

**BRYOPHYTE AND LICHEN COMMUNITIES ALONG A CHRONOSEQUENCE
IN THE BOREAL FOREST OF THE ABITIBI REGION**

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ABSTRACT

Several studies have shown that some bryophyte and lichen species are restricted to old-growth forest stands. However, only a few of these studies were conducted in the eastern part of the boreal forest and little is known about the importance of old-growth stands in maintaining biodiversity in this ecosystem. The objectives of our study are 1) to compare bryophyte and lichen communities in the boreal forest of the Abitibi region along a chronosequence, 2) to identify potential indicator species of stand age and 3) to formulate recommendations for sustainable forest management that would respect the integrity of bryophyte and lichen communities.

Twenty-two stands, representing four age classes (80-120, 120-160, 160-200 and > 200 years old) were visited. We sampled bryophytes and lichens along a 100 metre transect at each site. Twenty-one quadrats (2500 cm²) were placed along the transect. Inside these quadrats, the percent cover of each species was estimated. The epiphytic lichens were collected on two branches from the tree nearest to the quadrats, for a total of 42 branches by stand. The cover of epiphytic lichens was estimated for a portion of 50 cm on the upper surface of the branches. Furthermore, we surveyed all species present within two metres of the transect line

Correspondance analysis on the epiphytic data shows that the variable time since fire is the most correlated with the first axis. Variables related to time since fire such as organic matter depth and basal area of *Larix laricina* are positively correlated with the first axis of an ordination on terricolous species. *Dicranum polysetum*, *Polytrichum commune*, *Ptilium crista-castrensis* and *Japewia toroënsis* are indicator species of the youngest stands. Inversely, *Ptilidium ciliare* and *Sphagnum fuscum* are indicator species of the oldest stands. The results of multiple regression analyses suggest that *Bryoria trichodes*, *Imshaugia aleurites* and *Mycoblastus sanguinaria* prefer the oldest trees whereas *Tuckermanopsis haleii* is more abundant on the youngest trees. Linear regressions show that *Sphagnum* spp. richness, abundance and diversity increase while epiphytic lichen richness decreases as the time since fire increases. This study shows that each forest stage of the time sequence possesses distinct bryophyte and lichen communities features. This has many implications for sustainable forest management.