



Pygmy Pocket Moss

Photo: © Stéphane Leclerc



Scientific name

Fissidens exilis

Taxon

Mosses

COSEWIC Status

Not at Risk

Canadian range

British Columbia, Ontario, Quebec, Nova Scotia

Reason for Designation

This species has a very large extent of Canadian occurrence, occurring on both Pacific and Atlantic coasts, and in central Canada. Despite low detectability that confounds attempts to quantify population sizes and trends, the number of known occurrences has increased from 7 to 21 since 2005, and it is expected that more occurrences will be documented with ongoing search effort. Although it is found in some densely populated regions of Canada, including southern Ontario, no declines or direct imminent threats are known for this species. Localized soil disturbance is required for suitable habitat, such that some kinds of human disturbance may actually benefit the species. Although data are lacking in many aspects of its biology, ecology, distribution, and abundance, no evidence suggests that this species is at risk in Canada.

Wildlife Species Description and Significance

Pygmy Pocket Moss (*Fissidens exilis*) is an ephemeral moss, periodically producing minute (up to 2 mm), 4- to 8-leaved plants from a mat of undifferentiated green filaments, or “protonemata”, persisting between periods of reproductive activity

on and in the surface soil layer. It can be identified using microscopic features of the leafy plants (gametophores), but the protonemata, which persist between periods of reproductive activity, cannot be visually identified by any means. Spore-filled capsules, supported on 2 – 9 mm stalks, are attached to the apex of each successfully fertilized, mature plant. Pygmy Pocket Moss is most likely to be detected when capsules are present, especially in large colonies.

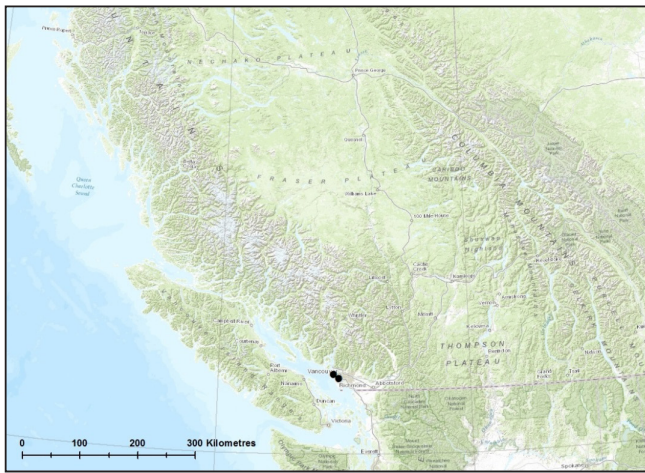
Distribution

Pygmy Pocket Moss is known from Europe, Asia, Africa, the West Indies, New Zealand and North America. Some authors speculate that it may have been introduced to the last three of these, but conclusive evidence is lacking. Pygmy Pocket Moss was first discovered in North America in 1947, in Cleveland, Ohio, and it is known from at least fifteen eastern US states, as well as from the Canadian provinces of Nova Scotia, Quebec, Ontario, and British Columbia. Some experts believe the species may be introduced in British Columbia.

Search effort for Pygmy Pocket Moss requires specific, intensive approaches that address challenges associated with ephemeral mosses, which can be visually recognized under only certain, sporadic conditions. These measures have not been undertaken, and most known subpopulations were opportunistically discovered.



a) Canadian distribution of Pygmy Pocket Moss (*Fissidens exilis*) in eastern Canada; maps are based on 20 known Canadian specimens and/ or literature reports



b) Canadian distribution of Pygmy Pocket Moss (*Fissidens exilis*) in western Canada; maps are based on 20 known Canadian specimens and/ or literature reports

Habitat

In North America, most Pygmy Pocket Moss has been found largely on bare, moist, at least partly shaded, clay-based soil or loam. It has been collected on the forested banks of streams and ravines, floodplains, bluffs, beaches, roadsides, trails and other environments where bare soil is exposed. Habitat patches are transient and may be unpredictable, resulting from a variety of natural and human-related phenomena. No broad trends in the preferred habitat of Pygmy Pocket Moss are known.

Biology

Pygmy Pocket Moss is ephemeral and exhibits a “fugitive” life history strategy: the life and reproductive cycles of its leafy plants are short (less than a year), not seasonally dependent, and driven largely by abiotic factors. Reduced size allows such species to reach maturity sooner than larger mosses with more protracted developmental processes. It expends relatively high reproductive effort, with virtually every tiny plant producing a spore-filled capsule, and its small spores (less than 20 µm) are characteristic of species with longevity in the spore bank. These traits equip plants to complete their life cycles in transient, early-successional environments, and avoid stress during periods of habitat unsuitability by persisting in forms (spores and underground filaments) that are less vulnerable to unfavourable conditions.

Spores are dispersed from less than 1 cm above the substrate, and most collections of this moss have been made from at least partly sheltered environments, so long-distance spore dispersal may be very infrequent. Dispersal of moss- or spore-laden soil via a range of possible biotic and abiotic vectors may be important.

Population Sizes and Trends

Population sizes and trends are unknown for Pygmy Pocket Moss, and efforts to establish both must take into account challenges presented by the species’ ephemeral nature and tiny size.

Threats and Limiting Factors

Some threats can be inferred with reference to the general biology of mosses and the habitats in which Pygmy Pocket Moss has been collected, but no research has demonstrated any specific threats to this species. Some human activities that routinely threaten other plant species may have a neutral or beneficial effect on this species, which relies on localized soil disturbance.

Protection, Status and Ranks

Pygmy Pocket Moss is currently listed as a species of Special Concern under the Canadian *Species at Risk Act*. It is also protected under the Ontario *Endangered Species Act*, and at least half of the sites where it has been found are managed by the federal or Ontario government, or by conservation-oriented organizations. Some North American jurisdictions, including British Columbia, have ranked Pygmy Pocket Moss SE (exotic).

Source: COSEWIC. 2016. COSEWIC assessment and status report on the Pygmy Pocket Moss *Fissidens exilis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 28 pp.

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