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The *Luzula comosa* complex (*Luzula* section *Luzula*, Juncaceae) in western North America

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Abstract

Field and herbarium study of *Luzula comosa* and its allies revealed two taxa in western North America that were overlooked in recent years but are distinct and best treated as species. ***Luzula cascadensis***, once considered a variety of *Luzula campestris*, is elevated to species rank. It inhabits montane wetlands from southern Washington to California, east to Idaho and Montana. It is distinguished from *Luzula comosa* by its elongate horizontal rhizomes, usually darker tepals, and wetter habitats. ***Luzula macrantha*** is raised to species rank and separated from *Luzula subsessilis* by differences in inflorescence architecture as well as the length of the tepals, styles, and anthers. *Luzula macrantha* is found in dry forest and openings from southern British Columbia to California. Lectotypes are designated for *Luzula comosa* var. *laxa* and *Luzula comosa* var. *congesta.* Descriptions, distribution maps, synonymy, a key, and illustrations are provided for members of the group.

Keywords: new species, Canada, United States

Luzula de Candolle (1805: 158) sect. *Luzula* (Kirschner *et al.* 2002) consists of cespitose or rhizomatous perennial graminoids with obtuse, slightly swollen leaf tips. Their inflorescences are spike-like clusters of many flowers (rarely three), arranged in umbel-like or head-like inflorescences. The flowers are small, with six scarious, brown, dark purple, or black tepals, and six stamens. The capsules contain three seeds, each with a basal aril (caruncle). Members of *Luzula* sect. *Luzula* grow in Eurasia, North and South America, Australia, and New Zealand. The section is taxonomically challenging (Kirschner 1990).

In this study we treat four native species of *Luzula* sect. *Luzula*, one with two varieties. These morphologically similar taxa can be referred to as the *L. comosa* Meyer (1823: 21) complex. The complex includes all members of *Luzula* sect. *Luzula* in California, Oregon and Washington, with the exception of *L. campestris* and *L. multiflora*, which are generally distinguished by their consistently denser spikes. Species included in the complex are *L. comosa* with two varieties, *L. subsessilis* (Watson 1880: 203) Buchenau (1898: 290), and two taxa we raise to the rank of species, *L. cascadensis* and *L. macrantha*.

Lacking access to type specimens or a coherent treatment, North American botanists have been troubled by the group for more than a century. Over a dozen different names have been applied to these five taxa (Table 1). Sometimes all have been treated as *L. comosa* (Swab 1993, 2000) or *L. campestris* (Linnaeus 1753: 329) de Candolle (1805: 161; *e.g.*, Abrams 1940). All but one have been treated as *L. multiflora* (Ehrhart 1790: 14) Lejeune (1811: 169; *e.g.*, Peck 1961) or *L. campestris* var. *congesta* (Thuillier 1799: 178) Bicheno (1819: 334; *e.g.*, Hitchcock & Cronquist 1973). Clearly this was a group in need of revision.

Good progress in interpreting Pacific North American taxa came from studies of euploidy and agamatoploidy in *Luzula* sect. *Luzula* (Nordenskiöld 1951, 1956, 1971). However, the taxonomic confusion of the day limits the current usefulness of Nordenskiöld's work. Not all of the relevant material used in Nordenskiöld's chromosome studies could be safely equated with the native taxa treated below. We attempted to check the identification of her voucher specimens, but some could not be found when we attempted to borrow them from UPS. Because of the importance of polyploidy and agamatoploidy in understanding the evolution of the *Luzula comosa* and similar species (Kirschner 1992a), a new karyological study should be carried out using seeds from recently collected herbarium vouchers.

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Appendix 1:—Common associates for members of the *Luzula comosa* complex, based on herbarium labels and field notes.

1. ***Luzula cascadensis*:** *Abies magnifica* A. Murray bis, *Agrostis scabra* Willd., *Allium validum* S. Watson, *Calamagrostis canadensis* (Michx.) P. Beauv., *Carex aurea* Nutt., *C. bolanderi* Olney, *C. echinata* Murray, *C. feta* L. H. Bailey, *C. fissuricola* Mack., *C. laeviculmis* Meinsch., *C. lenticularis* Michx., *C. luzulina* Olney, *C. nebrascensis* Dewey, *C. pachystachya* Cham. ex Steud., *C. pellita* Muhl. ex Willd., *C. subfusca* W. Boott, *Deschampsia cespitosa* (L.) P. Beauv., *Dodecatheon redolens* (H. M. Hall) H. J. Thomps., *Drosera rotundifolia* L., *Eriophorum angustifolium* Honck., *Hypericum anagalloides* Cham. & Schltdl., *Juncus balticus* Willd. subsp. *ater* (Rydb.) Snogerup, *J. covillei* Piper, *J. ensifolius* Wikstr., *J. howellii* F. J. Herm., *J. laccatus* Zika, *J. mertensianus* Bong., *J. nevadensis* S. Watson, *Mimulus guttatus* Fisch. ex DC., *M. primuloides* Benth., *Montia fontana* L., *Narthecium californicum* Baker, *Pedicularis groenlandica* Retz., *Picea engelmannii* Parry ex Engelm., *Pinus contorta* Douglas ex Loudon, *P. jeffreyi* Balf., *P. ponderosa* P. Lawson & C. Lawson, *Salix commutata* Bebb, *S. orestera* C. K. Schneid., *S. pedicellaris* Pursh, *S. planifolia* Pursh, *Scirpus microcarpus* J. Presl & C. Presl, *Senecio triangularis* Hook., *Triantha occidentalis* (S. Watson) R. R. Gates, *Trifolium monanthum* A. Gray, and *Tsuga mertensiana* (Bong.) Carrière.

2A. ***Luzula comosa* var. *comosa*:** *Acer circinatum* Pursh, *Alnus rubra* Bong., *Anaphalis margaritacea* (L.) Benth. & Hook. f., *Anthoxanthum odoratum* L., *Aruncus dioicus* (Walter) Fernald, *Carex harfordii* Mack., *C. obnupta* L. H. Bailey, *Deschampsia cespitosa, Holcus lanatus* L., *Juncus hesperius* (Piper) Lint, *J. phaeocephalus* Engelm.,