

evolution of life forms is correlative with the evolution of land forms in the California Gulf Region and that plant speciation in some cases can be synchronized somewhat with geologic time.

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ON THE SUBSPECIES OF LEPIDIUM MONTANUM

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In the fall of 1945, Mr. R. C. Barneby sent me a series of specimens of a shrubby *Lepidium* which he and Mr. Ripley had collected twelve miles south of Mountain Home, Elmore County, Idaho. I ventured the opinion that the collection comprised another variant of the plastic *L. montanum* Nutt. ex T. & G. and with this opinion Mr. Barneby agreed. However, in the fall of 1947, he sent me a second series of plants collected near Duchesne, Duchesne County, Utah, which were more similar to the specimens from Idaho than to any other of the various subspecific entities of *L. montanum*. After studying the two collections I believe them to be sufficiently distinctive to warrant description.

Accordingly, these two shrubby-based, dwarf plants were described as new subspecific entities of *L. montanum* and a key was

prepared to differentiate them from var. *integrifolium* and the other varieties of *L. montanum*. Therefore, Dr. Rollins' (1948) paper "On Two Perennial Caespitose *Lepidiums* of Western North America" was of particular interest to me since *L. Davisii* Rollins, therein described (type: from ca. fourteen miles south of Mountain Home, Elmore County, Idaho, June 27, 1946, R. J. Davis 4670), is the same entity as that collected by Ripley and Barneby in nearly the same locality in 1945.

Dr. Rollins is of the opinion that his species is comparatively closely related to *L. nanum* and that it partially bridges the gap between that species and *L. montanum*. To substantiate this opinion he states that "the siliques of *L. Davisii* are similar in shape to those of *L. nanum*. The seeds are of similar size and shape, and the cotyledons are accumbent in both species." With Dr. Rollins' conclusions I am unable to agree, since, in my opinion *L. Davisii*, with its entire leaves, is even less similar to *L. nanum* than are several of the forms of *L. montanum*. *Lepidium nanum* is unique, insofar as North American species are concerned, in having apically trilobed leaves and in being scapose. For this reason, I suggested (1936, p. 314) not that *plants*, but rather that the *habit* of plants of *L. nanum* was "more suggestive of *Draba* than of *Lepidium*." *Lepidium Davisii*, on the other hand, is so similar to occasional stunted plants of *L. montanum* (*sensu latiore*) from New Mexico or Utah (e.g. Hitchcock *et al* 4316) as to be distinguishable from them with some little difficulty. Furthermore, the cotyledons of *L. montanum*, *L. nanum*, and *L. Davisii* are all incumbent [according to the definition of "incumbent" as applied to cotyledons by Gray (1887, p. 128, figs. 427, 428) and Jackson (1928)]. This is the normal condition in *Lepidium*.

In my opinion, *L. Davisii* is not specifically distinct from *L. montanum*. In the following revised key to the subspecies of *L. montanum* having entire or non-lobed leaves, *L. Davisii* is included as a subspecies.

Leaves entire to crenate-dentate.

Basal leaves crenate or crenate-serrate *L. montanum* subsp. *spathulatum*
Basal and cauline leaves entire.

Plants with branched, woody crowns; stems many, 5-10 cm. tall, erect;
basal leaves linear to oblanceolate, 10-40 mm. long, 1-4 mm. broad.

Basal leaves linear to linear-spatulate, 20-40 mm. long, 1-2 mm.
broad, glabrous or nearly so, cauline leaves similar but smaller;
petals cream-colored *L. montanum* subsp. *demissum*

Basal leaves spatulate to oblanceolate, 10-20 mm. long, 2-4 mm.
broad, sparsely puberulent, cauline leaves somewhat larger;
petals white *L. montanum* subsp. *Davisii*

Plants with thick, unbranched caudex; stems decumbent at the base, 10-30
cm. tall; basal leaves thick and fleshy, 30-100 mm. long, 4-15 mm.
broad *L. montanum* subsp. *integrifolium*

Leaves, some of them, lobed to parted or divided . . . , etc.

Since the publication of the numerous varieties of *L. montanum* in 1936, I have come to believe that they might more truly be de-

fined as subspecies, as most present day workers interpret that entity, and I therefore propose the following new names.

LEPIDIUM MONTANUM Nutt. ex T. & G. subsp. *demissum* subsp. nov. Plantae glabrae vel sparse pubescentes, demissae; caulibus 4–10 cm. altis, erectis, ex caudicibus ramosissimis; foliis integris, linearibus vel spathulatis, 20–40 mm. longis, 1–2 mm. latis; racemis elongatis; petalis albo-flavis.

Plants glabrous or very sparsely pubescent, from thick, woody, freely branching crowns; stems many, stiffly erect, 4–10 cm. tall; leaves entire, linear to very narrowly linear-spatulate, the basal mostly 20–40 mm. long, 1–2 mm. broad; racemes about half total length of stems; petals cream-colored.

Type. White shale benches and hilltops at 5900 feet elevation, 4 miles southwest of Duchesne, Duchesne County, Utah, June 15, 1947, *Ripley & Barneby 8699* (Univ. of Washington Herbarium 113909).

The short stature of these plants apparently is not due to particularly poor growing conditions during the season of 1947. They presumably are derived from subsp. *integrifolium* which is to be found in the same locality in moister places, especially where the salinity is high. Since numerous plants were collected, it is certain that the type is representative of a distinctive population.

LEPIDIUM MONTANUM Nutt. ex T. & G. subsp. *Davisii* (Rollins) comb. nov. *L. Davisii* Rollins, Madroño 9: 164. 1946.

Plants similar in habit to those of subsp. *demissum*, the stems many, 3–10 cm. tall, from woody, freely branched crowns, the entire plant finely puberulent; leaves linear-oblongate to oblongate, entire, the basal smaller than the cauline, the latter 10–25 mm. long, 2–5 mm. broad; stamens 6; petals apparently white.

Material seen. 12 miles south of Mountain Home, Elmore County, Idaho, May 31, 1945, elevation 2750 feet, "plants forming a pure association in dry bed of a small playa on a sagebrush mesa", *Ripley and Barneby 6499*; dried up pond, west of highway 1½ mile north of rim of Snake River Canyon, south of Mountain Home (Range 6 E., Township 5 S.), June 27, 1946, *R. J. Davis 4670* (type of *L. Davisii*, Dudley Herbarium no. 314343); from nearly same station, May 9, 1947, *R. J. Davis 4745* (Dudley Herbarium).

In my opinion this phase of the species is also similar to, but apparently more than, a badly stunted form of subsp. *integrifolium*. It is very unlike either subsp. *typicum* or subsp. *papilliferum*, the only subspecies of *L. montanum* previously reported from Idaho, and occurs considerably farther to the north than subsp. *integrifolium* has been reported.

LEPIDIUM MONTANUM subsp. *typicum* nom. nov. *L. montanum* var. *typicum* C. L. Hitchc. Madroño 3: 302. 1936.

LEPIDIUM MONTANUM subsp. *typicum* var. *wyomingense* (C. L. Hitchc.) comb. nov. *L. montanum* var. *typicum* forma *wyomingense* C. L. Hitchc. *op. cit.*, p. 304.

LEPIDIUM MONTANUM subsp. *canescens* (Thell.) comb. nov. *L. montanum* var. *canescens* (Thell.) C. L. Hitchc. *op. cit.*, p. 304.

LEPIDIUM MONTANUM subsp. *cinereum* (C. L. Hitchc.) comb. nov. *L. montanum* var. *canescens* forma *cinereum* C. L. Hitchc. *op. cit.*, p. 306.

LEPIDIUM MONTANUM subsp. *papilliferum* (Henderson) comb. nov. *L. montanum* var. *papilliferum* Henderson, Bull. Torrey Bot. Club 27: 342. 1900.

LEPIDIUM MONTANUM subsp. *heterophyllum* (Wats.) comb. nov. *L. montanum* var. *heterophyllum* (Wats.) C. L. Hitchc. *op. cit.*, p. 307.

LEPIDIUM MONTANUM subsp. *glabrum* (C. L. Hitchc.) comb. nov. *L. montanum* var. *glabrum* C. L. Hitchc. *op. cit.*, p. 307.

LEPIDIUM MONTANUM subsp. *alpinum* (Wats.) comb. nov. *L. montanum* var. *alpinum* Wats. Bot. King Exp. 29. 1871.

LEPIDIUM MONTANUM subsp. *tenellum* (Williams) comb. nov. *L. montanum* var. *tenellum* (Williams) C. L. Hitchc. *op. cit.*, p. 308.

LEPIDIUM MONTANUM subsp. *Jonesii* (Rydb.) comb. nov. *L. montanum* var. *Jonesii* (Rydb.) C. L. Hitchc. *op. cit.*, p. 309.

LEPIDIUM MONTANUM subsp. *alyssoides* (Gray) comb. nov. *L. montanum* var. *alyssoides* (Gray) Jones, Zoe 4: 266. 1893.

LEPIDIUM MONTANUM subsp. *alyssoides* var. *Eastwoodiae* (Wooton) comb. nov. *L. montanum* var. *Eastwoodiae* (Wooton) C. L. Hitchc. *op. cit.*, p. 311.

LEPIDIUM MONTANUM subsp. *spathulatum* (Robinson) comb. nov. *L. montanum* var. *spathulatum* (Robinson) C. L. Hitchc. *op. cit.*, p. 312.

LEPIDIUM MONTANUM subsp. *angustifolium* (C. L. Hitchc.) comb. nov. *L. montanum* var. *angustifolium* C. L. Hitchc. *op. cit.*, p. 312.

LEPIDIUM MONTANUM subsp. *integrifolium* (Nutt.) comb. nov. *L. montanum* var. *integrifolium* (Nutt.) C. L. Hitchc. *op. cit.*, p. 313.

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