Insect succession in postfire black spruce forests: a 10-year study

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Fire is the most important natural disturbance affecting the dynamics of black spruce boreal forests. Within the context of wood fibre rarefaction, salvage harvesting of recently fire-killed trees in the boreal forest is a measure that helps to maintain the wood volumes needed to support industrial activities. However, a diverse insect fauna is found in burned trees and needs to be taken into account in order to avoid negative impacts of salvage harvesting on biodiversity. We studied insect succession in black spruce trees that died after a fire that occurred in early June 1999 in the Parc des Grands-Jardins, Quebec, Canada. Four trees were cut yearly from 2000 to 2004, and again in 2009, in each of three burned mature stands; 40-cm boles were then collected and reared for up to four years. In 2005, bole sections were also collected from trees cut in previous years to study insect succession in trees that fell to the ground. Results indicate that snags are rapidly colonized by several species of Cerambycidae and Scolytinae. Snags were heavily used during the first two years after fire but they became poorly used after, except by some species such as Acmaeops pratensis (a red-listed species in Europe) that increased over time. The latter species was still found in snags 10-yrs after fire. Once on the ground, boles were invaded by a variety of insects, predominantly by ants but also by several saproxylic species.

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