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The distribution and synonymy of *Sibbaldia procumbens* L. (A type species of genus *Sibbaldia*) Rosaceae. III

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RÉSUMÉ

RAJPUT, M. T. M., S. S. TAHIR & S. Z. HUSAIN (1994). Les distribution et synonymie de *Sibbaldia procumbens* L. (une espèce type du genre *Sibbaldia*) Rosacée. III. *Candollea* 49: 133-139. En anglais, résumés français et anglais.

Sibbaldia procumbens L. est l'espèce-type du genre *Sibbaldia*. Ainsi qu'on peut le voir sur la carte présentée, cette plante est largement répartie en Asie, en Europe et en Amérique du Nord. La synonymie est établie principalement grâce à l'examen des plantes-types et 10 taxons y sont énumérés (*S. aphanopetala* Handel-Mazzetti, *S. cuneata* Kunze, *S. cuneata* Edgeworth, *S. cuneata* Kunze var. *micrantha* (J. D. Hooker) Stewart, *S. macrophylla* Turcz., *S. olgae* Juz. & Ovezinn, *S. parvifolia* Willd., *S. perpusilla* (Hook. f.) Chatterjee, *S. semiglabra* C. A. M., *S. taiwanensis* Li).

ABSTRACT

RAJPUT, M. T. M., S. S. TAHIR & S. Z. HUSAIN (1994). The distribution and synonymy of *Sibbaldia procumbens* L. (A type species of genus *Sibbaldia*) Rosaceae. III. *Candollea* 49: 133-139. In English, French and English abstracts.

Sibbaldia procumbens L. is the type species of genus *Sibbaldia*. It has a wide distribution in Asia, Europe and North America, a distribution map is provided. Synonymy is established, basing mostly on the examination of type materials, and 10 taxa are placed in the synonymy (*S. aphanopetala* Handel-Mazzetti, *S. cuneata* Kunze, *S. cuneata* Edgeworth, *S. cuneata* Kunze var. *micrantha* (J. D. Hooker) Stewart, *S. macrophylla* Turcz., *S. olgae* Juz. & Ovezinn, *S. parvifolia* Willd., *S. perpusilla* (Hook. f.) Chatterjee, *S. semiglabra* C. A. M., *S. taiwanensis* Li).

KEY-WORDS: ROSACEAE — *Sibbaldia procumbens* — Synonymy.

Introduction

Sibbaldia procumbens belongs to Rosaceae (Sub-family Rosoideae tribe Potentilleae) HUTCHINSON (1964). LINNEAUS (1753) described this species from Europe. RYDBERG (1908) selected *S. procumbens* as a type species of the genus *Sibbaldia*. This is the only species of *Sibbaldia* known in the Arctic. *S. procumbens* has a wide geographical distribution and spans to a greater latitude of any other species in the genus *Sibbaldia* but the populations are discontinuous between Europe, North America and South East Asia. Correspondingly, the species consists of a series of relatively pronounced forms, many of which have been described as distinct taxa, particularly from

the U.S.S.R. However, the detailed examination of a large number of specimens from throughout the range shows, that plants similar to a form, no different in characteristics were observed from different geographical regions of the same taxa. The origin of this species is referred to the upper Tertiary and the primary centre of its development appears to be the mountains of central and western China, MURAVJOVA (1936).

Materials and methods

About 1000 herbarium specimens of *S. procumbens* L. from Asia, Europe and America were examined, during this taxonomic study at the Arnold Arboretum of Harvard University U.S.A. and University of Reading U.K., borrowed on loan from different herbaria (see Acknowledgement for the list of herbaria).

In the citation of the specimens abbreviation of the institutions/herbaria is followed, after the sixth edition of index Herbariorum (HOLMGREN & KEUKEN, 1974). The specimens are cited and in the citations of the specimens, 2-5 specimens from each political unit are cited, depending upon the size of the political unit. Generally those specimens are cited which have duplicates in different herbaria.

Distribution map of *S. procumbens* at a global level was developed, using the entire material available for this study (Fig. 2). In most of the early collections, the specimens were allocated only to country or province or state, therefore, the resulting map are uniform in meaning. A fair number of collections, whose localities are not located have also been examined. The specimens have also been annotated, whose labels were in Russian, and were difficult to decipher, that is why one may find a few dots on the map.

Results and discussions

In the course of study for the preparation of monographic revision of genus *Sibbaldia* at a global level. The herbarium specimens, from all the important herbaria of the world were examined including most of the type specimens of *Sibbaldia* species. It was also a fortunate coincidence, that the large size and relatively frequent occurrence of the type species *S. procumbens* made it the best documented species. All the species of *Sibbaldia*, has never been the subject of a single investigation. There have been a few regional studies e.g. CHATTERJEE (1938), DIXIT & PRANIGRAHI (1981), JUZEPCZUK (1941) and SOJAK (1970), but unfortunately a narrow concept of species was taken into consideration, leaf characters were extensively used in erecting the new species of *Sibbaldia*, JUZEPCZUK (1941). *S. procumbens* is an almost glabrous to tomentose prostrae herb, from woody rootstocks and stem bases covered with persistent brown leaf-bases with variable leaf morphology. The leaf characters are quite variable in a wide range of its distribution. The variation in leaf-morphology is recorded here as: leaves trifoliolate and pinnate or palmate, petioles 0.7-8.5 cm long, mostly tomentose with stiff usually appressed to semi spreading hairs, sometimes glabrescent or even glabrous; stipule bodies 5-15 mm long, 2-5 mm wide, membranaceous, glabrescent or sparsely tomentose at the margin; stipule auricles 2-5 mm long, 1.5-2.5 mm wide, sharply acute, veined, glabrous adaxially, sparsely tomentose at the apices or on veins adaxially. Leaflets 3, 12-30 mm long; blades obovate or obovate-cuneate, oblong-cuneate; apex truncate with 3-5(-8) glandular tipped acute or acuminate teeth of equal to unequal sized. The blades densely tomentose to glabrescent or even glabrous on both surfaces, distinctly veined, the midvein and some secondary veins sometimes elevated beneath. The size and density of the hairs is also quite variable on blades and petioles. The variation in size and shape of leaflets, and number of apical teeth are shown in Fig. 1.

S. procumbens occurs predominantly in North America, Europe and Asia and has elliptical to ovate-leaflets borne on medium to fairly long petioles, flowering shoots are fairly long, with hairs moderately distributed on the vegetative parts. The same species also occurs in the U.S.S.R.

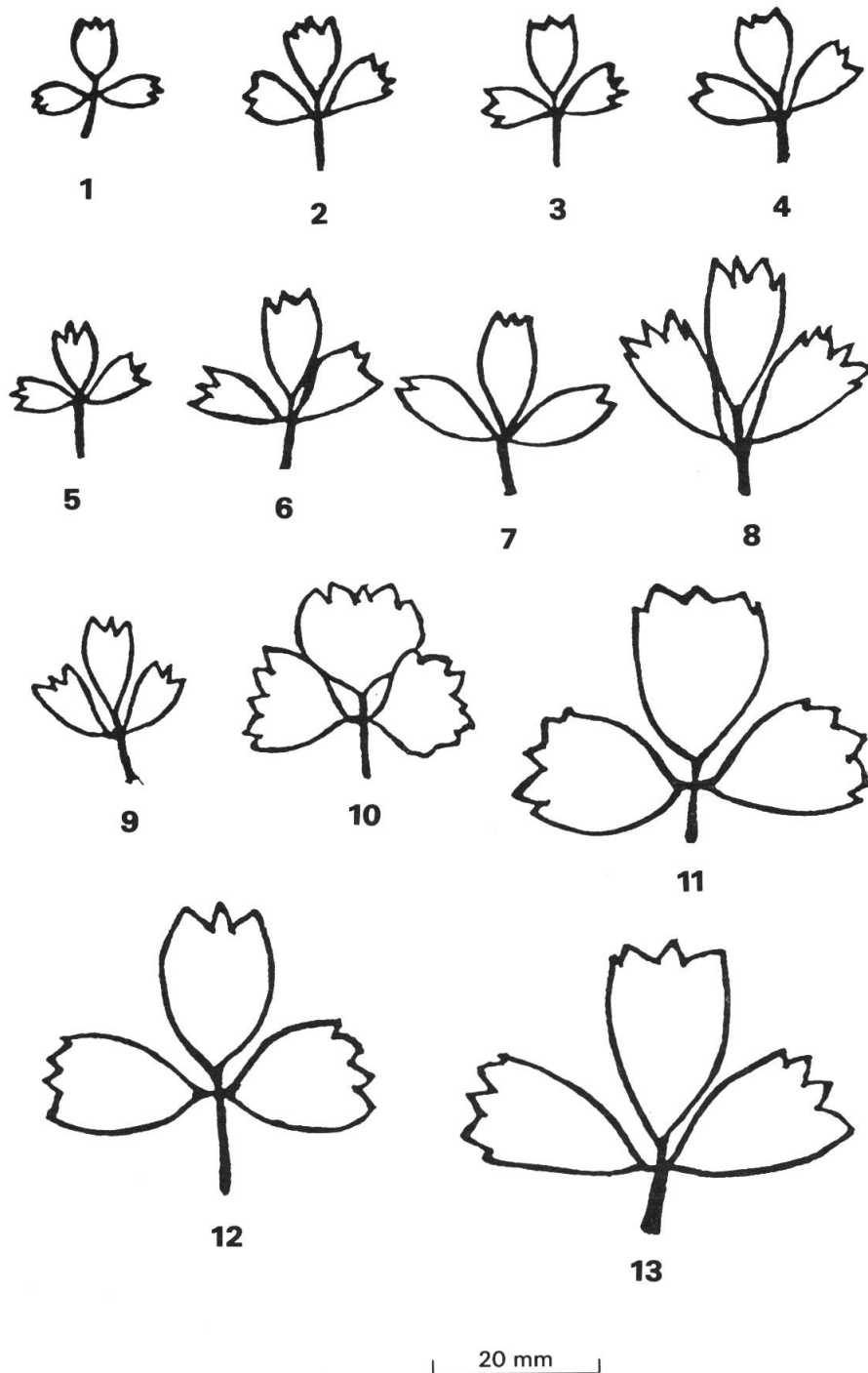


Fig. 1. — The variations in size and shape of the leaflets and number of apical teeth in *Sibaldia procumbens* L. (vouchers see Appendix 1.

Appendix 1. — List of voucher specimens of *S. procumbens* L.

1, P. wendelbo & L. Ekberg 9644 (E); 2, George Forrest 16703 (A); 3, C. F. Baker 401 (A); 4, George Forrest 14280 (E); 5, G. Halliday A 326/75 (E); 6, Harry Smith 4571 (E); 7, Bent Fredskild 2733 (BM 013193); 8, O. Polunin 6154 (BM 013132); 9, M. R. Fletcher 28 (E); 10, Erica Clark 8 (BM 013167); 11, E. & N. Busch s.n. (BM 013164); 12, S. Juzepczuk & I. Vysokoostrovskaja s.n. (BM 013203); 13, J. A. Calder 15169 (BM 013166).

WORLD, NORTHERN HEMISPHERE

No. 20IPN

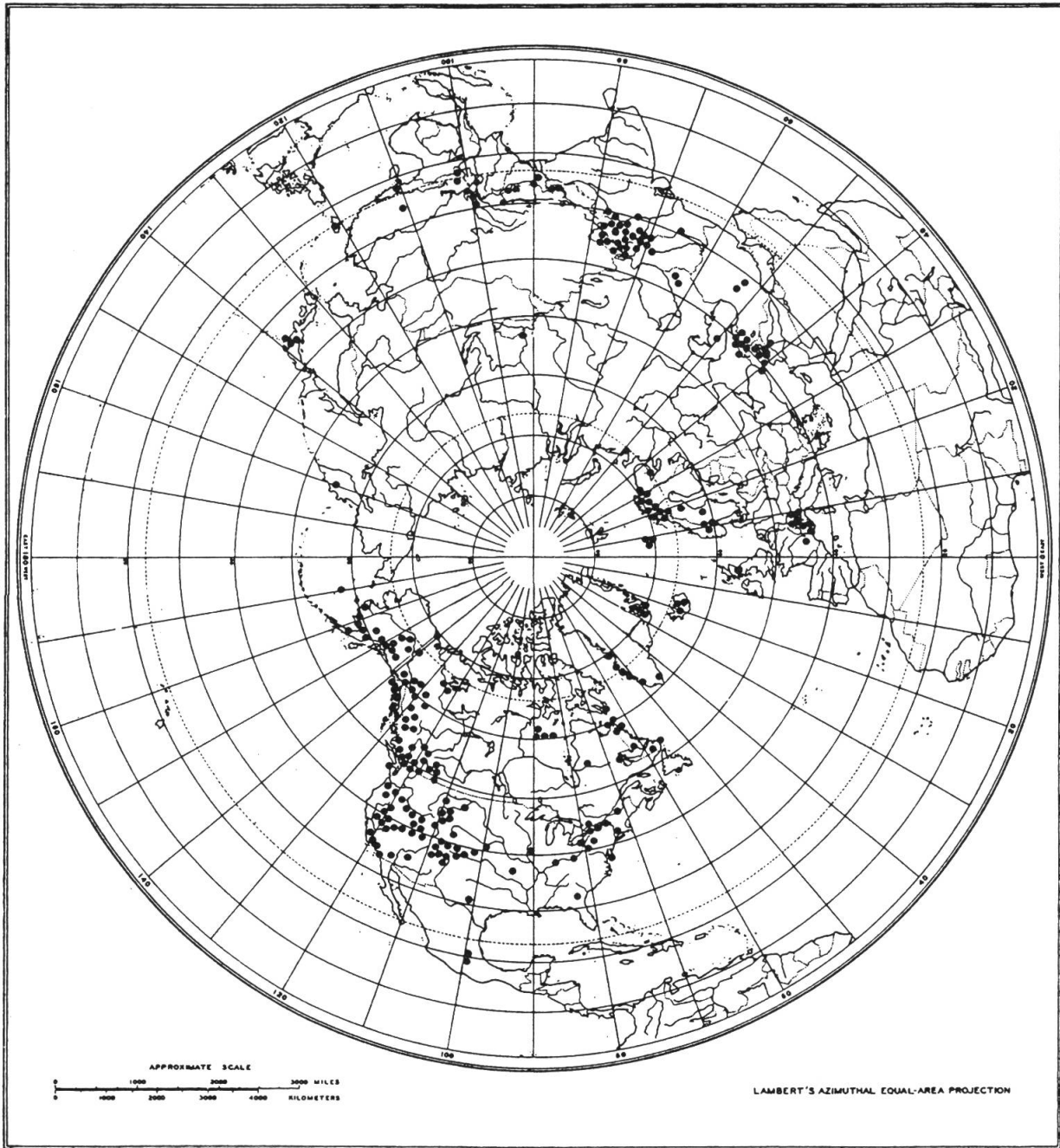


Fig. 2. — Distribution of *Sibbaldia procumbens* L.
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in the U.S.S.R. however, these are plants with almost entirely semi-glabrous leaves. In Asia (China, India, Pakistan, Kashmir, and Turkey) the plants are more compact and the flowering branches do not usually exceed the leaves. Another variation has also been found in the specimens collected from Turkey, which shows a very thick rootstock, but this same feature is also found less frequently in other areas of its range. The degree of prominence of veins also varies greatly in the sepal lobes and on the lower surface of the blades. Due to such a wide variation in leaf characters in *S. procumbens* the population of *S. procumbens* was described as distinct taxa particularly from U.S.S.R. by Russian botanists. Good examples of this variation are found in the types *S. parvifolia* and *S. semiglabra*. In the former the blade is oblong-cuneate to obovate with 3(-5) acute or acuminate teeth at the apex. In the latter the blade is broadly obovate or sometimes obovate-to-sub-orbicular with 3-5 acuminate apical teeth. When compared material from Asia, Europe and North America; the leaf blade variations are from obovate to obovate-cuneate or roughly obovate to sub-orbicular, elliptical-ovate to oblong-elliptical with acute-acuminate or obtuse apical glandular teeth, which vary 3-8 in number. JUZEPCZUK (1941) while reviewing *Sibbaldia* for the Flora of U.S.S.R. has casted doubts on circumscription of a few species of *Sibbaldia*. In the case of *S. macrophylla* Turcz writes that “*S. macrophylla* is only very slightly different from the Areto-Alpine *S. procumbens* and is distinguished mainly by the dentation of leaflets; even this character is rather variable. However we have attempted to separate these two taxa, believing that it will stimulate other authors to study them in greater detail”. Indeed both *S. procumbens* and *S. macrophylla* represent one and the same species, which occupies a greater area of geographical distribution. It has, therefore, not been possible to recognize any variant of *S. procumbens*, as distinct species as the characters, on which they were based vary more or less continuously in the greater range of material now available.

We have examined the types of *S. cuneata* Edgeworth, *S. aphanopetala* Handel-Mazzetti, *S. cuneata* Kunze var. *micrantha* (J. D. Hooker) Stewart, *S. parvifolia* Willd., *S. perpusilla* (Hook.) Chatterjee and *S. taiwanensis* H. L. Li, all these taxa appear to fall within the range of variation, demonstrated by the collection that we have examined. We were unable to examine directly the type collections of *S. cuneata* Kunze, *S. semiglabra* A. C. M., *S. olgae* Juz. & Ovezinn and *S. macrophylla* Turcz. However, from the original descriptions, and photo of the type material, it appears that these taxa also fall within the range of variation. It is therefore suggested, to treat *S. procumbens* as the correct name with synonyms as follows:

Sibbaldia procumbens L., Sp. Pl., 1: 284 (1753). Type: Lapland specimen No. 111 (Inst. France, Paris): 401.1 (Linn).

Sibbaldia parvifolia Willd., Neue Schrift. Cl. Naturf. Ges. Z. Berl., 11: 125 (1799). Holotype: Capodocia, Willdenow 6305 (B) photo A!; isotypes A!, BM!).

Sibbaldia cuneata Edgeworth, Trans. Linn. Soc. London, 20: 44 (1846). Holotype: P. M. Edgeworth Hab. Himalaya in *supibus elatis* (K!).

Sibbaldia cuneata Kunze, Linnaea 20: 59 (1847). Type: not designated.

Sibbaldia semiglabra C. A. M. in Beitr. Pflanzenk. Russ. Reiches, 4: 44 (1849). Type: not designated.

Sibbaldia macrophylla Turcz in Scheel., Cfr. Addenda, 9: 456 (1936). Holotype: Dahuria U.S.S.R. (LE).

Sibbaldia perpusilla (Hook. f.) Chatterjee in Notes Bot. Gard. Edinb., 19: 326 (1938). Lectotype: Tibetan region of Sikkim, J. D. Hooker (K!).

Sibbaldia aphanopetala Handel-Mazzetti, Acta Hort. Gotoburg., 13: 327 (1939). Holotype: Smith 10625, China, Sikang, Kangting (Tachienlu) District, Yulingkong, Montes Yachiagan, 24 July 1934 H. (presumably at W; isotypes A!, BM!).

Sibbaldia olgae Juz. & Ovezinn in Fl. URSS, ed. Komarov., X, 225: 614 (1941). Holotype: Tadzhikistania, Karatezin, ad fontes, U.S.S.R. (LE).

Sibbaldia taiwanensis H. L. Li, Lloydia 14(4): 236 (1952). Type: S. Suzuki 5379 Formosa; Mt Tugutaka, 8 July 1939 (NTU Holotype).

Sibbaldia cuneata Kunze var. *micrantha* (J. D. Hooker) R. R. Stewart, Annot. Cat. Vasc. Pls. W. Pak. & Kashmir, 369 (1972). Lectotype: T. Thomson, Western Tibet, Tibetan region of Sikkim (K!; Isolectotype A!).

Selected specimens examined

Afghanistan: Prov. Laghman, Alishang, upper part of Darrah, Rastyon, *Wendelbo & Ekberg W 9644* (E); Kurrum Valley, *Aitchison* s.n., 1879 (A, BM). **Bhutan:** Yale La, Ludlow, *Sherriff (Hicks 16404)* (BM); Mela (south side), *Ludlow, Sherriff & Hicks 200353* (BM). **China:** Szechuan, Kaushu shan, leilung (Leirong), *Rock 24500* (A, BM). Tibet: Langong (28.51-93.47), *Ludlow, Sherriff & Taylor 5501* (BM, E). Yunnan: Atuntze Mt. Miyetzium, *T. T. Yu 10540* (A, BM). **India:** Punjab: Manali, Lehus, *N. L. Bor 12635* (E, K); Patari Sikkim, *Jongi, Hara, Kanai, Murata, Togashi & Tuya-ma 2033* (A, KYO). **Japan:** Prov. Shinano, between Sanpuku Pass and Mt. Shiomi, *Murata 10315* (KYO); Mt. Arakawa dake Igawa mura, Abe-Gun, Prov. Suruga, Miyoahi, *Furuse* s.n., 23.8.1959 (A). **Kashmir:** Gangabal, *O. Polunin, 56/752* (B, BM, E); Rana Killanmarg, *Duthie 13051* (B). **Nepal:** Bhurchula lekh, near Jumla, *Polunin, Sykes & Williams 4569* (A, BM, E); Dojam Khola near suli Gad, *Polunin, Sykes & Williams 2258* (A, BM W). **Pakistan:** Gangalwat Gol, Kafriстан, S.W. of Chitral, *Stainton 2722* (A, BM); Karakorum, Gharesa Glacier Base Camp., 13 miles east of Nagar, *Polunin 6154* (B, BM). **Taiwan:** Prof. Taichung, Mt. Hsueh-shan, main peak, *Tamura 21164* (E); Formosa edge of Mt. Morrison, *Price 989* (A). **France:** Alpes du Dauphiné et de Provence, *J. & A. Raynal* s.n. (BM). **Great Britain:** Scotland: Mountains of Scotland, *J. G. Baker* s.n., Feb. 1899 (US 545510); Breadalbane mountains, *J. Ball* s.n., 1850 (US 297818). **Iceland:** S. W. north of Thingvellir, H. G. Vevers 39 B t. Esja, near Reykjavik, *Edith Scamman 1419* (A). **Italy:** Italien Aosta-Tal, Gresoney St-Jeans, Gruchen-Alm, Feinschutthalde urgestein, *Ketelhit & Schiers 214-60-81-10* (B). **Norway:** Laeradale, *Fretheuy* s.n., 1925 (BM); glacier near Evolene, Herb. A. H. Maude, 1933 (K). **Sweden:** Torne Lappmark N. of Tourist Station at Riksgransen, on south west facing slope at Njutums base, *Clausen 1350* (A); Kamtchatka Australis Avatcha Volvano, *Eric Hulthen 740* (BM, K). **Switzerland:** Gornergrat, G. S. Miller Jr. Sn., 25.7.1904 (US 545212); Vogenen, Granitfelsen am Hohneck, *N. Martin & Retournemer 322* (BM). **Turkey:** Prov. Van. Satak, Kavussahap Dag, *Davis 23, 126 & Polunin* (BM, E; K); Prov. Rize, Distr. Ikizdere cermanin Tape, *Davis 21059 & Dodds* (BM, E, K). **U.S.S.R.:** Caucasus Dist. Ashtarak, in declivibus, austro-orientalis, Montis Aragac, *V. Vasak* s.n., 13.7.1975 (B, BM, K); Georgia in vicin opp. bukuriani. In summo monte Tskhara-Tskharo, ad pedem rupium in declivibus meridionalis bus, *Juzepczuk 4060* (A, B, E, K). **Canada:** Alaska, Kodiak, *Piper 4314* (US 420771); Head of Sourdough creek n. of Steese highway, mile 66 central Alaska (circle quadrangle), *G. halliday A. 326/76* (BM, E). Quebec-Labrador height of land, 58°08N 64°25W, *Gillett 9009* (BM, US 2260846). British Columbia, 9.5 miles north of Topley along road to Babine Lake, *Calder, Savile & Ferguson 12802* (A, US 2330842); Selkirk, and Rocky mountains in British Columbia near 51°30N lat., *Shaw 44* (A, BM, US 525841). **U.S.A.:** Arizona: San-Francisco mountain, *Knowlton 129* (US 85438); California: Jonesville, Butte County, *Copeland 418* (A, B, BM); Colorado: about 3 miles north west of capital city, Hinsdale county, *Stephen Sponberg 64-57* (A); Idaho: Silver City owyhee county, Jarbidge, Quadrangle, R. R. Coats (US 2234863); Oregon, *Henderson 56660* (A); New York, *Dress 1070* (BM); Utah: iuntah mts., *Leslie N. Goodding 1253* (A, US 485666); Washington: Cascade Mountains Washington, *Grant 8383* (US 1469909); Wyoming range, 15 miles west of Merna, Sublette county, *Edwin B. Paysp. & Lois B. Payson 2785* (A).

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