

## TYPIFICATION AND NOMENCLATURE OF *HEDYSARUM BOREALE* NUTT. (LEGUMINOSAE)

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ABSTRACT.— The holotype of *Hedysarum boreale* Nutt. is convarietal with natural populations now known as *Hedysarum boreale* Nutt. var. *cinerascens* (Rydb.) Rollins instead of var. *boreale*. The new combination *Hedysarum boreale* Nutt. var. *rivulare* (Williams) Northstrom is proposed for populations formerly known as var. *boreale*.

Considerable confusion has been apparent in taxonomic literature in recent years concerning the application of the binomial *Hedysarum boreale* Nutt. because the type specimen could not be located by previous workers nor by the present author in an earlier study (Northstrom & Welsh 1970).

Thomas Nuttall described *Hedysarum boreale* (1818) from specimens collected in the vicinity of the Mandan Post of the Missouri Trading Company in the summer of 1811 (Graustein 1967). In his original description, however, Nuttall (1818:110), failed to stress any of the characters which are significant in delimiting *Hedysarum* taxa either on the specific or the infraspecific level. In addition, he indicated that he was not entirely sure that his plant was not *Hedysarum alpinum* of Michaux (1803).

There are presently three varieties of *Hedysarum boreale* recognized as occurring in North America. The first, the typical var. *boreale*, is characterized by having leaflets which are usually glabrous above and very sparsely villous below. The second, var. *cinerascens* (Rydb.) Rollins, possesses leaflets which are beset with many appressed, satiny hairs on both the upper and lower surfaces, the whole plant being quite villous. The third, var. *gremiale* (Rollins) Northstrom & Welsh, is distinguished by the presence of distinct spines which arise from the costae of the loment articles. These three taxa occupy rather distinct geographical areas and are morphologically quite distinct, although they exhibit a nearly complete degree of intergradation which is in harmony with the current use of the varietal rank.

After geographically plotting the distribution of *Hedysarum boreale* var. *cinerascens*, it became evident that the type lo-

cality reported by Nuttall in his original description of *Hedysarum boreale* falls within the distribution pattern of var. *cinerascens* instead of var. *boreale*. This, together with the description of the leaflets given by Nuttall as being "partly villous," stimulated a renewed search for a type specimen.

A type specimen was finally located in the British Museum (Natural History) and was obtained on loan (Fig. 1). Although Nuttall did not designate this particular specimen as the type, it is imperative that it be considered as such, since it appears to be the only specimen of *Hedysarum boreale* which was retained in Nuttall's personal herbarium until after his death in 1859 and subsequently sold to the British Museum by Thomas Booth in 1860 (Graustein 1967). It was immediately recognized that this type is indeed homologous with populations currently known as *Hedysarum boreale* (*H. boreale* ssp. *boreale* of Welsh 1968), but is convarietal with populations now known as var. *cinerascens* instead of var. *boreale*.

The population now known as var. *cinerascens* appropriately becomes the typical variety, while the glabrous-leaved population requires a new varietal epithet. Article 11 of the International Code of Botanical Nomenclature (Stafleu et al. 1972) states that the earliest available legitimate epithet published in the proper rank has priority. The earliest available name for this entity is *H. pabulare* A. Nels. var. *rivulare* Williams, Ann. Missouri Bot. Gard. 21:344. 1934, and thus the new combination *Hedysarum boreale* Nutt. var. *rivulare* (Williams) Northstrom is proposed.

A closely related taxon, *Hedysarum mackenzii*, was described by Richardson (1823) as a distinct species. In recent years, however, this entity has been recog-

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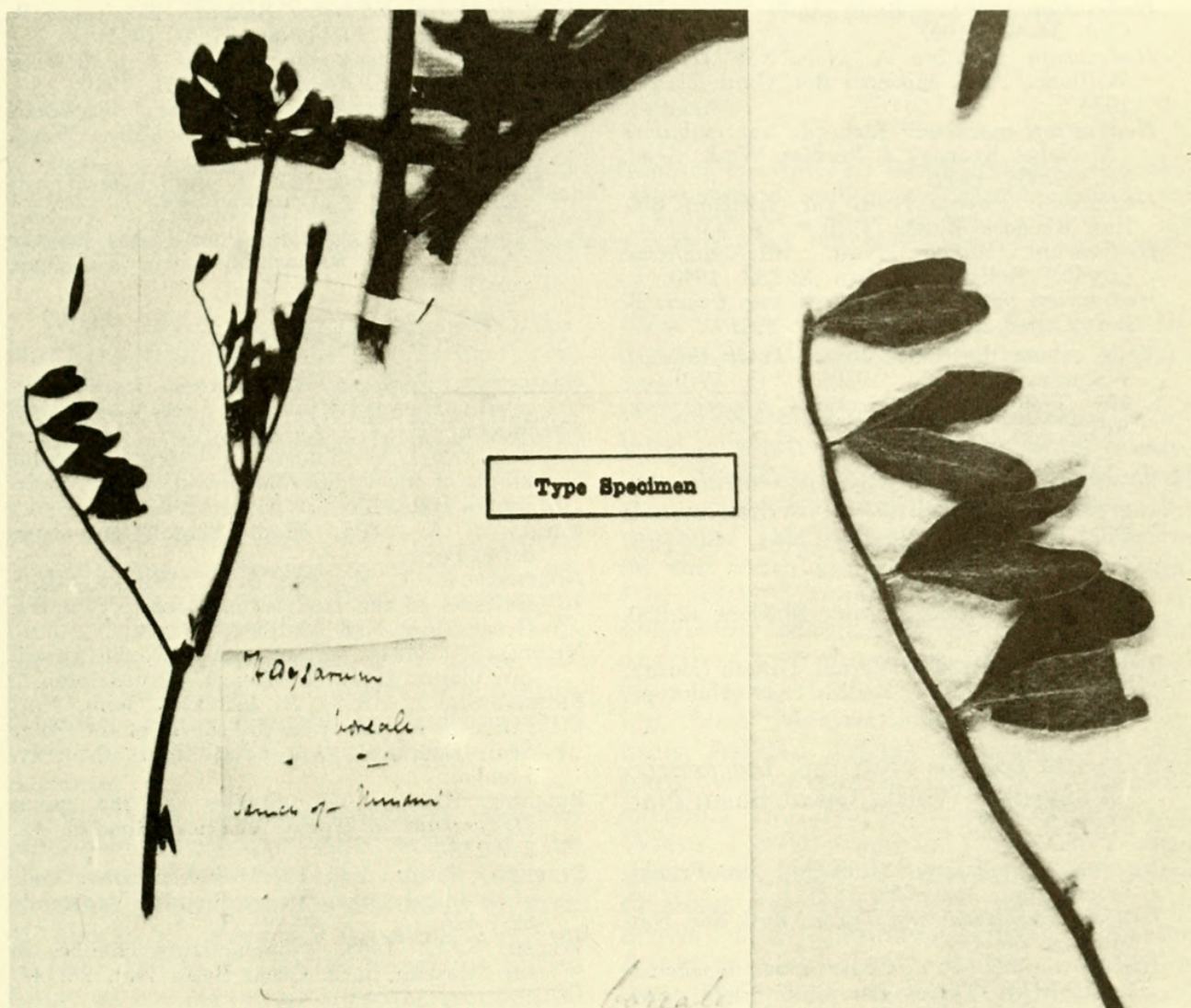


Fig. 1. Photograph of the holotype of *Hedysarum boreale* Nutt. ssp. *boreale* var. *boreale*: A. entire specimen; B. close-up of one leaf illustrating the dense pubescence.

nized both as a subspecies (Welsh 1968) and as a variety (Hitchcock et al. 1961) of *Hedysarum boreale*. The present author follows the treatment of Welsh (1968). A further note in relation to this entity concerns the formation of its specific epithet. Article 73 of the International Code of Botanical Nomenclature (Stafleu et al. 1972) states that when a specific epithet is taken from a personal name ending in a vowel, the letter "i" is added. Hence, *Hedysarum mackenzii* Richards. (Frankl. Journal Bot. App. 745. 1823) should be cited as *Hedysarum mackenziei* Richards.

The synonymy of the species is as follows:

*Hedysarum boreale* Nutt. ssp. *boreale* var. *boreale*, Gen. N. Am. P. 2:110. 1818.

*Hedysarum canescens* Nutt. ex T. & G., Fl. N. Am. 1:357. 1838, nom. illegit.

*Hedysarum cinerascens* Rydb., Mem. New York Bot. Gard. 1:257. 1900.

*Hedysarum macquenzii* Richards. f. *canescens* (Nutt.) Fedtschenko, Acta Hort. Petrop. 19: 274. 1902.

*Hedysarum macquenzi* Richards var. *canescens* (Nutt.) Fedtschenko, Acta Hort. Petrop. 19:362. 1902.

*Hedysarum boreale* Nutt. var. *obovatum* Rollins, Rhodora 42:235. 1940.

*Hedysarum boreale* Nutt. var. *cinerascens* (Rydb.) Rollins, Rhodora 42:234. 1940.

*Hedysarum boreale* Nutt. var. *cinerascens* (Rydb.) Rollins, f. *album* B. Boi., Nat. Canad. 87:34. 1960.

Type. Fort Mandan, on the banks of the Missouri, Nuttall s.n. (Holotype BM!)

*Hedysarum boreale* Nutt ssp. *boreale* var. *rivulare* (Williams) Northstrom, comb. nov.

*Hedysarum carnosulum* Green, Pittonia 3:212. 1897.

*Hedysarum pabulare* A. Nels., Proc. Biol. Soc. Wash. 15:185. 1902.



- Hedysarum utahense* Rydb., Bull. Torrey Bot. Club 34:424. 1907.
- Hedysarum pabulare* A. Nels. var. *rivulare* Williams, Ann. Missouri Bot. Gard. 21:344. 1934.
- Hedysarum mackenzii* Richards. var. *pabulare* (A. Nels.) Kearney & Peebles, Wash. Acad. Sci. 29:485. 1939.
- Hedysarum boreale* Nutt. var. *typicum* Rollins, Rhodora 42:232. 1940.
- Hedysarum boreale* Nutt. var. *utahense* (Rydb.) Rollins, Rhodora 42:232. 1940.
- Hedysarum mackenzii* Richards. var. *fraseri* B. Boi., Canad. Field-Nat. 65:20. 1951.
- Type. Along the Snake River, Teton County, Wyoming, 31 July, 1932, L. O. Williams 975 (Holotype RM!; Isotypes G, UTC!, NY, MO).
- Hedysarum boreale* Nutt. ssp. *boreale* var. *gremiale* (Rollins) Northstrom & Welsh, Great Basin Nat. 30:125. 1970.
- Hedysarum gremiale* Rollins, Rhodora 42:230. 1940.
- Type. 14 miles west of Vernal, Uintah County, Utah, 16 June 1937, Rollins 1733 (Holotype, G; Isotypes PH, OK!).
- Hedysarum boreale* Nutt ssp. *mackenziei* (Richards.) Welsh, Great Basin Nat. 28:152. 1968.
- Hedysarum mackenzii* Richards., in Frankl. Journal Bot. App. 745. 1823.
- Hedysarum dasycarpum* Turcz., Bull. Soc. Nat. Mosc. p. 68. 1840.
- Hedysarum americanum* Michx. var. *mackenzii* Britt., Mem. Torrey Bot. Club. 5:202. 1894.
- Hedysarum mackenzii* Richards. f. *niveum* B. Boi., Canad. Field-Nat. 65:20. 1951.
- Hedysarum mackenzii* Richards f. *proliferum* Dore, Canad. Field-Nat. 73:151. 1959.
- Hedysarum boreale* Nutt. var. *mackenzii* (Richards.) C. L. Hitchc., Univ. Wash. Publ. Biol. 17(3):275. 1961.
- Hedysarum boreale* Nutt. f. *proliferum* (Dore) B. Boi., Nat. Can. 94:630. 1967.
- Type. Barren grounds, Point Lake to the Arctic Sea, Richardson s.n. (Holotype, BM!).

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