

***LOMATIUM FILICINUM* (APIACEAE): A NEW COMBINATION  
EPITYPIFIED WITH *LOMATIUM BASALTICUM***

**DONALD H. MANSFIELD**

Department of Biology  
Harold M. Tucker Herbarium  
The College of Idaho  
Caldwell, Idaho 83605  
dmansfield@collegeofidaho.edu

**BARBARA L. WILSON**

*Carex* Working Group  
2250 NW 13<sup>th</sup> Street  
Corvallis, Oregon  
cwg@peak.org

**JAMES F. SMITH**

Department of Biological Sciences  
1910 University Drive  
Boise State University  
Boise, Idaho 83725  
jfsmith@boisestate.edu

**MARK DARRACH**

Burke Museum of Natural History and Culture  
University of Washington  
Seattle, Washington 98195  
corydalis.mark@gmail.com

**ABSTRACT**

*Lomatium basalticum* Mansfield & McK. Stevens was described recently without knowledge of the type specimens of *Leptotaenia filicina* M.E. Jones described in 1902. Here we argue that these represent the same species and provide the combination ***Lomatium filicinum*** (M.E. Jones) Mansfield & McK. Stevens, **comb. nov.**, to accommodate the earlier name. An epitype is designated for *Leptotaenia filicina*.

When publishing the narrowly endemic biscuitroot *Lomatium basalticum* Mansfield & McK. Stevens (Mansfield et al. 2016), the authors were unaware of the type specimens of *Leptotaenia filicina* M.E. Jones, a name that had been ignored since its publication (Jones 1902). Dr. Jason Alexander brought to our attention the *Leptotaenia filicina* holotype specimen at RSA (Figure 1; herbarium acronyms from Theirs continuously updated). An isotype was located at UTC and viewed on-line (<http://intermountainbiota.org/portal/collections/individual/index.php?occid=3074559&clid=0>). Both types had been annotated as “= *Lomatium grayi* var. *filicinum* (Jones) n. comb. ined.” in 1939 by Mathias and Constance. Apparently, that name was never published.

The *Leptotaenia filicina* type specimens have long, narrow mature fruits, like those of *Lomatium basalticum* and *L. brunsfeldianum*. The leaves were largely senescent at the time of collection and are in poor condition. The few remaining ultimate leaf segments appear filiform, consistent with the identification of *L. basalticum* and *L. brunsfeldianum*.

The type specimens were collected in 1899 in the Seven Devils Mountains of Idaho. This area was variously recognized as either Idaho County or Washington County during the second half of the 19<sup>th</sup> century. In 1911, part of this area was separated to form Adams County. The Seven Devils

Mountains straddle what is now the western Adams Co./Idaho Co. border. This location falls within the range of *Lomatium basalticum*, which is known from Adams Co., Idaho, and Wallowa and Baker cos., Oregon. However, *Lomatium brunsfeldianum* grows on rocky cliffs along streams in the northern Rocky Mountains, as nearby as eastern Idaho County, so range considerations alone do not allow for a confident discrimination between these two species.



Figure 1. Holotype of *Leptotaenia filicina*, RSA

In attempts to determine the identity of the *Leptotaenia filicina* type specimens relative to these recently described species, measurements of fruit length and width were taken from photographs of the type specimens. Additionally, Dr. Mare Nazaire, RSA Collections Manager, weighed the available fruits in a fragments packet on the type specimen there.

The filiform leaves might suggest that the types are *Lomatium grayi*. However, the form of *L. grayi* found in the area [*L. papilioniferum* J.A. Alexander and W. Whaley, in review] has proportionately shorter fruits, with length/width ratios 1.5–2.2 (Mansfield et al. 2016) versus 3.5–5.1 for the types (Table 1). It also has shorter and notably papillose ultimate leaf segments that attach more distantly from the rachis. Though leaves of the type specimen are badly broken, a few of the remaining ultimate leaf segments appear too long and are attached too proximally to comport with *L. grayi/papilioniferum*.

Fruit measurements of *Lomatium basalticum* and *L. brunsfeldianum* overlap greatly (Mansfield et al. 2016). Nonetheless, those of the type specimens seem to match *L. basalticum* better than *L. brunsfeldianum*. Fruit weights are considered the best trait for distinguishing fruits of the two species (Mansfield et al. 2016). Weights of fruits in the fragment packet on the RSA specimen are intermediate between those of the two species. However, these weighed fruits average smaller than those attached to the type specimen sheet (Nazaire, pers. comm.), and they have had approximately 100 years longer to lose mass than any fruits evaluated for the publication of *L. basalticum*.

Table 1. Traits of the *Leptotaenia filicina* type specimens and of *Lomatium basalticum* and *Lomatium brunsfeldianum*.

Trait	<i>L. filicina</i> type (RSA)	<i>L. basalticum</i>	<i>L. brunsfeldianum</i>
Mericarp length	15-21 mm	12-21 mm	9.8-17 mm
Mericarp width	3.5-5 mm	3--4.8 mm	2-3.8 mm
Mericarp L/W ratio	3.5-5.1	3.3-5.6	3.3-5.5
Mericarp mass	14.0 +/- 9.4 g	34.3 +/- 14.5 g	4.8 +/- 0.1 g
Habitat	not known	gravelly slopes, hillsides	river banks
Range, Idaho	Seven Devils Mts. (NW Adams Co. and SW Idaho Co.)	Adams and Washington cos.	Benewah, eastern Idaho, Kootenai, Nez Perce, and Shoshone cos.
Range, Oregon		Baker and Wallowa cos.	
Range, Montana			Sanders Co.

We conclude that the *Leptotaenia filicina* type specimens belong to the same species that was later named *Lomatium basalticum* by Mansfield et al. (2016). In light of this new information, two actions are necessary.

First, the name *Leptotaenia filicina* must be epitypified to stabilize its meaning. The Jones type specimens lack some of the important characteristics, such as plant bases, for properly identifying this taxon. Numerous new nomenclatural combinations and modifications to taxonomic understanding are occurring in this group of plants (e.g., Feist et al. 2017), and more changes will likely occur as a result of ongoing analysis of phylogenetic relationships in Apiaceae subfamily Apioideae (George et al. 2014; Smith et al. 2018). Besides this general flux, disagreement exists regarding how best to classify *Lomatium basalticum* in relation to *L. brunsfeldianum* and the remainder of the *L. grayi* complex (J.A. Alexander, pers. comm.). In this regard, we epitypify *Leptotaenia filicina* with the more complete specimen that is the type of *Lomatium basalticum*.

Second, as has been the case with all other members of the genus *Leptotaenia*, the name *L. filicina* must also be assigned to *Lomatium* (Mathias & Constance 1942). Phylogenetic analyses (George et al. 2014; Mansfield 2016) have placed *L. basalticum* and *L. brunsfeldianum* within the same large subclade of *Lomatium* that includes all the other species (we sampled 9) originally placed in *Leptotaenia* but transferred by Mathias and Constance (1942) to *Lomatium*.

**Lomatium filicinum** (M.E. Jones) Mansfield & McK. Stevens, **comb. nov.** *Leptotaenia filicina* M.E. Jones, Contr. W. Bot. 10: 56. 1902. **TYPE: USA. Idaho.** Washington Co.: Seven Devils Mountains, 5 Aug 1902, *M.E. Jones s.n.* (holotype RSA!; isotype UTC! [photos of both seen online], Fig. 1). **Epitype** (here designated): **Oregon.** Wallowa Co.: Hells Canyon National Recreation Area, 1.26 km SE of McGraw Lookout, 370 m due E of Forest Service Road 110, 45.1672124° N -116.7681258° W, sparse *Pseudoroegneria spicata* grassland/forbland, common on silty loam derived from weathered entablature basalt, southerly aspect, with *Pseudoroegneria spicata*, *Poa secunda*, *Bromus carinatus*, *Sedum stenopetalum*, *Astragalus reventus*, *Artemisia rigida*, elev. 1804 m (5920 ft), 5 Jul 2015, *M. Darrach 1115* (holotype: CIC!; isotypes: NY!, OSC!, RM!, WTU!, ID!).

*Lomatium basalticum* Mansfield & McK. Stevens, Phytoneuron 2016-74: 2. **TYPE: USA. Oregon.** Wallowa Co.: Same collection (*Darrach 1115*) and distribution as for *Lomatium filicinum*.

#### ACKNOWLEDGEMENTS

Dr. Jason A. Alexander informed us about the *Leptotaenia filicina* type specimens, Dr. Mare Nazaire at RSA weighed holotype seeds for us, and Dr. Kanchi Gandhi gave us advice about how to proceed with the discovery that *L. filicina* is an earlier name for *Lomatium basalticum*.

#### LITERATURE CITED

- Feist, M.E., J.F. Smith, D.H. Mansfield, M. Darrach, R.P. McNeill, S.R. Downie, G.M. Plunkett, and B.L. Wilson. 2017. New combinations in *Lomatium* (Apiaceae, Subfamily Apioideae). *Phytotaxa* 316: 95–98.
- George E.E., D.H. Mansfield, J.F. Smith, R.L. Hartman, S.R. Downie, and C.E. Hinchliff. 2014. Phylogenetic analysis reveals multiple cases of morphological parallelism and taxonomic polyphyly in *Lomatium* (Apiaceae). *Syst. Bot.* 39: 662–675.
- Jones, M.E. 1902. Miscellaneous species. *Contr. West. Bot.* 10: pp. 55–58.
- Mansfield, D.H., M. Stevens, L. Polito, J.F. Smith, and M. Darrach. 2016. *Lomatium basalticum* (Apiaceae), a new species from the vicinity of Hells Canyon in Oregon and Idaho. *Phytoneuron* 2016-74: 1–13.
- Mathias, M.E. and L. Constance. 1942. New combinations and new names in the Umbelliferae—II. *Bull. Torrey Bot. Club* 69: 244–248.
- Smith, J.F., D.H. Mansfield, M. Stevens, E. Sosa, M.E. Feist, S.R. Downie, G.M. Plunkett, and M. Darrach. 2018. Try tri again?: Resolving species boundaries in the *Lomatium triternatum* (Apiaceae) complex using molecular phylogenetic tools. *J. Syst. Evol.* In press.
- Thiers, B. [continuously updated]. *Index Herbariorum: A global directory of public herbaria and associated staff.* New York Botanical Garden's Virtual Herbarium. <<http://sweetgum.nybg.org/science/ih/>>