
PLANTS

UNUSUAL MORPHOLOGY AMONG COMMON MOONWORTS (*BOTRYCHIUM LUNARIA*) FROM CHURCHILL, MANITOBA

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Although we no longer believe that moonworts hold magical properties after being stepped upon by horses under the light of the full moon, this group of plants still has many intriguing features to draw our attention.^{1,2,3} The moonworts (*Botrychium* spp.) are a group of very unusual ferns in that each plant produces only one leaf (frond) per year, and this

leaf has a fertile (sporophore) and a sterile (trophophore) portion (Fig. 1).¹⁻⁵ The pinnately compound trophophore of the common moonwort (*B. lunaria*) has distinctive fan-shaped lobes (pinnae). In Manitoba, this species is most numerous on moist sand and gravel substrates near Churchill, but is rare elsewhere in the province (Fig. 2).⁶



Figure 1. Common moonworts with “normal” morphologies. Each frond has a single sterile and a single fertile portion.
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In July 2007, an arbitrary collection of 35 fronds was made during field work at various sites within 32 km of Churchill. This taxon is usually well known for its consistent morphological structure;⁵ however, the examination of this collection in the laboratory at a later date revealed some surprising variants (Fig. 3, see inside back cover, bottom). Seven specimens (20%) had sporangia on the periphery of one or both lower pinnae in addition to those of the sporophore itself. In most cases, the fertile lower pinnae of the trophophore were pinnatifidly lobed. In 12 specimens (34%), one or both lower pinnae were entirely lacking and replaced by additional sporophores.

Two specimens (6%) from Dene Village, south of Churchill, each possessed two



Figure 2. Common moonworts are frequent in disused sand/gravel quarries like this one on an esker ridge 7 km SE of Churchill, Manitoba, where the population was estimated at 2000 fronds.
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trophophores instead of a single one. These were paler than in “normal” forms of the species, and their sporangia were considerably smaller.

It appears that morphological variation is not only found in Manitoba populations; there are previous reports of similar variants in this species. For instance, in 1909, Benson found Swiss plants with sporangia on the sterile portion of the fronds.⁷ Recently, Farrar indicated that sporangia may be occasionally produced on the trophophores of any moonwort species.⁴ Chrysler used knowledge of similar variants in *B. lanuginosum* to develop a hypothesis regarding the evolutionary origin of fertile and sterile components in the frond structure and that this may explain their interchangeability.^{8,9}

What is the cause of this variation? Are these plants showing some reversion to an ancestral form, or are these variants simply a result of damage to growing apices by external forces (P. Friesen, unpublished)? There is certainly room for further research to find an answer that would explain the mysterious morphology of these magical plants.

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