

Saxifraga: Studies of the Flora of the Kunlun and the Karakorum Mountains, Central Asia, 2¹⁾

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This is the result of the identification of *Saxifraga* collected between 1987 and 1990 from the Kunlun (including the Hoh Xil Range) and the Chinese side of the Karakorum Mountains, central Asia. Valid names with synonymy, distribution, specimens collected, and partly, notes are given to eleven species found in the region.

Key to the species is prepared. The phytogeography is discussed.

(Continued from J. Jpn. Bot. 70: 11–31, 1995)

Between 1987 and 1990 the first and second authors have surveyed the floras of the Kunlun and Karakorum Mountains in China. This is the second paper coming after *Astragalus* (Ohba et al. 1995), and the first inventory of *Saxifraga* in this region.

Saxifraga is a highly diversified genus in both moist and dried alpine zones in Himalaya to SW China through S Tibet and N Burma. Especially the section *Ciliatae* is recognized as a representative group specifically diversified in the Sino-Himalayan floristic region, and more than 80 species have been recorded from Himalaya, Tibet and SW China. Though the Chinese species was revised in *Flora of Reipublicae Popularis Sinicae* by Pan (1992), only two species, *S. sibirica* and *S. pulvinaria*, were recorded from the Kunlun and the Karakorum Mountains. We have found ten species in our collection, among them six belong to the section *Ciliatae*.

We have arranged these according to the following key and given synonymy, distribution, specimens

collected, habitat, and partly, notes on variation and colour of flowers as well as taxonomic treatment.

Key to the Species

- 1a) Leaves palmately 5–7-lobed with cordate base [sect. *Mesogyne*] 2
- 2a) Bracteal leaves with bulbils; flowers solitary ...
..... 1) *S. cernua*
- 2b) Bracteal leaves without bulbils; flowers 2 or 3.
..... 2) *S. sibirica*
- 1b) Leaves not palmately lobed neither cordate ... 3
- 3a) Flowers white, pink or purple-red; moss-like cushion-formed herb without conspicuous rosulate leaves; leaves amplexicaul or sessile with wide base, long persistent after died [sect. *Porphyron*] 4
- 4a) Petals purple-red or pink (very rarely white); leaves with amplexicaul base
..... 3) *S. oppositifolia*
- 4b) Petals white; leaves not amplexicaul 5

- 5a) Petals 6–7 mm long, obovate, apex round or obtuse; cauline leaves oblong, entire with sparse glandular hairs 4) *S. subsessiliflora*
- 5b) Petals 3.5–5.3 mm long, linear-oblongate or narrow oblanceolate, apex usually retuse, conspicuously ciliate-dentate 5) *S. pulvinaria*
- 3b) Flowers yellow; caespitose or medium-sized herb, if cushion-formed conspicuously long petiolate rosulate leaves present; leaves sessile with attenuate or round base or petiolate [sect. Ciliatae] 6
- 6a) Sepals reflexed at flowering 7
- 7a) Flowering stems congested forming a loose cushion; rosulate leaves long petiolate, long persistent after died 6) *S. tibetica*
- 7b) Flowering stems not congested; rosulate leaves sessile or nearly so, not long persistent after died 8
- 8a) Leaves spatulate, 4–6 mm long; flowers solitary without glandular hairs 7) *S. nanella*
- 8b) Leaves linear-oblongate, (5–)6–10 mm long; flowers 2–4 with glandular hairs 8) *S. pseudohirculus*
- 6b) Sepals erect or nearly so at flowering 9
- 9a) Petals 10–14 mm long, usually 9–13-nerved; sepals 5–8 mm long, hairy on outer surface 9) *S. montana*
- 9b) petals 2.5–8 mm long, usually 5-nerved; sepals 2–3.5 mm long, glabrous on the outer surface 10
- 10a) Flowering stems usually 10–25 cm long with 2 or 3 flowers 10) *S. heleonastes*
- 10b) Flowering stems 1–4 cm long; flowers solitary 11) *S. parva*

Sect. Mesogyne

1) ***Saxifraga cernua*** L., Sp. Pl.: 403 (1753). C. Y. Yang in Clav. Pl. Xinjiang. 2: 475 (1983). J. T. Pan in Fl. Reipubl. Pop. Sin. 34 (2): 77 (1992). Lectotype: LINN 575.44 (Webb 1987).

Specimens: XINJIANG. Taxkorgan Xian: Honqilapu, 4700 m. 12 Aug. 1989. WWF4882 (KUN, TI). Hotan Xian: Taxkax, 4000 m. 8 July 1988. WOWF2549 (KUN, TI); Kaxtax, Bageqi, 3700 m. 10 July 1988. WOWF3048 (KUN, TI); Kaxtax, 4000 m. 8 July 1988. WOWF2006 (KUN, TI). Ruoqiang Xian: Binghe, 4400 m. 21 Aug. 1988. WOWF4234 (KUN, TI); Aqqikkol, 4300 m. 17 Aug. 1988. WOWF2818 (KUN, TI); E of Aqqikkol, 4600 m. 17 Aug. 1988. WOWF2243 (KUN, TI).

Habitat: In cracks of rocks on steep rocky slopes, among scree or on gravel in the alpine zone.

Distr.: Circumboreal, and alpine regions in the Northern Hemisphere including Himalaya and Central Asia.

This is morphologically and cytologically variable (Wakabayashi and Ohba 1988). Our Kunlun specimens show rather narrow range of morphological variations. Our collection agrees with the Pl. 16, fig. 6 left of Flora Reipubl. Pop. Sin. 34 (2), having aerial stems with a terminal solitary flower and numerous bracteal leaves with axillary bulbils. The bracteal leaves are narrowly ovate or lanceolate, and sometimes apically tricuspidate, 5–10 mm long. The radical and cauline leaves from lower one to three nodes are widely ovate or circular with long petioles and laminae palmately incised into ovate or oblong-ovate lobes with apiculate apex and cordate base. The flower is probably abortive, and the plants are reproduced by the bulbils.

2) ***Saxifraga sibirica*** L., Sp. Pl., ed. 2: 577 (1762). C. B. Clarke in Hookf. f., Fl. Brit. India 2: 390 (1878). Hara in Hara et al., Enum. Fl. Pl. Nepal 2: 155 (1979). J. T. Pan in Fl. Xizang. 2: 461 (1985); in Fl. Reipubl. Pop. Sin. 34 (2): 76 (1992). Lectotype: Sibir. LINN 575.49 (Webb 1987).

Specimen: XINJIANG. Taxkorgan Xian: Kalaqigu, 4400 m. 16 Aug. 1989. WWF5076 (KUN).

Habitat: On meadow in the alpine zone.

Distr.: E Europe to Siberia and southward to

Himalaya.

Pan (1992) reported the occurrence of this species in Taxkorgan. This has two or three normal flowers. The bracteal leaves have no bulbil, and except the lowest they are much reduced. The lobes of radical and lower cauline leaves are transversely oblong and rarely widely ovate with inconspicuously apiculate apex.

Sect. Porphyron

3) *Saxifraga oppositifolia* L., Sp. Pl.: 402 (1753). C. B. Clarke in Hook. f., Fl. Brit. India 2: 397 (1878). Engl. et Irmisch. in Engl., Pflanzenr. 69: 616 (1919). A. Losinsk, in Fl. URSS 9: 197 (1939). C. Y. Yang in Clav. Pl. Xinjiang. 2: 474 (1983). J. T. Pan in Fl. Reipubl. Pop. Sin. 34 (2): 219 (1992). Lectotype: LINN 575.32 (Webb 1987).

Specimens: XINJIANG. Taxkorgan Xian: Honqilapu, 4600 m. 13 Aug. 1989. WWF4900 (KUN, TI). Akto Xian: Qiaqkelake, 43–4400 m. 13 July 1987. W870623 (KUN); Aketashi, 3800 m. 24 June 1987. W870166 (KUN); Qiaernong, 3800 m. 9 July 1989. WWF4644b* (KUN, TI); loc. cit., 37–3800 m. 9 July 1989. WWF5010 (KUN). Yutian Xian: Kekeya, 3900 m. 6 Aug. 1987. W s.n. (KUN). Hotan Xian: Taxkax, 4000 m. 9 July 1988. WOWF2551 (KUN, TI). Qira Xian: Nuer, 4100 m. 26 June 1988. WOWF1918 (KUN, TI); loc. cit., 4100 m. 27 June 1988. WOWF3025 (KUN, TI); Nuryamei, 4200 m. 27 June 1988. WOWF2464* (KUN, TI).

Habitat: A cushion-formed plants on soils among stones or rocks, and also gravel slopes in the alpine zone.

Distr.: Circumboreal including Himalaya and Tibet.

This is the widely distributed species and occurs throughout this region. The flowers have usually purplish red petals, reddish calyx, pale purplish red filaments, greyish purple-red anthers, and pale green ovaries with purplish red styles. The colourless disks surround the lower half of the ovaries. The asterisked

specimens have white or pinkish petals.

4) *Saxifraga subsessiliflora* Engl. et Irmisch. in Engl., Pflanzenr. 69: 573, t. 118 (1919). H. Sm. in Bull. Brit. Mus. Bot. 2 (4): 90 (1958). J. T. Pan in Fl. Xizan. 2: 510, t. 168, f. 15–21 (1985); in Fl. Reipubl. Pop. Sin. 34 (2): 212, t. 56, f. 17–23 (1992). Type: Sikkim, Bijan. King's collector in 1888 (W).

Specimens: XINJIANG. Taxkorgan Xian: Kalaqigu, 4500 m. 16 Aug. 1989. WWF5083 (KUN, TI). Akto Xian: Wuyitage, 3500 m. 6 Aug. 1989. WWF4838 (KUN); Qiaernong, 3800 m. 9 July 1989. WWF4643 (KUN, TI). Hotan Xian: Kaxtax, 4150 m. 8 July 1988. WOWF2015 (KUN, TI). Qira Xian: Nuer, 3900 m. 28 June 1988. WOWF1931 (KUN, TI); Nuryamei, 4200 m. 27 June 1988. WOWF2463 (KUN, TI); Nuer, 4200 m. 27 June 1988. WOWF2923 (KUN, TI); loc. cit., 4100 m. 27 June 1988. WOWF3024 (KUN, TI).

Habitat: A cushion-formed plant on gravel or stony slopes or rarely on soil banks by streams in the alpine zone.

Distr.: E Himalaya (Sikkim and Bhutan) to NW Yunnan (Zhongdian) through Tibet, and new to Xinjiang (Karakorum and Kunlun Mts.).

The white petals are spreading at flowering, and stamens consist of green filaments and yellow anthers before dehiscence. Pan (1985, 1992) described that the calyx lobes are widely ovate to ovate 1.5–2.5 mm long and the petals are obovate, 3–3.5 mm long. In our specimens the calyx lobes are widely oblong or widely oblong-ovate, 2.5–3 mm long and the petals attaining ca. 6 mm long. At present we consider that this species has apparently wider ranges of variation of the length of calyx lobes and petals than that previously recognized.

5) *Saxifraga pulvinaria* H. Sm. in Bull. Brit. Mus. Bot. 2 (4): 105, f. 4m–o (1958). Hara in Hara et al., Fl. Pl. Nepal 2: 154 (1979). J. T. Pan in Fl. Reipubl. Pop. Sin. 34 (2): 220 (1992). Type: Kunawar, Simla Hill States (Herb. Royle), not seen.

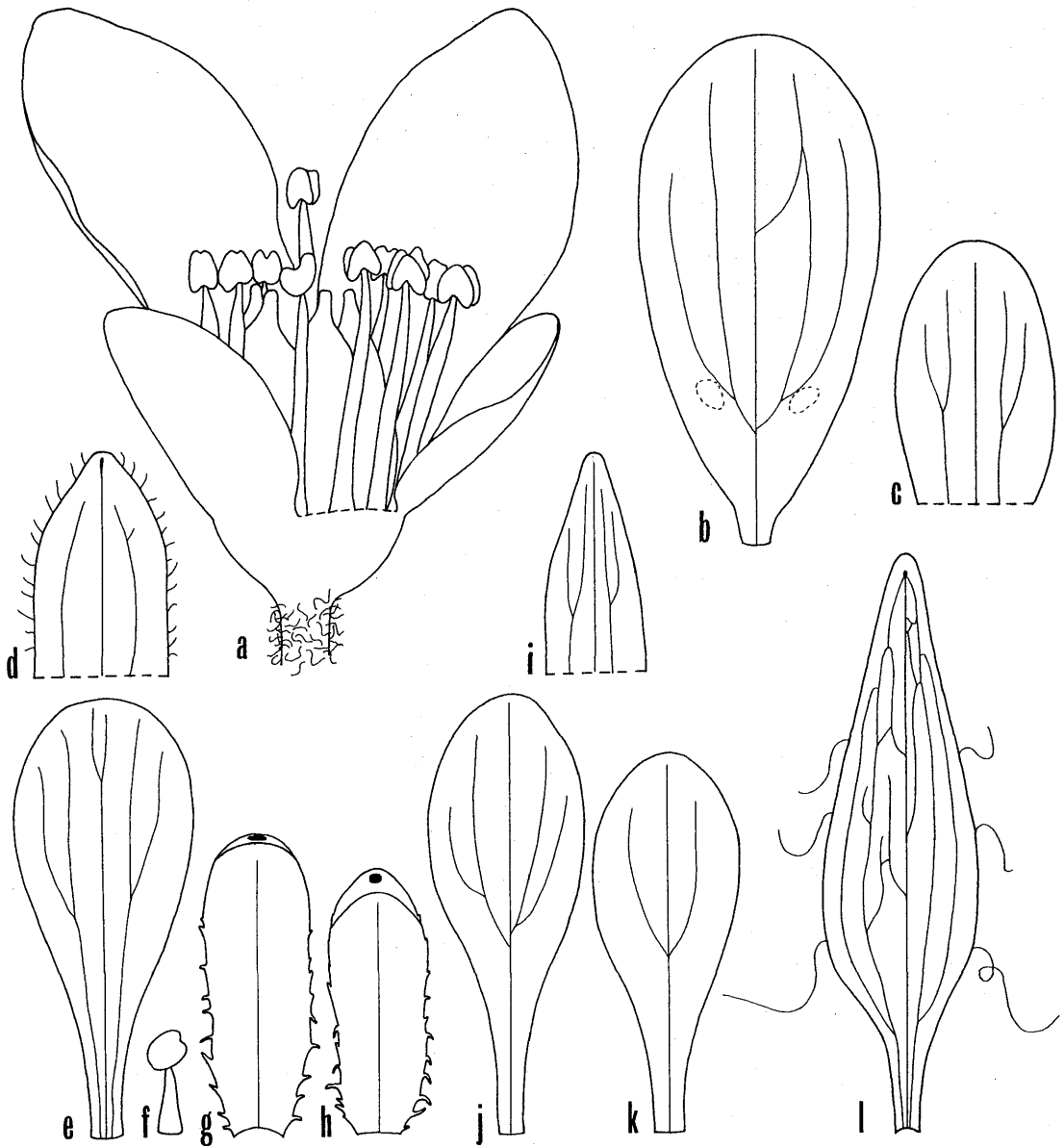


Fig. 1. a-c: *Saxifraga parva* Hemsl. (WOWF4142). d-h: *S. subsessiliflora* Engl. et Irmsch. (WOWF4643). i-l: *S. tibetica* A. Losinsk (WOWF2693). a: Flower, one sepal and three petals are removed. b, e, j, k: Petal. c, d, i: Sepal. f: Stamen. g, h, l: leaf. All $\times 10$.

We have not collected this, but Pan (1992) reported it from Taxkorgan.

Sect. Ciliatae

6) *Saxifraga tibetica* A. Losinsk. in Bull. Jard. Bot. Princ. URSS 27: 597, f. 1 (1928). J. T. Pan in Fl. Xizan. 2: 483 (1985); in Fl. Reipubl. Pop. Sin. 34 (2):

202, t. 54, f. 10-14 (1992). Types: Tibet. A fl. Dzagyngol, in collibus ripariis, 4500 m. Ladigin, 12-27 July 1890 (LE); in jugo Burchan-Budda, decl. bor., in angustis Nomochun, 4500 m. Ladigin, 22 May-4 June 1890 (LE); Tibet bor., ad decursum superiorem fl. Jangtze. N. Przewalski (LE); loc. cit., 4500 m. N.

Przewalski, 24 May–5 June 1884 (LE).

Specimens: XINJIANG. Ruoqiang Xian: Qimantag Mountain, 45–4850 m. 9 Aug. 1988. WOWF3969 (KUN, TI); Hasheklei river, 4700 m. 19 Aug. 1988. WOWF4141 (KUN, TI). TIBET. Baingoin Xian: Whale Lake, 49–5100 m. 14 Aug. 1988. WOWF4071 (KUN, TI); loc. cit., 5000 m. 15 Aug. 1988. WOWF3084 (KUN, TI); Kunlun Mountain, NEN of Whale Lake, 5000 m. 15 Aug. 1988. WOWF2227 (KUN, TI); Biyunshan, N of Whale Lake, 5000 m. 14 Aug. 1988. WOWF2213 (KUN, TI); loc. cit., 5100 m. 14 Aug. 1988. WOWF2693 (KUN, TI). QINGHAI. Golmud Xian: 920 km in the highway from Qinghai to Tibet, 4500 m. 6 Sept. 1988. WOWF2847 (KUN, TI); Hoh Xil Mts.: Gang-qi-qu, 4950 m. 27 June 1990. K108 (KUN); Wu-lan-wu-la, 5000 m. 2 July 1990. K729 (KUN), K148 (KUN), K751 (KUN), K740 (KUN); Ma-liao-shan, 5050 m. 3 July 1990. K169 (KUN); Xi-jin-wu-lan, 5000 m. 15 July 1990. K801 (KUN); Lei-xie-wu-dan, 5100 m. 22 July 1990. K264 (KUN); loc. cit., 5000 m. 5 Aug. 1990. K395 (KUN); Ku-sai-hu, 4600 m. 11 Aug. 1990. K474 (KUN).

Habitat: On sandy-gravel or gravel slopes in the alpine zone.

Distr.: SW of Qinghai to Tibet and new to Xinjiang (Kunlun Mts.).

The petals are yellow with orange or brownish oblong spots inside and pale purple-red outside, but sometimes without any spot inside. The anthers are deep yellow before dehiscence.

7) *Saxifraga nanella* Engl. et Irmsch. in Bot. Jahrb. **50** (Beibl. 144): 44 (1914); in Engl., Pflanzenr. **67**: 155, f. 39 (1916). Hara in Hara et al., Enum. Fl. Pl. Nepal **2**: 154 (1979). J. T. Pan in Fl. Xizan. **2**: 503, t. 165, f. 28–33 (1985); in Fl. Reipubl. Pop. Sin. **34** (2): 175 (1992), incl. var. *glabrisepala* J. T. Pan. Type: Tibet, 35°21'N, 94°40'E, alt. 5000 m. Wellby and Malcolm on 12 Aug. 1896 (K).

Specimens: XINJIANG. Ruoqiang Xian: Aqqikkol, 4260 m. 12 Aug. 1988. WOWF4051 (KUN,

TI); N slope of Qimantag Mountain, 4400 m. 9 Aug. 1988. WOWF2667 (KUN, TI); Qimantag Mountain, 45–4850 m. 9 Aug. 1988. WOWF3968 (KUN, TI); Qimantag, 4500 m. 10 Aug. 1988. WOWF2186 (KUN, TI); Aqqikkol, 4300 m. 17 Aug. 1988. WOWF2716 (KUN, TI); E. of Aqqikkol, 4600 m. 17 Aug. 1988. WOWF2245 (KUN, TI); Hasheklei river, 4730 m. 19 Aug. 1988. WOWF4143 (KUN, TI); Muztag, SE of Xuezaobi, 5100 m. 20 Aug. 1988. WOWF2251 (KUN, TI). TIBET. Baingoin Xian: Biyun Mountain, N of Whale Lake, 5000 m. 14 Aug. 1988. WOWF2215 (KUN, TI); Biyunshan near Whale Lake, 5100 m. 14 Aug. 1988. WOWF2698 (KUN, TI); Whale Lake, 49–5100 m. 14 Aug. 1988. WOWF4072 (KUN). Hoh Xil Mts.: Wu-lan-wu-la, 5000 m. 1 July 1990. K146 (KUN); loc. cit., 2 July 1990. K741 (KUN); Xi-jin-wu-lan, 5000 m. 14 July 1990. K221 (KUN); Lei-xie-wu-dan, 4950 m. 25 July 1990. K285 (KUN); loc. cit., 5000 m. 26 July 1990. K287 (KUN); loc. cit., 4880 m. 27 July 1990. K898 (KUN); Tai-yang-hu, 51–5200 m. 29 July 1990. K322 (KUN); loc. cit., 5000 m. 31 July 1990. K905 (KUN); loc. cit., 4950 m. 1 Aug. 1990. K352 (KUN); Wu-zie-feng, 4800 m. 5 Aug. 1990. K959 (KUN); Ku-sai-hu, 4800 m. 11 Aug. 1990. K448 (KUN).

Habitat: Among rocks, rock crevices, and cushions of various species; sometimes occurring in limestone areas.

Distr.: NW Yunnan, Tibet, Qinghai and new to Xinjiang (Kunlun Mts.).

This was found in the alpine zone throughout the Kunlun Mountains. The flowers have yellow petals with numerous orange dots in the lower half, anthers deep yellow before dehiscence, and bright red follicles when matured.

8) *Saxifraga pseudohirculus* Engl. in Bot. Jahrb. **48**: 590 (1912). Engl. et Irmsch. in Engl., Pflanzenr. **67**: 134, t. 30p–x (1916). H. Sm. in Acta Hort. Gothob. **1**: 12 (1924). J. T. Pan in Fl. Xizan. **2**: 490, t. 161, f. 9–11 (1985); in Fl. Reipubl. Pop. Sin. **34** (2): 204 (1992).

Type: S. Tibet, Chumbi. King's collector (=Dungboo) s.n. (CAL).

Specimen: QINGHAI. Golmud Xian: 920 km in the highway from Qinghai to Tibet, 4600 m. 6 Sept. 1988. WOWF2804 (KUN, TI).

Habitat: On grassy slopes in alpine zone.

Distr.: SE Tibet, W Sichuan, Qinghai, S Gansu and Shanxi.

9) *Saxifraga montana* H. Sm. in Acta Hort. Gothob. 1: 9, f. 2e, f, t. 6A (1924). J. T. Pan in Fl. Xizan. 2: 480 (1985); in Fl. Reipubl. Pop. Sin. 34 (2): 94 (1992). Lectotype (selected here): China, Northwest Szechuan: Mountains E of Matang, ca. 4800 m. H. Smith 4414 (UPS).

Specimens: XINJIANG. Taxkorgan Xian: Honqilapu, 46–4700 m. 5 July 1987. W870467 (KUN); loc. cit., 4600 m. 12 Aug. 1989. WWF4890 (KUN, TI); loc. cit., 4500 m. 12 Aug. 1989. WWF4885 (KUN, TI); Maza, 4000 m. 3 July 1987. W870435 (KUN); Kekeya, 4300 m. 8 July 1987. W870506 (KUN); Mintiegai, 4600 m. 15 Aug. 1989. WWF5051 (KUN, TI). Akto Xian: Qiakelake, 43–4400 m. 13 July 1987. W87067 (KUN). Yutian Xian: Kekeya, 4700 m. 5 Sept. 1987. W871478 (KUN); loc. cit., 3900 m. 6 Aug. 1987. W870896 (KUN). Hotan Xian: Taxkax, 4000 m. 8 July 1988. WOWF2546 (KUN). Qira Xian: Nuryamei, 4200 m. 27 June 1988. WOWF2466 (KUN, TI).

Habitat: On unstable stones near glacier, alpine meadow and in marsh grasses.

Distr.: Himalaya (Kashmir to Bhutan), S and E Tibet, NW Yunnan, W Sichuan, Qinghai, S Gansu, Shanxi, and new to Xinjiang (Karakorum and Kunlun Mts.).

This has yellow spotted petals, but the spot is invisible in our Kunlun specimens.

10) *Saxifraga heleonastes* H. Sm. in Acta Hort. Gothob. 1: 5, f. 1f–i, t. 5A (1924). J. T. Pan in Fl. Reipubl. Pop. Sin. 34 (2): 92, t. 20, f. 1–7 (1992). Lectotype (selected here): China, North Szechuan,

west of Huang-chlen-kuan, in marshy ground, ca. 3200 m. H. Smith 4063 (UPS).

Specimen: TIBET. Rutog Xian: Guobianchuan, 4300 m. Sept. 1987. W871384 (KUN).

Habitat: On alpine meadow.

Distr.: Tibet, N and W Sichuan and Shanxi.

11) *Saxifraga parva* Hemsl. in J. Linn. Soc. (Bot.) 30: 112 (1895). Engl. et Irmsch. in Engl., Pflanzenr. 67: 109 (1916). Hara in Hara et al., Enum. Fl. Pl. Nepal 2: 154 (1979). J. T. Pan in Fl. Xizan. 2: 482 (1985); in Fl. Reipubl. Pop. Sin. 34 (2): 99 (1992). Type: Tibet, sides of rivulets, 17000 ft. Thorold (K).

Specimens: XINJIANG. Ruoqiang Xian: Hasheklei river, 4770 m. 19 Aug. 1988. WOWF4142 (KUN, TI). Hoh Xil Mts.: Wu-xie-feng, 4800 m. 5 Aug. 1990. K952 (KUN).

Habitat: On marsh meadow in alpine zone.

Distr.: E Himalaya (Nepal and Bhutan), Tibet, Qinghai, and new to Xinjiang (Kunlun Mts.).

Discussion

The high species diversity of *Saxifraga* is characteristic of the Sino-Himalayan floristic region: 84 species were known from the Himalaya, 101 from Tibet and 136 from the Hengduan Mts. Only 11 species were found in the Kunlun and the Chinese side of the Karakorum Mountains. It means that the Kunlun and the Karakorum are the outside or endmost area of the Sino-Himalayan floristic region. *Saxifraga* was limited there in the alpine zone with streams from glaciers, but not found in montane and foot zones. Its scantiness is due to the arid condition of these mountains.

Except *S. cernua* all the species were found from Tibet. Eight of the 11 species occur in the Himalaya and the Hengduan Mts. However, only three species, *S. cernua*, *S. sibirica*, *S. oppositifolia*, are in common with the floras of Tianshan Mts. and circumboreal areas. There is no common species of section Ciliatae.

Section Ciliatae is represented by only six species

in the Kunlun and the Karakorum, though it shows a great diversity in the Himalaya, Tibet and the Hengduan Mts. The species of the Ciliatae found in the Kunlun and the Karakorum have wide ranges covering the Himalaya, Tibet and Hengduan Mts., but *S. tibetica*, *S. pseudohirculus* and *S. heleonastes* have not been found in the Himalaya. *Saxifraga tibetica* and *S. parva* are also absent from the Hengduan Mts.

Saxifraga tibetica A. Losinsk., which was known from Tibet and SW Qinghai and found in central and eastern Kunlun Mts., is the only representative which is limited to the Kunlun and the adjacent areas. Pan (1992) classified this in the series Tanguticae, consisting of five species concentrated to Tibetan Plateau (including Tibet, W and N Sichuan, Qinghai, and some extension to Gansu and Shanxi). *Saxifraga tibetica* occupies the northwestern part of the whole range of the series Tanguticae, and is distinguished from the closest species, *S. przewalskii* Engl., by having flowering stems with solitary flowers.

Saxifraga pseudohirculus Engl., which Pan classified in the series Tanguticae, differs greatly from the others by the radical leaves smaller than the cauline leaves and the narrowly oblong or linear petals, and is reasonably separated from the series together with *S. cacuminum* H. Sm.

Among the six species collected from the Karakorum, three are classified in section Porphyron, two in sect. Mesogyne, and only one, *S. montana*, in sect. Ciliate. Though vegetationally the Karakorum is considered to be more humid than the Kunlun, the almost complete lack of the species of Ciliatae from the Karakorum is quite remarkable, because the species of Ciliatae are assumedly favourable to humid

condition.

In conclusion the Kunlun mountains are regarded as endmost areas of the Sino-Himalayan floristic region and floristically greatly differ from Tianshan Mts. The scantiness of the species is due to the arid condition of the mountains. The Kunlun is considerably different from the Karakorum and have a proper element, Kunlun element, *S. tibetica*.

Endnote

Contribution from the Open Laboratory for Plant Diversifications, Kunming Institute of Botany in 1995.

This was supported by a Grant from the Monbusho International Scientific Research Program (Field Research), No. 06041030 (to H. O.), in 1995, from the Ministry of Education, Science and Culture, Japan.

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大場秀章, 武 素功, 秋山 忍: 中央アジア崑崙
・カラコルム産植物の分類学的研究, 2. ユキノシ
タ属 (ユキノシタ科)

崑崙とその西に連なるカラコルム山脈北側のユ
キノシタ属を分類し, その生物地理について考察

した. この地域からはムカゴユキノシタ節 2 種,
ポルフィリオン節 3 種, キリアタ節 6 種の合計 11

種が記録・採集されていることが判った。
H. Smithが記載した2種についてレクトタイプを
指定した。

ユキノシタ属は区系上の「中国・ヒマラヤ地域」
に入るヒマラヤに84種、チベットに101種、横断
山脈に136種が記録され、この地域でもっとも多
様化した属である。崑崙・カラコルム(北側)地域
には11種あるのみである。この11種のうち、
Saxifraga tibetica は崑崙とその近接地域に分布が

限定された本属唯一の崑崙要素といえる。北半球
の亜寒帯と高山に広く分布する、ムカゴユキノシ
タ、*S. sibirica*, *S. oppositifolia* の3種は、天山山
脈にも分布するが、他種は天山山脈には見られな
い。種数は極端に少ないとはいえ、崑崙・カラコ
ルム(北側)地域は、ユキノシタ属植物相からはヒ
マラヤ・中国地域に含めるのが妥当であると考え
られた。