Boreal songbird response to variable retention harvest, 15 years post-harvest

Lead by: Sonya Odsen

Theme: Avian Diversity

Status: Continuing

Start: 2012

Participants

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Background

Songbird declines over the past three decades have been a source of concern for ecologists and conservationists. Many species of migratory songbirds breed in Canada's boreal forest, which is also the home to large-scale natural and industrial disturbances, including forestry. Forestry practices are transitioning away from traditional clear-cut methods toward variable retention harvest, with the aim of maintaining healthier ecosystems, supporting greater biodiversity, and promoting more complete regeneration. Variable retention harvest attempts to emulate the effects of fire by leaving live trees standing within the cut-block. This harvest approach is intended to partially maintain the habitat characteristics needed by many boreal forest species. If variable retention harvest is to replace clear-cutting as the primary harvest method, a greater understanding of the impacts of different retention levels on biodiversity is needed. Assessing the impacts of variable retention harvest is one of the primary objectives of the EMEND project, and my study uses the landscape-level experiment to ask the question: Is variable retention harvest an appropriate strategy for songbird conservation in the boreal forest?

Objectives

Using seven years of point count data collected in 1998 (pre-harvest) and six years at intervals post-harvest, up to and including 2013, I will address the following objectives: 1. Assess the impacts of different retention levels on songbird assemblages over time. 2. Assess the impacts of different retention levels on mature forest- and open area-associated songbird species over time, with an emphasis on species-at-risk. 3. Make

forest management recommendations according to the goals of maintaining overall songbird diversity and, more specifically, conserving species-at-risk (e.g. Canada Warbler and Olive-sided Flycatcher).

Key Results

Analyses are ongoing following the completion of the 2013 field season. Preliminary results demonstrate an unexpected increase in species richness following harvest, with little evidence for a treatment effect later than the first year post-harvest (1999). In 1999, only the clear-cut compartments exhibited lower richness and diversity than the other treatments, yet both measures were higher than the pre-harvest levels. Community-level and species-level analyses are ongoing, but preliminary results support Hypotheses 2-4. Several analyses suggest that the songbird assemblages in unharvested compartments changed after harvest. This result warrants further investigation, but one hypothesis is that this mobile group responds to landscape-level as well as stand-level changes.