Impact of partial cuts on xylophagous insect activity in the balsam fir-white birch domain

Mathieu Bélanger Morin [1] Jacques Brodeur [2] Christian Hébert [3] Richard Berthiaume [4]

[1] Université de Montréal, mathieu.belanger.morin@umontreal.ca
[2] Institut de Recherche en Biologie Végétale, jacques.brodeur@umontreal.ca
[3] RNCan, christian.hebert@rncan.gc.ca
[4] Consortium iFor, richard.berthiaume@sbf.ulaval.ca

To ensure an integrated management of natural resources, alternative silvicultural methods have been developed and their use has increased in recent years in Québec's forests. In this context, partial cutting aims at harvesting a predetermined percentage of wood. This method lowers the age of forest stands and opens up the canopy, leading to changes in the ecosystem. In addition, these treatments may impose additional stress to residual trees, a phenomenon known as "thinning shock", making trees more vulnerable to xylophagous insects (e.g. *Cerambycidae*, *Scolytinae*). The objective of this project is to quantify the abundance and evaluate attack rates of xylophagous insects on residual trees the year following a partial cut using recently cut logs. At the Montmorency experimental forest, near Québec City (Québec, Canada), we exposed freshly cut logs (2m in length) from three different species representative of the tree flora (balsam fir, white spruce, paper birch). The logs were placed in experimental plots characterized by a gradient of partial cuts (i.e. 0%, 25%, 40%). Xylophagous insect species specialized in trees that have reached a specific decaying state (e.g. stressed, moribund, recently dead), and consequently the composition of insect assemblages can provide reliable indications of the state of the forest stand. Bark peeling the logs allows us to determine the relative abundance and attack rates of xylophagous insects in relation to tree species and level of thinning. Preliminary results will be discussed.

Keywords: xylophagous insect, management, partial cut, logs