



Fasciculus Muscorum III : New and Interesting Bryophytes Collected from Rio Arriba and Taos Counties by Robert C. Sivinski

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They say, “big things come in small packages.” For bryophytes (mosses and liverworts), this can be altered to “little big things come in small packages.” Recently, Robert Sivinski of Santa Fe and University of New Mexico Herbarium Associate, one of New Mexico’s premier botanists, sent us two small, bubble-wrap packages filled with even smaller packets of mosses and liverworts. These were gathered on two forays into glacial cirque country of northern New Mexico: the first on 19 August 2023 to the area just above Rio Quemado Falls and below Truchas Peak (Rio Arriba County); the second on 3 September 2023 to the area just below Serpent Lake (Taos County). A day’s work on each package revealed the following. All specimens will be deposited in the herbarium at New Mexico State University (NMC).



19 Aug 2023 site below Truchas Peak (Rio Arriba County). Photo by Bob Sivinski.

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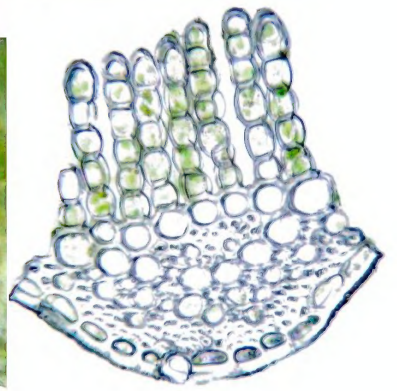
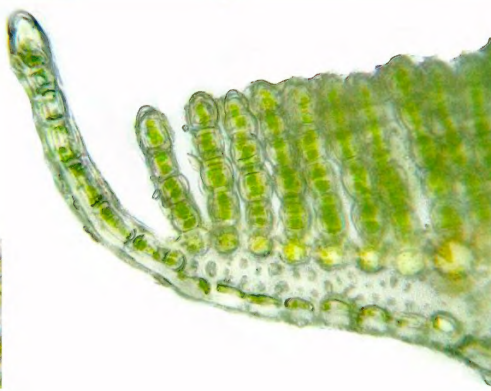
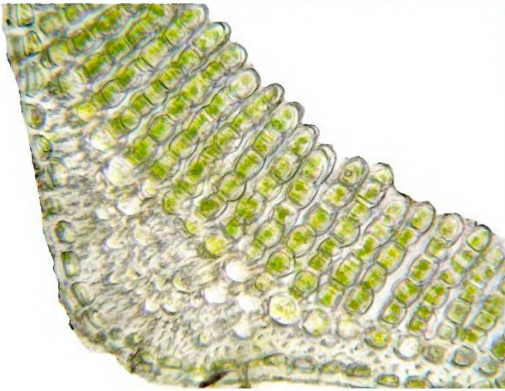
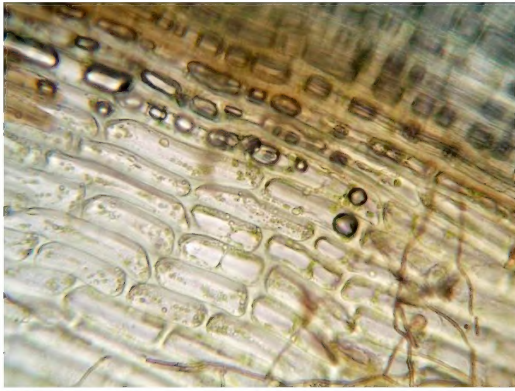
Serpent Lake (Taos County), 3 Sep 2023 collecting site is at bog below this. Photo by Bob Sivinski.

We acknowledge and extend a big “thank you” to Bob for making these collections while primarily focused on vascular plants, and for generously sharing them with us. We applaud him for making the difficult hikes into these remote areas, something that only one of us can still do! Though the current list of bryophytes in the state stands at 474 species (486 total taxa), experience has shown that almost every excursion into the wilds of New Mexico will yield something new and exciting. In addition, we credit Ries Lindley for putting us on the trail of *Hymenoloma mulahaceni* (see story below); without Ries’s attention to detail, we would have continued merrily on our way calling everything *Hymenoloma crispula*!

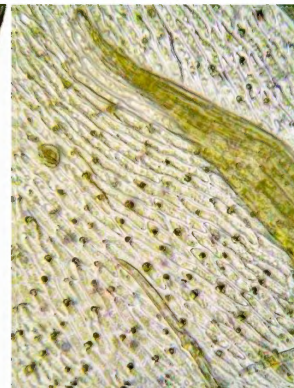
Three Additions to the New Mexico Bryoflora

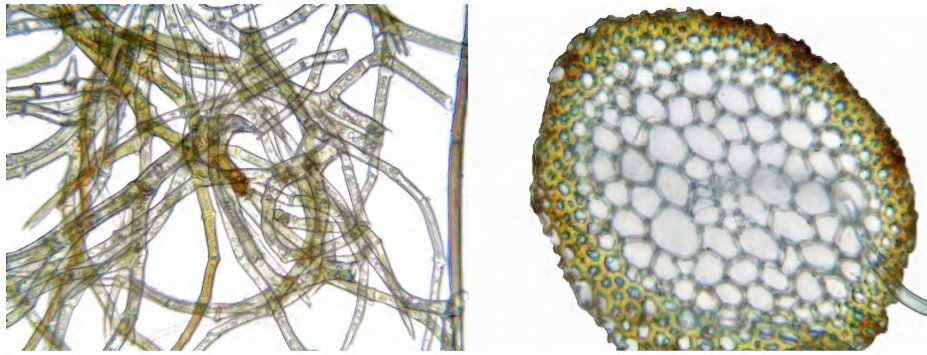
Polytrichum longisetum Swartz ex Bridel [*Polytrichastrum longisetum* (Swartz ex Bridel) G.L. Smith]: New Mexico: Rio Arriba County: Sangre de Cristo Mts, glacial cirque just above North Fork Rio Quemado Falls and below North Truchas Peak, N35.98276° W105.64817°, WGS84, 11320 ft, igneous rock at edge of wet meadow, 19 Aug 2023, *R.C. Sivinski* 9727 (NMC).





Helodium blandovii (Weber & Mohr) Warnstorf: New Mexico: Taos County: Sangre de Cristo Mountains, Pecos Wilderness, 4.8 air miles southwest of Angostura, broad boggy valley bottom just below Serpent Lake, N36.04543° W105.53992°, WGS84, 11720 ft, peat bog of mosses, *Carex* spp, with hummocks of *Salix planifolia*, 3 Sep 2023, Robert C. Sivinski 9781 (NMC).

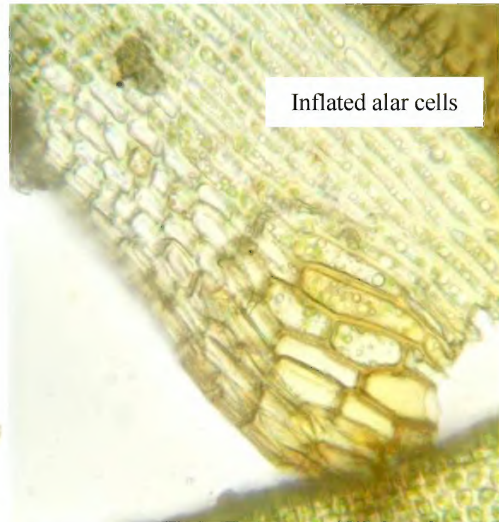




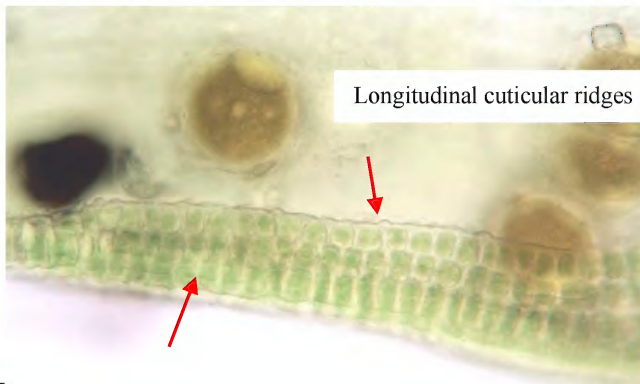
Hymenoloma crispulum (Hedwig) Ochyra: New Mexico: Rio Arriba County: Sangre de Cristo Mts, glacial cirque just above North Fork Rio Quemado Falls and below North Truchas Peak, N35.98319° W105.64864°, WGS84, 11340 ft, cracks in quartzite bedrock under *Picea engelmannii*, 19 Aug 2023, R.C. Sivinski 9735 (NMC).



Globose gemmae



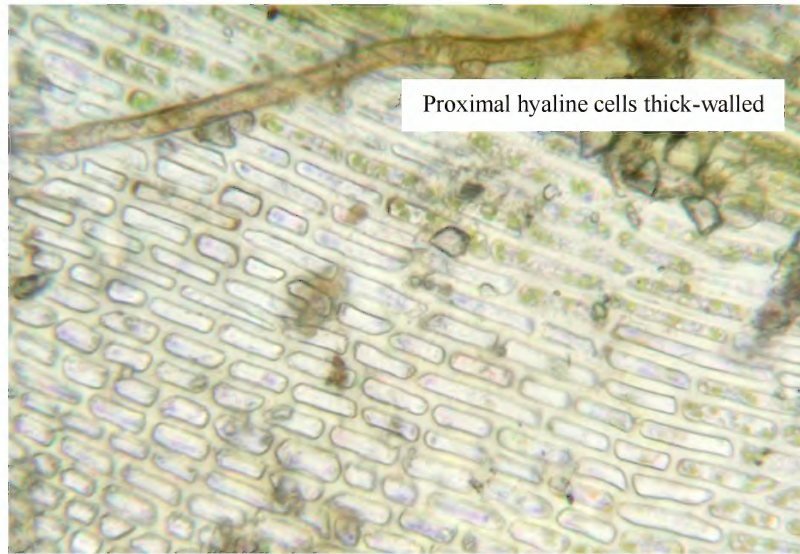
Inflated alar cells



Longitudinal cuticular ridges



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Page 414 from Lüth (2019, vol. 2), showing gemmae (circle) and enlarged alar cells (arrows) for *Hymenoloma crispulum*.

A Clarification of *Dicranoweisia* and *Hymenoloma* in New Mexico

The genus *Dicranoweisia* was first reported for New Mexico by Bartram (1931), based on two collections, one each from San Miguel and Bernalillo counties, collected in 1928 and 1929 by Bro. Gerfroy Arsène Brouard of the Sacred Heart Training College in Las Vegas, New Mexico. Because of longitudinal cuticular striae on the leaf blades, they were determined and distributed as *Dicranoweisia crispula* (Hedwig) Lindberg ex Milde. From 1931 to now, every *Dicranoweisia* in New Mexico with these peculiar and distinctive longitudinal cuticular ridges (looking suspiciously like papillae in cross-section) was assigned to *D. crispula* (Hedwig) Lindberg ex Milde. Further systematic investigations by various authors (see Werner et al. 2013) concluded that *Dicranoweisia* mosses with these cuticular striae belonged in a separate genus, *Hymenoloma*, within its own family, Hymenolomataceae.

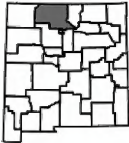
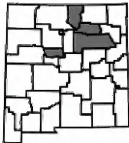
Dicranoweisia species lacking the longitudinal striae remain in *Dicranoweisia*. Of these, we have one species in New Mexico: *D. cirrata* (Hedwig) Lindberg ex Milde.

In early September of this year, Ries Lindley sent KWA photos of a *Hymenoloma* species from Arizona, asking if it might belong to *H. mulahaceni* (Höhnelt) Ochyra, and included a helpful paper (Werner et al. 2013) on distinguishing *H. mulahaceni* from *H. crispula*. This was the first we had heard of *H. mulahaceni*! After studying the paper, we agreed with Ries that his moss was, indeed, *H. mulahaceni*. This prompted us to wonder about all the specimens from New Mexico that had been determined as *H. crispula*; could some of them also belong to *H. mulahaceni*?

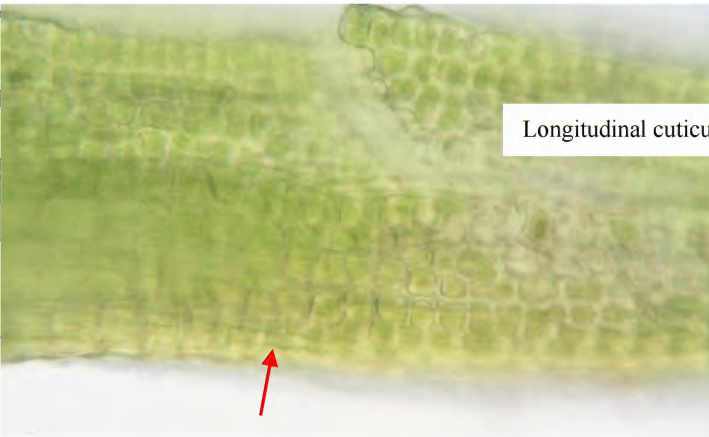
To date, we have examined 19 collections from New Mexico determined as *Hymenoloma crispula*. Only one belonged to *H. crispula* (Hedwig) Ochyra s.s.: Bob Sivinski's collection cited above. For this reason, we cite Bob's specimen as a new state record. Of the remaining 18, nine belonged to *H. mulahaceni* (reported below for New Mexico for the first time), six to *Dicranum montanum* Hedwig, two to *Symblepharis vaginata* (Hooker ex Harvery) Wijk & Margadant, and one to *Ceratodon purpureus* (Hedwig) Bridel. The two collections collected by Arsène and reported by Bartram (1931) as *Dicranoweisia crispula* both belonged to *Hymenoloma mulahaceni*.

According to Werner et al. (2013), the type collection of *Hymenoloma mulahaceni* from Mount Mulahacén in Spain produced elongate-oblong gemmae, but these were absent in other collections of *H. mulahaceni*. They also reported that gemmae were absent in *H. crispula*. We found such elongate-oblong gemmae in Arsène's collection of *H. mulahaceni* from San Miguel County, but not in his collection from Bernalillo County. Contrary to the claim of Werner et al. (2013), we found globose gemmae in Bob's collection of *H. crispula* from Rio Arriba County, illustrated above. Globose gemmae in *H. crispula* were also noted by Lüth (2019, vol. 2) in European material (see page above).

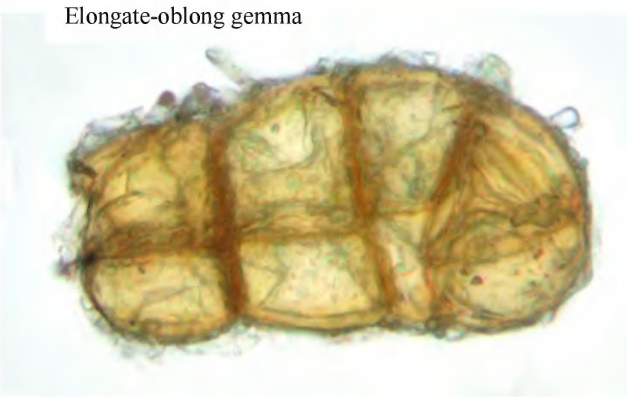
The two species of *Hymenoloma* in New Mexico can be summarized as follows:

<i>H. crispula</i>	<i>H. mulahaceni</i>
With longitudinal cuticular striae	With longitudinal cuticular striae
Axillary leaf gemmae present (in our 1 specimen), globose	Axillary leaf gemmae absent or present (in 1 specimen), elongate-oblong
Leaf margins 1-stratose	Leaf margins 2-stratose
Alar cells commonly inflated	Alar cells not or scarcely inflated
Proximal hyaline cells thick-walled	Proximal hyaline cells thin-walled
Known in NM from 1 county 	Known in NM from 4 counties 

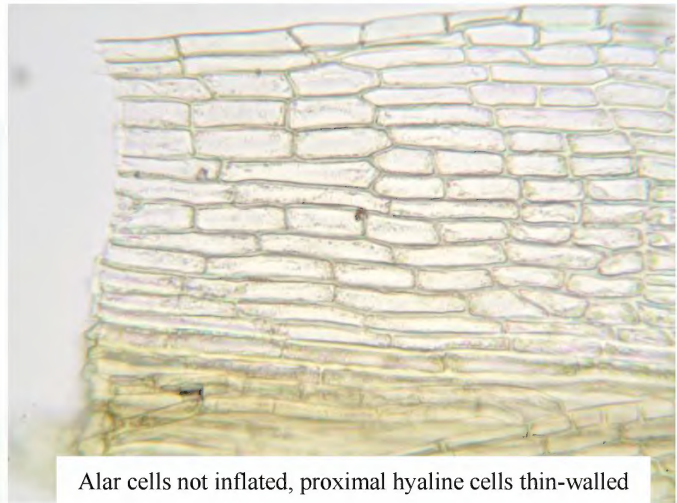
Hymenoloma mulahaceni (Höhnelt) Ochyra new to New Mexico: Bernalillo County: Sandia Mt, 3000 m, 7 Sep 1929, Bro. G. Arsene (FH) [note: the packet and Bartram's report (1931) incorrectly state this is in Sandoval Co.]; Mora County: Sangre de Cristo Mts, Pecos Wilderness, along trail near Allbright Creek, 2900 m, 31 July 1997, Kelly W. Allred 6957 (NMC); San Miguel County: Hermit's Peak, 3110 m, July 1928, Bro. G. Arsene (FH); Taos County: Taos Ski Resort Area, end of hwy 150 14 miles northeast of Toas, N36°35.77' W105°27.00', 2900 m, growing on granite, 29 May 1998, Kelly W. Allred 7172 (NMC).



Longitudinal cuticular ridges



Elongate-oblong gemma



Alar cells not inflated, proximal hyaline cells thin-walled

Complete List of Bryophytes from the Two Forays of Bob Sivinski

!=state record, *=county record

Rio Arriba County, 19 Aug 2023:

- **Conardia compacta* (Hooker ex Müller Hal.) H. Robinson
- **Dicranum scoparium* Hedwig
- **Hygrohypnella ochracea* (Hedwig) Loeske
- !*Hymenoloma crispulum* (Hedwig) Ochyra
- **Lophozia ventricosa* (Dickson) Dumortier
- **Plagiothecium denticulatum* (Hedwig) Schimper
- Pohlia cruda* (Hedwig) Lindberg
- Polytrichum juniperinum* Hedwig

!**Polytrichum longisetum* (Bridel) G.L. Smith

**Sanionia uncinata* (Hedwig) Loeske

Sphagnum capillifolium (Ehrhart) Hedwig

Taos County, 3 Sep 2023:

Climacium americanum Bridel

Encalypta vulgaris Hedwig

Drepanocladus aduncus (Hedwig) Warnstorf

!**Helodium blandovii* (Weber & Mohr) Warnstorf

Ptychostomum creberrimum (Taylor) J.R. Spence & H.P. Ramsay

**Scorpidium cossonii* (Schimper) Hedenäs

Tomentypnum nitens (Hedwig) Loeske

Literature Cited

Bartram, E.B. 1931. Mosses of northern New Mexico collected by Bro. Arsène. *Ann. Crypt. Exot.* 4:153-160.

Lüth, M. 2019. *Mosses of Europe – A Photographic Flora*. 3 vols. Publ. by the author, Freiburg, Germany. 1360 pp.

Werner, O., S. Rams, J. Kučera, J. Larrain, O.M. Afonina, S. Pisa, R.M. Ros. 2013. New data on the moss genus

Hymenoloma (Bryophyta), with special reference to *H. mulahaceni*. *Cryptogamie, Bryologie* 34(1): 13-30.