A Second Location for the Rare Boreal Felt Lichen in Nova Scotia

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The boreal felt lichen (*Erioderma pedicellatum* (Hue) P.M.Jorg.) has been cited as one of the rarest and most endangered lichens in the northern hemisphere (Clayden 1997). The world population of this lichen has been listed as critically endangered by IUCN and the Atlantic population listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). A new record brings the total known locations of this species to two in Nova Scotia.

The boreal felt lichen is one of a group known as the cyanolichens. The photosynthetic partners of cyanolichens are cyanobacterium, unlike other lichens in which algae are the photosynthetic partners. The felt lichen is foliose in form, i.e. somewhat leafy appearance. The lichen is normally gray brown when dry, to slate blue when wet. There is a covering of fine white hairs on both the lower and upper surface. Reproductive structures, known as apothecia, look like tiny dark coloured cups on the upper surface of mature individuals.

Boreal felt lichen is known to occur in humid, oceanic coniferous forest. Typically occurring on balsam fir, it can occasionally be found on black spruce or red maple (MacGregor et al. 2003, Robertson 1998). Historically the felt lichen was found in Scandinavia, Newfoundland and Maritime Canada (Clayden 1997).

Currently the felt lichen is found in only a few locations. The Newfoundland population appears to be the largest and healthiest and although new sites are being found, few of the original sites still have felt lichen (Robertson 1998). Quite likely, it is extirpated from New Brunswick as surveys by lichenologists Stephen Clayden and Wolfgang Maass have failed to reveal its' presence. Only one location in Scandinavia still known to exist (Holien et al. 1995).

Wolfgang Maass has been studying boreal felt lichen and many of its associated species for decades. Just two decades ago, Dr. Maass identified 40 locations where the felt lichen was found. Today only one of the original locations still has the lichen. All 39 other sites no longer have boreal felt lichen (MacGregor et al. 2003). It is largely Dr. Maass' work that led to the COSEWIC listing.

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Disappearance of the boreal felt lichen is attributed to acid rain and habitat destruction (Goward et al. 1998). Like many other cyanolichens, boreal felt lichen is very sensitive to acid rain. It may be more sensitive to acid rain than other cyanolichens because it inhabits an already acid environment, boreal coniferous forest. The lichen often grows on commercial species of trees and therefore is subject to habitat destruction through tree harvesting.

The finding is the result of systematic surveying of the Tangier Grand Lake Wilderness Area using Geographical Information System maps of likely habitat, generated by the Nova Scotia Department of Environment and Labour. Only a few of the most likely habitats were surveyed and it is quite possible additional thalli will be found. I found four thalli, three mature and one juvenile, on a mature balsam fir in a mature balsam fir-black spruce forest. No voucher specimen was taken because of the rarity of this species. Fortunately the newly located specimens are safe from commercial tree harvesting and development within an existing protected area. The Tangier Grand Lake Wilderness Area is a 16,000 ha area, protected through the Nova Scotia Wilderness Areas Protection Act.

As a result of the COSEWIC listing, an Atlantic Canada boreal felt lichen workshop was convened in the fall of 2002. Stemming from the workshop, a Maritime cyanolichen status assessment team was formed to assess the potential threats to other cyanolichens. As well, an information pamphlet and an identification card were published by the Nova Scotia Department of Natural Resources and Environment Canada to help raise awareness of the boreal felt lichen. The boreal felt lichen was listed under the Nova Scotia Endangered Species Act in October 2003.

Although there have been a few positive steps locally toward recovering the boreal felt lichen, the largest problem is acid rain. Much of Nova Scotia's acid rain problem stems from transboundary sulfur dioxide and nitrous oxide from the US and central Canada. Until acid rain is reduced the boreal felt lichen will be at risk.

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