

Arboreal lichens and bryophytes of old growth forest canopies in Nova Scotia: implications for sampling bias and vulnerability

Sean R. Haughian^{1,2}, Katrina Cruickshanks¹

¹*Saint Mary's University, Halifax, NS*

²*Nova Scotia Museum, Halifax, NS*

Epiphyte diversity is often exceptional in old growth rainforests, because such ecosystems include many rare or disturbance-sensitive species, which are negatively impacted by anthropogenic disturbance. Epiphyte surveys have traditionally focused on the lower bole of host trees; this bias can mislead forest managers about the biodiversity value or sensitivity of these forests. We tested how arboreal epiphyte communities differ between the canopy and lower boles of 27 old growth Eastern hemlock trees, to better understand the bias and vulnerabilities of these epiphyte communities. Trees were surveyed at the base and in the lower canopy at 9 different sites across Nova Scotia. Single rope ascension technique was used to access the lower canopy with minimal impact on epiphyte or tree cambium health. Habitat properties were also recorded, including bark pH, tree girth and height, and canopy cover. Canopy positions showed higher pH, and a greater diversity and abundance of macro lichens, whereas bryophyte abundance and richness were both greater on the lower boles. Geographic location in the province (southwest, central, or Cape Breton) impacted macrolichen but not bryophyte cover. Most species of the lower canopy are known from other tree species in the province, and those lichens that are known from only eastern hemlock trees were not exclusive to one stratum or another. Consequently, while surveying only epiphytes within reach of the ground leads to underestimating total epiphyte diversity, those species that are most vulnerable to the loss of hemlock forests are likely captured by the use of ground-based surveys.

Keywords: epiphyte, *Tsuga canadensis*, biodiversity, search effort, vertical zonation

Presentation type: poster