



2020 Project Summaries

## Boreal Ecosystem Recovery & Assessment

An NSERC Collaborative Research & Development Program

# ***Understory Protection Harvesting Improves Bird Habitat Quality***

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#### **Project Summary**

Understory protection harvesting seeks to protect unmerchantable white spruce during hardwood (i.e. aspen) harvest through a form of strip cutting. Alberta Pacific Forest Industries Inc. (Al-Pac) has been using understory protection since 2004 to harvest in mixedwood forests. Understory protection retains 50% of the understory spruce and 20% mature aspen, resulting in a heterogeneous forest structure. We compared songbird communities in understory protection against traditional harvests and unharvested forests to assess how songbird communities changed with time. On average, understory protection had a bird community more similar to the unharvested forest than traditional harvest. We found bird communities in 10-12 year old UP were not significantly different from communities in unharvested forest. The convergence of older understory protection communities with unharvested forest is driven by recolonization by mature forest species dependent on large white spruce. White spruce is released from competition after understory protection harvest and can increase growth rate by 300%. Species that rely on big spruce thus are able to use these stands far more quickly than after traditional harvest.

Detailed analysis of understory protection harvest by the Brown Creeper found that LiDAR was far more effective at documenting the structure left after understory protection than traditional aerial photography.



#### **Management Implications and Lessons Learned**

Traditional harvesting approaches can take up to 75 years before songbird community convergence with the unharvested forest occurs. However, bird communities in 10-12 year old understory protection were not significantly different from communities in unharvested forest. This suggests that this type of harvest has less of an impact on the bird community found in older forests. This provides foresters a powerful tool for managing wood supply, gaining economic value, and reducing impacts on birds that need mature to old forests. Future studies should focus on the use of LiDAR for understanding the exact structural characteristics that birds are using in harvested stands.

#### **Publication(s)**

Charchuk, C. and EM Bayne. 2018. Avian community response to understory protection harvesting in the boreal forest of Alberta, Canada. *Forest Ecology and Management* 407, 9-15.