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Tree-ring analysis of larch sawfly (*Pristiphora erichsonii* (Hartig) defoliation events and hydrological growth suppression in a peatland.

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Abstract

Insect defoliation events are a major forest disturbance in the boreal forest in Canada. Reconstructing previous events are crucial to understanding natural factors that lead to insect defoliation periods, improving our ability to predict future infestations and increasing the reliability of forest management plans and pest control programs. Researchers have often been limited in their ability to draw accurate conclusions regarding the history of larch sawfly (*Pristiphora erichsonii* (Hartig) infestation events in North America. It is well known that floods can affect survival of larch sawfly populations, as well as suppress radial growth of eastern larch (*Larix laricina* (Du Roi) K. Koch) trees. Eastern larch often inhabits peatlands where high water-table levels can lead to a decrease in tree-ring widths. Water-table level increases result in similar radial-growth patterns to when trees are defoliated by larch sawfly, making accurate diagnoses of larch sawfly events a challenge. This fact becomes more accentuated when non-host species used for standard dendroecological analyses (often black spruce (*Picea mariana* (Mill.) Britton)