

GRIMMIA MUEHLENBECKII SCHIMP., A NEW MOSS RECORD FOR THE MARITIME PROVINCES, CANADA

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Résumé – Le *Grimmia muehlenbeckii*, qui n'avait jamais été signalé dans les provinces Maritimes de l'est du Canada, vient d'être récolté à trois reprises en Nouvelle-Écosse. Deux des récoltes proviennent du comté de Lunenburg, et la troisième, du comté d'Annapolis.

Mots-clés : *Grimmia muehlenbeckii*, Grimmiaceae, Blandford Nature Reserve, provinces Maritimes. blocs de roche granitique, mousse.

Abstract – *Grimmia muehlenbeckii*, previously unknown in the Maritime Provinces, Eastern Canada, has been found three times in Nova Scotia. Two collections came from Lunenburg County and one from Annapolis County.

Key words: *Grimmia muehlenbeckii*, Grimmiaceae, Blandford Nature Reserve, Maritime Provinces, granitic boulders, moss.

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The moss *Grimmia muehlenbeckii* Schimp. [synonym: *G. hermannii* H.A. Crum] is reported here from three sites in the province of Nova Scotia, Canada (Figure 1). It had never been collected before in the Maritime Provinces, which also include New Brunswick and Prince Edward Island.

In 1959, an area on the Aspotogan Peninsula, in Lunenburg County, Nova Scotia, became a wildlife sanctuary and remained virtually untouched until 2005, when there was a threat that it,

along with twenty-two other game sanctuaries in the province, would be delisted. This one sanctuary attracted more attention than all others combined, with the result that in May 2007 it became a protected area under the Special Places Act. This 350 ha area, known as the Blandford Nature Reserve, contains a wide variety of habitats, including extensive Jack Pine (*Pinus banksiana* Lamb.) barrens, and it is home to rare lichens, mosses and vascular plants. It was in the course of doing surveys in this reserve that *Grimmia muehlenbeckii* was found.

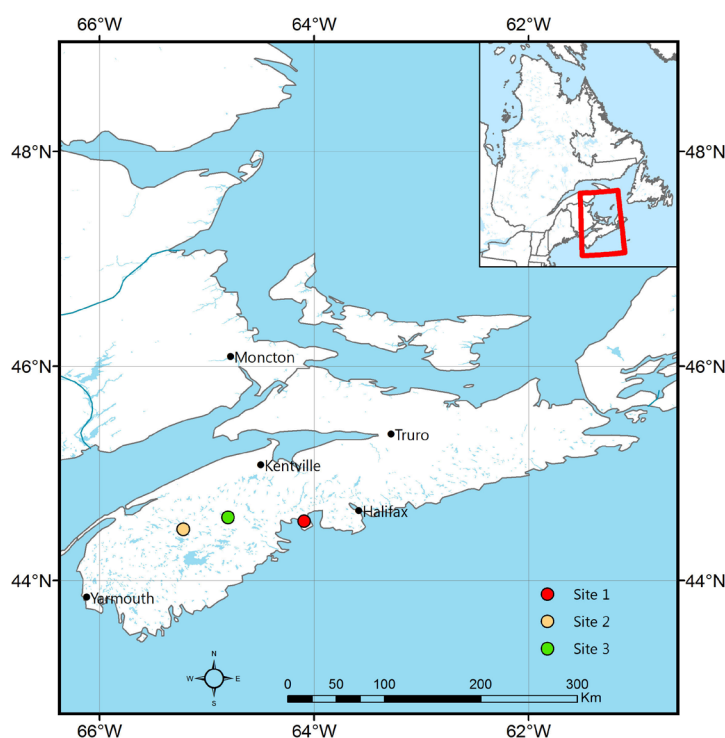


Figure 1. – Distribution of *Grimmia muehlenbeckii* in the Maritime Provinces.

The original specimen, *A. Mills s.n.* (NBM BB-20320; MO 6091506), was collected on March 8, 2008, on a large erratic boulder in Rocky Lake (Site 1 of Figure 1), about 6 metres from the shoreline, 44,55147 N, 64,09206 W, elev. 47 m. The lake margin was still frozen; otherwise the moss would not have been seen. Additional specimens were found later in the season, on boulders bordering the shoreline, not far from where the original specimen had been found. Overland access to these boulders was more difficult, through waist-high, dense shrubbery. In this location, there were thirty small to medium cushions of the moss, from 4 mm to 3 cm in diameter, on an east-facing sloping granite boulder, about 25-30 cm above the high water level (Figures 2 and 3).

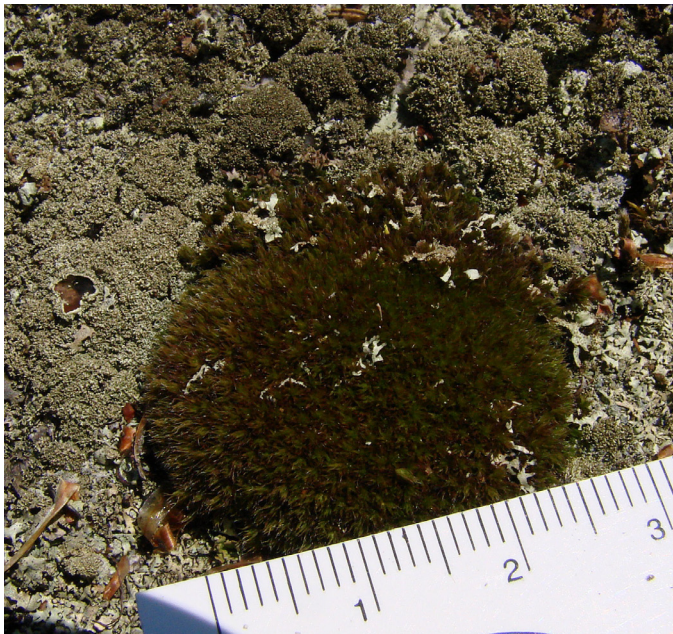


Figure 2 – *Grimmia muehlenbeckii* at Rocky Lake.



Figure 3 – *Grimmia muehlenbeckii* cushions exposed and in rock crevice, at Rocky Lake.

The dark-green cushions were scattered over the boulder surface, more plentiful and better developed on the southeast exposure and somewhat shaded by overhanging huckleberry bushes (*Gaylussacia baccata* (Wangenh.) K. Koch) and two white pine (*Pinus strobus* L.) trees (Figure 4).



Figure 4 – Location of *Grimmia muehlenbeckii* on boulders under white pines, at Rocky Lake.

Another collection of *G. muehlenbeckii*, *A. Mills s.n.* (*A. Mills pers. herb.* GM02), was made in late April 2010, at Mersey River Chalets, Annapolis County, Nova Scotia, 44,47851 N, 65,22111 W (Site 2 of Figure 1), on a large erratic granite boulder at the entrance to Hemlock Road leading to the Chalets, in a very exposed location. The specimen was growing among *Racomitrium aciculare* (Hedw.) Brid., *Andreaea rupestris* Hedw., and *Hedwigia ciliata* (Hedw.) P. Beauv.

The final collection, *A. Mills s.n.* (*A. Mills pers. herb.* GM03), was taken on October 14, 2011, from one of many large, flat granite boulders at Little Bluff, Lunenburg County, 44,59115 N, 64,80054 W, elev. 150 m (Site 3 of Figure 1). The moss was growing in an open location, among the lichens *Umbilicaria muhlenbergii* (Ach.) Tuck. and *Lassalia papulosa* (Ach.) Llano. The area bordered a steep valley facing northeast. This is an old quarry from which granite blocks were cut for building bridges along the nearby, now-abandoned, railway.

In my first attempt to identify this *Grimmia* species, using *Moss Flora of the Maritime Provinces* (Ireland 1982), it keyed out as *G. olneyi* Sull. This was not surprising, since the key did not include *G. muehlenbeckii*, but neither did the specimen fit the description of *G. olneyi*, which is considered rare in Nova Scotia. *G. olneyi* lacks gemmae on basal leaf cells, and its leaves are concave with a flat costa at the back (Allen 2005). Leaves of *G. muehlenbeckii* are ovate-lanceolate with a winged costa at the back (Figure 5), and the basal leaf cells bear clusters of gemmae (Figure 6).

The original specimen from Rocky Lake was identified as *Grimmia muehlenbeckii* by Bruce Bagnell at the New Brunswick Museum and confirmed by Bruce Allen at the Missouri Botanical Garden. Bruce Allen commented that this moss seems to be overlooked in the field, because of its small size and lack of sporophytes.



Figure 5 – *Grimmia muehlenbeckii* leaf cross-section.

The defining feature of *Grimmia muehlenbeckii* is a group of small spherical gemmae or propagula on slender filaments, scattered in clusters in the axils of the lower leaves. The immature gemmae are green, while the mature gemmae are reddish in color. Perichaetia are frequent (Figure 7), but no antheridia were found.

The known distribution of *Grimmia muehlenbeckii* in the Maritime Provinces is mapped in Figure 1. Elsewhere in eastern Canada, the species has been collected in Ontario (Crum 2004), Quebec (Faubert et al. 2011), and Newfoundland and Labrador (Hastings & Greven 2007). Now that it can be readily identified in the field, further searches in appropriate habitats of other counties may yield an interesting distribution of this moss in Nova Scotia, and possibly in the other Maritime Provinces.

The specimens collected at the Rocky Lake site are housed in the New Brunswick Museum Herbarium (NBM) and in the Missouri Botanical Garden Herbarium (MO). Specimens from the two other sites are housed in the personal herbarium of the author.



Figure 7 – *Grimmia muehlenbeckii* perichaetium with archegonia.

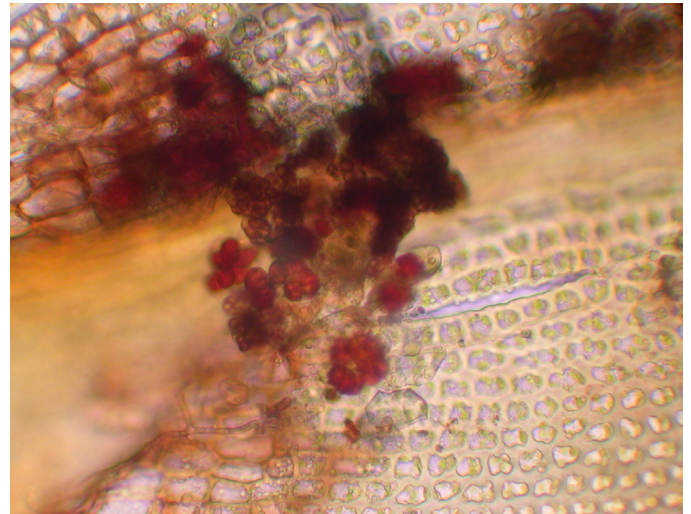


Figure 6 – *Grimmia muehlenbeckii* basal leaf cells with gemmae.

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