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# The genus *Minuartia* L. (Caryophyllaceae) in the Western Himalaya

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## RÉSUMÉ

MAJUMDAR, N. C. & G. S. GIRI (1983). Le genre *Minuartia* L. (Caryophyllaceae) dans l'Himalaya occidental. *Candollea* 38: 341-348. En anglais, résumé français.

Cet article propose un examen systématique du genre *Minuartia* L. dans l'Himalaya occidental, avec une nouveauté pour la région, la description de *M. ebracteolata* Majumdar & Giri sp. nova et une clé des espèces présentées.

## ABSTRACT

MAJUMDAR, N. C. & G. S. GIRI (1983). The genus *Minuartia* L. (Caryophyllaceae) in the Western Himalaya. *Candollea* 38: 341-348. In English, French abstract.

The article presents a synopsis of the genus *Minuartia* L. in the Western Himalaya including one new record for the region, *M. ebracteolata* Majumdar & Giri sp. nova with illustration, and a key to the concerned species.

The genus *Minuartia* L. was described by Linnaeus (1753). In this genus, the capsule opens by as many valves as there are styles, in contrast to the capsule valves twice as many as styles as found in *Arenaria* and other allied genera. Fenzl (1840) recognised several natural subdivisions or sections in the genus which were well classified in the monograph by Mattfeld (1922). McNeill (1962) has discussed about the classification in the group and has made some modifications in the classification and nomenclature. The present study deals only with the taxa of this genus represented in the Himalaya, where it is restricted in Kashmir, Himachal Pradesh and Uttar Pradesh.

Edgeworth & Hooker f. (1874) described *Arenaria foliosa* and *A. kashmirica*, which were later transferred to *Minuartia* L., *M. foliosa* being only a glabrescent variant of *M. kashmirica*, is merged here with the latter. The other three taxa treated here are *M. biflora*, first reported from the region by Stewart (1972), *M. sedoides*, recorded here for the first time from this region, and *M. ebracteolata*, described here as a new species.

**Minuartia** L., Sp. Pl. ed. 1: 89. 1753 et Gen. Pl. ed. 5: 100. 1754: Fenzl in Endlicher, Gen. Pl. 965. 1840; Mattfeld in Bot. Jahrb. 57, Beibl. 126: 27 et Beibl. 127: 13. 1922; Pax & Hoffmann in Engler & Harms, Nat. Pflanzenfamilien ed. 2, 16C: 329. 1934; McNeill in Notes Roy. Bot. Gard. Edinb. 24: 100, 133. 1962 et 311. 1963; *Arenaria* subgenus vel sectio *Alsine* Benth. & Hook. f. Gen. Pl. 1: 150. 1862.

Annual or perennial herbs, small, tufted. Leaves usually linear, subulate, rarely lanceolate, somewhat rigid or flexuous, exstipulate. Flowers solitary or in dichasial cymes, terminal or axillary, usually 5-merous. Sepals free, petals 5, usually white, entire or slightly emarginate, rarely absent. Stamens usually with nectaries at base. Styles 3, capsules ovoid or oblong, opening by 3 valves. Seeds reniform, papillose or spiny, buff to dark brown. Ca. 120 species in the arctic, temperate and subtropical regions.

### Key to the Western Himalayan species

1. Plant densely caespitose or pulvinate perennial, 3-7 cm high, leaves dentate-crenate, cymes few flowered, seeds smooth or reticulate ..... 2
- 1a. Plant erect or loosely tufted perennial, 10-30 cm high, leaves entire, cymes many flowered, umbellate or subumbellate, seeds honeycombed, distinctly tuberculate ..... 3
2. Dwarf caespitose perennial, flowering shoot erect, internodes prominent in flowering shoot, leaves linear, 8-12 mm long, petals prominent, as long as or slightly longer than sepals, sepals erect at anthesis, seeds smooth or very obscurely reticulate **M. biflora**
- 2a. Dwarf cushion like perennial with woody stock, flowering shoot not erect, flowers usually remaining within the cushion, leaves linearly triangular, 5-7 mm long, petals filiform, distinctly shorter than sepals or absent, sepals spreading at anthesis, seeds reticulate ..... **M. sedoides**
3. Cymes lax, pedicels much longer than sepals, usually with a pair of bracteoles at or near the middle ..... **M. kashmirica**

- 3a. Cymes compact, pedicels usually shorter than sepals, without a pair of bracteoles.....**M. ebracteolata**

**1. *Minuartia biflora*** (L.) Schinz & Thell. in Bull. Herb. Boiss. Ser. 2, 7: 404. 1907; Stewart, Annot. Cat. Vasc. Pl. W. Pak. Kashm. 228. 1972; Rau, High Alt. Fl. Pl. 79. 1975; *Stellaria biflora* L., Sp. Pl. ed. 1: 422. 1753; *Alsine biflora* Wahlenb., Fl. Lapp. 128. 1812.

Slender, caespitose, dwarf perennial herb with vegetative and flowering shoots. Vegetative shoots prostrate or decumbent, flowering shoots more or less erect, 3-8 cm long, glabrous. Leaves crowded and imbricating on vegetative shoot, loosely arranged on flowering shoot, linear, (6.0-)8.0-12.0(-14.0) × (0.5-)0.75-1.0(-1.5) mm, acuminate, dentate crenate, slightly connate at base, glabrous, flexuous, 1-3 nerved, lateral nerves usually obscure. Pedicels terminal 2, or axillary 1-3, verrucose, (1.0-)2.0-3.0(-5.0) mm long. Sepals 5, ovate oblong, 4-5 × 1.5-2.0 mm, trinerved, acute, narrowly scarious margined, glabrous, greenish white, erect at anthesis. Petals oblong, as long as or slightly longer than sepals, membranous, finely veined inside. Stamens 10, filaments 2.0-2.5 mm long, glabrous, anthers oblong, 0.5 mm long. Capsules 3-valved, glabrous, shining, slightly longer than sepals. Seeds ovoid, reddish, smooth or very obscurely reticulate.

*Type:* Linn. Herb. 584/12, 584/13 Microphoto!

*Fl., Fr.:* July to September.

*Distribution:* the arctic Eurasia and the Alps. Recorded to be growing in Kashmir by Stewart (1972) and Rau (1975).

#### *Specimens examined*

Kashmir: Chilas, 3355 m, Aug. 1962, Wadhwa & Vohra 627; Gilgit Road, Burzil pass, 27.7.1940, *R. R. Stewart 19 904*; Musjid valley, 12 000-13 000 ft. (3650-3950 m), 26.7.1893, *J. F. Duthie 14 135* (CAL).

Himachal Pradesh: Lahul, *Oswal 10 297* (Central Drug Research Institute, Lucknow, India) (new locality recorded).

**2. *Minuartia ebracteolata*** Majumdar & Giri, *sp. nova* (fig. 1).

Proxime affinis *Minuartiae kashmiricae* (Edgew.) Mattfeld, sed differt inflorescentia compacta pauciflora, pedicellis plerumque sepalis brevioribus, bracteolis nullis.

Herba perennis, erecta vel laxe caespitosa cum surculis vegetativis et eis florentibus. Folia linearia, opposita, decussata, (8-)10-15(-20) × (0.5-)0.75-1.0(-1.5) mm, glandulari-pubescentia, saepe flexuosa, ad basin

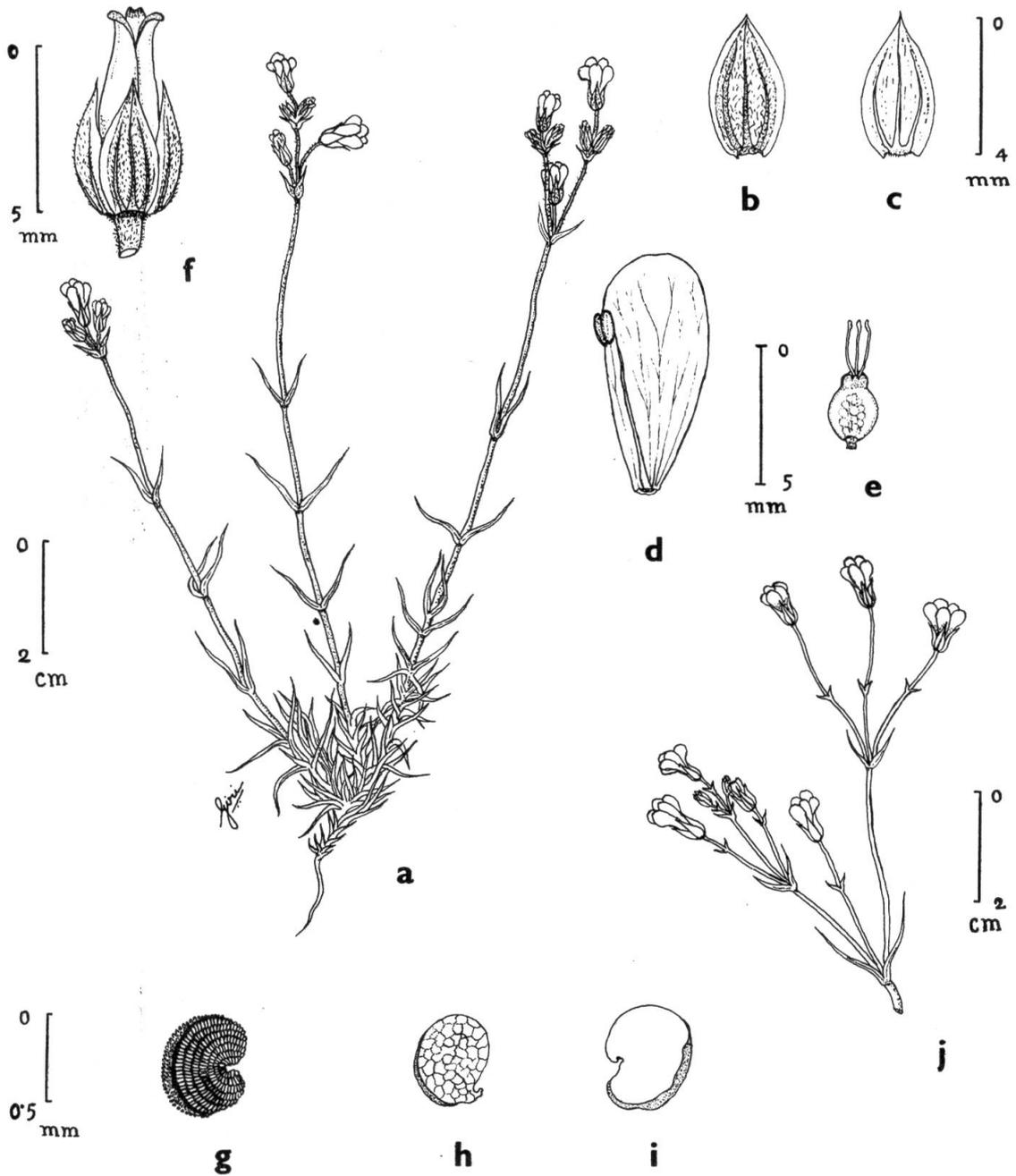


Fig. 1. — a-g, *M. ebracteolata*: a, habit; b & c, sepals (dorsal & ventral view); d, petal & stamen; e, pistil; f, dehiscent capsule with persistent sepals; g, seed. — h, seed of *M. sedoides*; i, seed of *M. biflora*; j, inflorescence of *M. kashmirica* showing bracteolate pedicels.

parum connata, acuta, integra, 1-3 nervia, nervi laterales plerumque subobscuri, internodia perbrevia in surculis vegetativis et longa in surculis floralibus. Surculi florales 10-14 cm longi, glandulari pubescentes. Cymae pauciflorae compactae, pedicelli dense glandulari pubescentes, (0-)1-4(-5) mm longi, ebracteolati. Sepala 5, ovato-oblonga vel ovato-lanceolata, (3.5-)4.0-4.5(-5.0) × 1.5-2.0 mm, valde trinervia, apice acuta vel apiculata, marginibus late scariosis, dorsaliter glandulari-pubescentia, per anthesis erecta. Petala 5, oblonga, 8-9 × 3.5-4 mm, intus subtiliter venosa, membranacea. Stamina 5, petalis opposita et petalorum basibus affixa, filamentis 6-7 mm, glabris, antheris oblongis, 0.5 mm longis, dorsifixis. Ovarium urceolatum, glabrum, stylis 3, glabris 2 mm longis, stigmatate complanato. Capsulae 3-valves, 6-7 mm longae, per dehiscens valvarum apicibus reflexis. Semina ovoidea, ca. 0.5 mm longa, atro sanguinea, favosa, manifeste tuberculata.

Closely allied to *M. kashmirica* (Edgew.) Mattfeld, but differs by its compact few flowered inflorescence, pedicels usually shorter than sepals, bracteoles absent.

Erect or loosely tufted perennial herb with vegetative shoots and flowering shoots. Leaves linear, opposite-decussate, (8-)10-15(-20) × (0.5-)0.75-1.0(-1.5) mm, glandular pubescent, often flexuous, slightly connate at base, acute, entire, 1-3 nerved, lateral nerves usually subobscure. Internodes very short in the sterile shoots and long in the flowering shoots. Flowering shoots 10-14 cm long, glandular pubescent. Cymes few-flowered, compact, pedicels densely glandular-pubescent, (0-)1-4(-5) mm long, ebracteolate. Sepals 5, ovate-oblong or ovate lanceolate, (3.5-)4.0-4.5(-5.0) × 1.5-2.0 mm, strongly trinerved, acute or apiculate at the apex, with broad scarious margins, dorsally glandular-pubescent, erect at anthesis. Petals 5, oblong, 8-9 × 3.5-4 mm, finely veined inside, membranous. Stamens 5, attached to the base of petals; filaments 6-7 mm, glabrous, anthers oblong, 0.5 mm long, dorsifixed. Ovary urceolate, glabrous, styles 3, 2 mm long, glabrous, stigma flattened. Capsules 3-valved, 6-7 mm long valves reflexed at apex on dehiscence seeds ovoid, ca. 0.5 mm long, dark red, honeycombed and clearly tubercled.

*Type.* – Himachal Pradesh, Lahul, Batal, 4000 mt., 11 Sept. 1961, *N. C. Nair* 16 867 (Holotype CAL! Isotype BSD!).

*Fl.:* June-July; *Fr.:* Aug.-Sept.

*Distribution.* – Kashmir, Himachal Pradesh; Pakistan.

*Specimens examined (other than the type)*

Himachal Pradesh: Lahul, upper Bhaga valley on metamorphic rocks, 9500-13 000 ft. (2890-3950 m), June 1865, *Stoliczka* s.n. (CAL); Rotang, 12 000 ft. (3650 m), June 1941, *Bor* 14 512 (CAL); Chamba, above Tindi, 10 000 ft. (3040 m), 15 Sept. 1897, *J. H. Lace* 1785 (CAL); Lahul, *Capt. Hey* s.n. (CAL).

Kashmir: Pissu ghati, 3800 m, 27.6.1959, *T. A. Rao 9726* (CAL; BSD).  
Troncol, 11 000 ft. (3340 m), 13.9.1913, *F. E. Koebel 32* (CAL); Sonmarg  
hill, 16.9.1959, *T. A. Rao 9574* (CAL; BSD).

Pakistan: Gilgit expedition, 1885, *Dr. Giles* s.n. (CAL).

- 3. *Minuartia kashmirica*** (Edgew.) Mattfeld in Bot. Jahrb. 57 (Beibl. 126): 32. 1921; McNeill in Notes Roy. Bot. Gard. Edinb. 24: 145. 1962; et 347. 1963; Nair, Fl. Bashahr Himal. 37.1977; *Arenaria kashmirica* Edgew. ex Edgew. & Hook. f. in Fl. Brit. Ind. 1: 236.1974; Kachroo & al., Fl. Ladakh 61. 1977; *A. foliosa* Royle ex Edgew. & Hook. f. in Fl. Brit. Ind. 1: 236. 1874; *M. foliosa* (Royle ex Edgew. & Hook. f.) Majumdar in J. Ind. Bot. Soc. 44: 142. 1965; *M. lineata* Bornm. in Beih. Bot. Zbl. 27: 318. 1910; Rau, High Alt. Fl. Pl. 79. 1975; *M. lineata* forma *kashmirica* (Edgew.) R. R. Stewart, Ann. Cat. Pl. W. Pak. & Kashm. 248. 1972.

Erect or loosely tufted perennial herb, much branched, branches slender, glabrous to glandular pubescent, vegetative and flowering shoots differentiated. Flowering shoot erect, 25 cm long. Leaves crowded and imbricating in vegetative shoot, loosely arranged with longer internodes in the flowering shoot, linear, (8-)12-15(-30) × (0.5-)0.75-1.0(-1.5) mm, acuminate, entire, slightly connate at base, glabrous or sparsely glandular pubescent, flexuous, 1-3 nerved, lateral nerves not obscure. Cymes axillary or terminal, umbellate or subumbellate, peduncle elongated, glabrous or glandular pubescent. Flowers 6-8(-10) mm diam., pedicels (8-)10-20(-25) mm long, glabrous or glandular pubescent, usually subtended by a pair of bracteoles; bracteoles ovate acute, concave, 1.5-2.0 × 0.5-0.75 mm, strongly nerved. Sepals 5, ovate lanceolate, (3.5-)4-5(-6) × 1.25-1.5(-1.75) mm, strongly trinerved, acuminate, glabrous or dorsally glandular pubescent, with narrow scarious margins, greenish white, erect at anthesis. Petals 5, oblanceolate, 8-9 × 3.5-4.5 mm, entire, membranous, white, finely veined inside. Stamens 10, filaments nearly as long as sepals, glabrous, anthers oblong, 0.5 mm long. Ovary ovoid, ca. 1 mm long, glabrous, styles 3, as long as ovary. Capsules 3-valved, 5-6 mm long, valves reflexed at apex on dehiscence. Seeds reniform or cuneoid, 0.75-1.0 × 0.75 mm, dark brown or black, clearly honeycombed and tubercled.

*Type*: Kashmir, Regio temp., alt. 5000-6000 ped. (1520-1820 m), *T. Thomson* s.n. (CAL! K Photo!).

*Fl., Fr.*: May-September.

*Distribution*: Himalaya: Kashmir, Himachal Pradesh, Uttar Pradesh, Nepal; Pakistan; Afghanistan, Tibet.

*Specimens examined*

Kashmir: Palgam, 11 000 ft. (3340 m), 4 Sept. 1876, *C. B. Clarke 31 081 D* (CAL); Pissughati, 3800 m, 26.9.1959, *T. A. Rao 9704*, 2 specimens (CAL); Burjila, 12 000 ft. (3650 m), 1.8.1876, *C. B. Clarke 29 888* (CAL); near Chandanwari, 3000 m, 25.9.1961, *Wadhwa & Vohra 202*, 2 specimens (CAL); Sind valley, below Sonamarg, 8000-9000 ft. (2430-2730 m), 26.9.1892, *J. F. Duthie 11 492* (CAL); Liddar valley 11 000-12 000 ft. (3340-3650 m), 21.7.1893, *J. F. Duthie 13 142* (CAL); above Kainmul, Liddar valley, 11 000-12 000 ft. (3340-3650 m), 21.7.1893, *J. F. Duthie 13 101* (CAL); above Dras, Baltistan, 11 000-12 000 ft. (3340-3650 m), 25.8.1893, *J. F. Duthie 13 758* (CAL); Chandanwari, 2745 m, 9.9.1962, *Wadhwa & Vohra 836*, 2 specimens (CAL); Sheshnag, 3500 m, Sept. 26.1961, *Wadhwa & Vohra 258*, 2 specimens (CAL); Skardo-Dras, 13 000 ft. (3950 m), 18.8.1876, *C. B. Clarke 30 530 B* (CAL).

Uttar Pradesh: Kumaun, Nipchung valley in Darma, 12 000-13000 ft. (3650-3950 m), 31.8.1884, *J. F. Duthie 2758* (CAL); Kutiyangti, Kali valley, 11.9.1900, *Inayat 24 255* (CAL); rocks in Damdar valley, 11 000-12 000 ft. (3340-3650 m), 26.6.1883, *J. F. Duthie 612* (CAL); Bashahr, Ralli, 9500 ft. (2890 m), 29.5.1890, *J. H. Lace 195* (CAL). Himachal Pradesh: Chamba, Pangi, 1899, *Harsukh* s.n. (CAL); Sanch valley, Chamba, Pangi, 9000-10 000 ft. (2736-3040 m), 16.8.1899, *Harsukh* s.n. (CAL), Chamba, Aug. 1880, *Robert Ellis 383* (CAL); Pangee, July 1864, *Brandis 3994* (CAL); Roghi, Kinnaur, 2800 m, 8.6.1962, *N. C. Nair 22 578* (CAL, BSD); Lahul, Koksar, 3400 m, *U. C. Bhattacharyya 48 637* (CAL; BSD); Lahul, Dadarphoo, 3400 m, 4.9.1961, *N. C. Nair 16 630* (CAL; BSD); Pangee, *Stoliczka* s.n. (CAL); Lahul, Chotadara, 3960 m, 21.7.1972, *U. C. Bhattacharyya 48 796* (CAL; BSD); between Kila & Sach, Chamba 2700 m, 20.7.1964, *N. C. Nair 32 666* (CAL, BSD); Lahul, *Capt. Hey* s.n., 2 specimens (CAL); Pangi, *Mrs. Douie 123* (CAL); Kungum, Spiti, 3975 m, 7.9.1961, *N. C. Nair 16 705* (CAL); Sural valley above Chabi Got., 12 500 ft. (3800 m), 18.7.1899, *Harsukh* s.n. (CAL).

McNeill (1963: 347) considered *A. foliosa* Royle as distinct from *M. lineata* Bornm. Stewart (1972: 248) considered *M. kashmirica* as a form under *M. lineata*. The present study reveals the conspecificity of these three taxa. Here *M. kashmirica* is accepted as the correct name as it is prior to *M. lineata* in specific rank. *M. foliosa* being a glabrescent variant of the same, is treated as a synonym under it. It cannot be retained as a distinct taxon due to the presence of specimens showing intermediate characters.

**4. *Minuartia sedoides* (L.) Hiern, J. Bot. (Lond.) 37: 321. 1899; *Cherleria sedoides* L., Sp. Pl. 425. 1753; Fl. Eur. 1: 132. 1964; Clapham & al., Fl. Brit. Isl. ed. 2: 253. 1962.**

Densely caespitose, dwarf perennial with very long tap root and woody stock, herb ca. 5 cm diam., flowering and non flowering shoots forming a yellowish green cushion. Non flowering shoots not distinct and flowering

shoots scarcely coming out of the cushion. Leaves (3-)4-6(-8) × (0.5-)0.75-1.0(-1.5) mm, linear triangular, crowded and imbricating on the stem, glabrous, flexuous, acuminate, shortly dentate crenate at margin, slightly connate at base with 1-3(-5) nerves, lateral nerves usually obscure. Flowers 4-5 mm diam., unisexual, usually solitary, rarely 2 or 3, axillary or terminal; pedicels (1.0-)2.0-4.0(-5.0) mm long, verrucose or finely glandular pubescent. Sepals 5, ovate oblong, 3-4 × 1.25-1.5 mm, trinerved, acute, with narrow scarious margins, glabrous, greenish-white, spreading at anthesis. Petals usually 0 in female flowers, evidently shorter than sepals in male flowers, membranous. Stamens 10 in male flowers, shorter than sepals. Ovary abortive in male flowers. Capsules 3 valved, glabrous, shining, 4.5-6 mm long, valves reflexed at apex on dehiscence. Seeds comma like, 0.5-0.75 mm long, reddish, finely reticulate.

*Type:* Linn. Herb. 586/1, 586/2 Microphoto!

*Fl., Fr.:* July-September.

*Distribution:* Europe including Scotland, the Pyrenees, Alps and Carpathians. Now reported for the first time from Kashmir, Western Himalaya.

#### *Specimens examined*

Kashmir: near Frozen Lake, 3500 m, 12.9.1961, *Wadhwa & Vohra 62* (CAL); Khilan, 13.7.1899, *Inayat s.n.* (CAL); Deosai plains, shores of Shersar lake, 13 000-14 000 ft. (3950-4260 m), 15.9.1893, *J. F. Duthie 14 052* (CAL); Baltistan, Chatpani nala, West of Dras, 29.8.1893, *J. F. Duthie 13 888* (CAL).