 mm long, 5-10 mm wide, acute at apex, wide-cuneate at base, entire; petioles 5-6 mm long. Flowers in cyme-raceme; pediceles 5-10 mm long; sepals 5, lanceolate to oblong, 1-2 mm long; petals 5, lanceolate-oblong, 3-5 mm long, yellow; stamens 10, shorter than petals, 2-whorled; glands wide-spathulate to wide-cuneate; carpels 5, oblong, nearly erect, 4 mm long; style short. Follicles 5, connate at base; seeds oblong-ovate, 0.3 mm long, testa striated, brown. Flower and fruit periods from July to August.

Mainland China. On mountain at altitudes from 1,500 to 2,500 m, especially on the shady stone slit.

Specimens cited:

- Nantou Co.: Tungpu, Suzuki *s.n.* July 28, 1935. Nengkaoshan, Matsuda *s.n.* Aug. 1919. Chihyuanshanchuang, W. S. Tang 1787, 1801. Lushan to Tunyuan, W. S. Tang 1826.  
Hualien Co.: Lanshan, T. C. Huang 4290.



14. *Sedum uniflorum* Hook. & Arn., Bot. Beech. Voy. 263. 1841; Liu & Chung, Fl. Taiwan 3: 23. 1977.

*Sedum sasakii* Hayata, Icon. Pl. Formos. 3: 111. 1913; 疏花佛甲草 Fig. 14.

A perennial fleshy herb; stem tufted, prostrate, emitting fibrous roots at base, many-branched, 5-7 cm high. Leaves sessile, alternate, densely arranged, narrowly cylindrical-oblong, 3-5 mm long, 1.5-2.2 mm wide, round at apex, entire and glabrous. Flowers solitary, occasionaly 5-10, in terminal spike, sessile; sepals 5, oblong-linear, 3 mm long, 1 mm long, obtuse or rounded at apex, slightly cuneate at base; petals 5, ovate-spathulate, 3.5 mm long, 1.5 mm wide, acute at apex, slightly cuneate at base, yellow; stamens 10, the inner 5 petalous, shorter than petals; anthers elliptic, 0.5 mm long, obtuse or obscurely so at apex; carpels 5, connate at base, free upwards, elongate-ovate, acuminate at apex, 2.4 mm long, verticillately spreading when mature. Follicles 5; testa yellow, 0.5 mm long. Flower and fruit periods from April to June.

Japan, the Ryukyu and northern part of Taiwan, especially on sandy place of the seashore.

Specimens cited:

Taipei Co.; Aoti, *Simada s. n.* May 2, 1932.

Keelung city: Tienliaokung, *Sasaki s. n.* May 1, 1912 (TAIF).

Ilan Co.: Tali, *H. N. Yang s. n.* May 17, 1979. Wushihbi, *W. S. Tang 1796 & 1804.*



Fig. 14. *Sedum uniflorum* Hook. & Arn. 1. Habit; 2. Leaf; 3. Flower; 4. Follicle.

## ACKNOWLEDGEMENT

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# 臺灣植物誌之觀察 (6)

## 佛甲草亞科 (景天科)

湯惟新 黃增泉

### 摘 要

臺灣景天科之植物共可分為兩亞科：燈籠草亞科及佛甲草亞科。本文僅處理佛甲草亞科十五個分類羣，認定兩屬——八寶屬 (*Hylotelephium*) 和佛甲草屬 (*Sedum*)，並增加一新記錄種——珠芽佛甲草 (*Sedum bulbiferum* Makino) 及三新同物異名——等萼佛甲草 (*Sedum triangulisepalum* Liu & Chung)、截柱佛甲草 (*Sedum truncatistigma* Liu & Chung)、青山佛甲草 (*Sedum taiwaniana* Ying)，並確定臺灣佛甲草 (*Sedum formosanum* N. E. Br.)、杉葉佛甲草 (*Sedum cryptomerioides* Bart. & Yamamoto) 和尖萼佛甲草 (*Sedum parvisepalum* Yamamoto) 等三種的存在。