A tale of two buffers: Reducing impacts of logging and invasive species on the critically endangered boreal felt lichen

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Boreal felt lichen (*Erioderma pedicellatum*) is a rare and endangered lichen that grows on balsam fir trees in swamps along Nova Scotia's Atlantic Coast. The most important threats to the species include forest harvesting, overgrazing by invasive slugs (*Arion* spp.), and increasingly, climate change. Attempts to protect the species from further declines have included special management practices requiring 100-m no-harvesting buffers, based on an assumption that modified microclimate from clearcut edges was to blame for declines, and subsequently 200-m no-harvesting buffers with 500-m low-impact buffers were introduced. More recently, tree-scale buffers (slug movement barriers) were added to the bases of all remaining boreal felt lichen host trees. The efficacy of both large-scale, no-harvesting buffers, and tree-scale, slug exclusion barriers were evaluated. Large-scale buffer efficacy was evaluated via landscape scale models that predict mortality based on the intensity of clearcut harvesting, road density, and climate anomalies over the last 20 years. Tree-scale buffer efficacy was evaluated by comparing population-wide decline rates before and after treatments were applied. Preliminary results suggest that tree-scale barriers, in conjunction with no-harvesting buffers, can reduce morbidity and mortality of remaining lichen thalli, but that no-harvesting buffers cannot do so on their own.

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