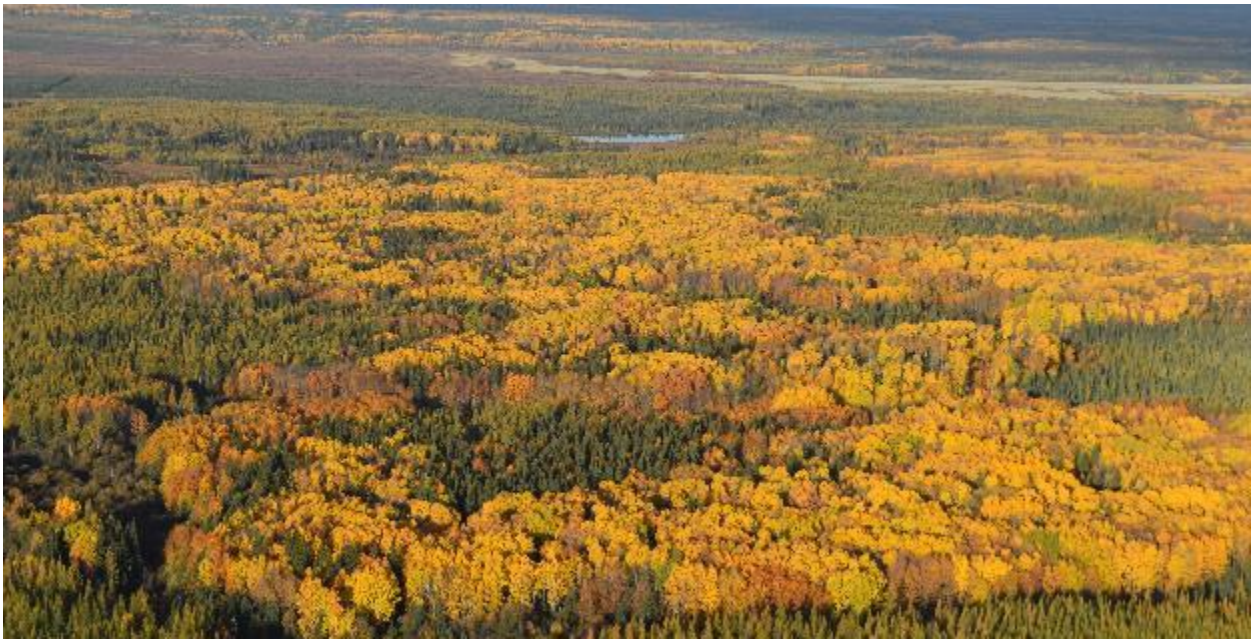
Harvesting approach expedites bird use of harvested sites

Understory protection promotes rapid growth of spruce trees and reduces the time required for mature forest bird species to occupy a harvested site.

If you flew over the boreal forest of Alberta, you would see a patchwork of forest types: aspen and spruce, young and old, and everything in between. This diversity, caused by natural cycles of disturbance (mainly wildfire) and regrowth, provides a wide breadth of habitats that meet the needs of a diversity of organisms.



The boreal mixedwood forest in Alberta is a natural patchwork of different tree species and forest stands of different ages. Photo courtesy Alberta-Pacific Forest Industries Inc.

Alberta-Pacific Forest Industries Inc.'s (Al-Pac's) traditional harvesting approach aims to approximate wildfire patterns within the boreal forest by retaining overstory trees, singly and in clumps. Another harvesting approach used by Al-Pac, "understory protection," leaves understory spruce unharvested with some overstory aspen left standing to protect the young spruce from wind. Unlike other harvest methods, understory protection releases understory spruce from competition and allows them to grow to full height before being harvested in a second pass.

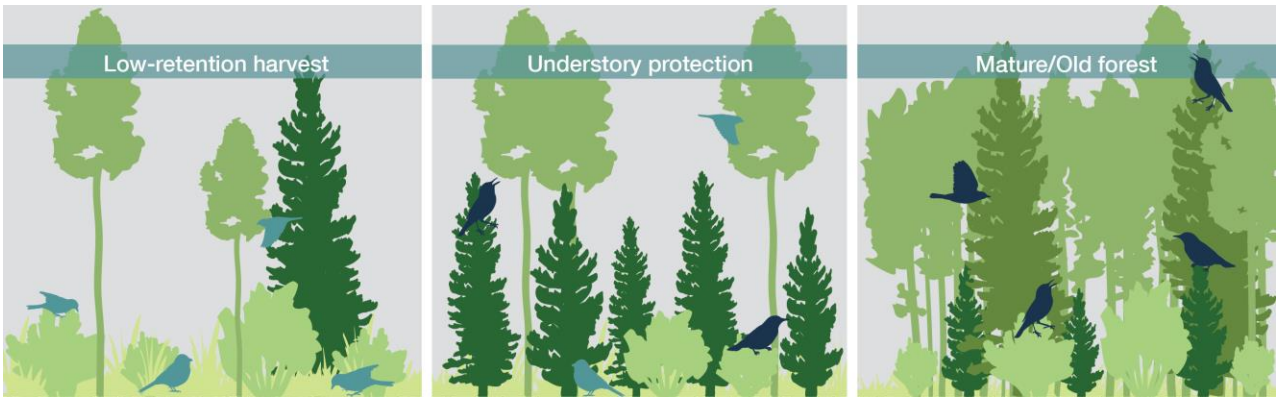
Understory protection, it turns out, is providing key benefits to bird species.

An in-between forest habitat

A recent study by researchers from the University of Alberta has shown that after twelve years, **understory protection harvests support some species of birds that normally take up to 75 years to re-**

establish in more traditional harvests. This includes species like the Bay-breasted Warbler, which are sensitive to the effects of harvesting and have habitat requirements that include older spruce trees.

Understory protection stands did more than simply fast-forward the natural transition of bird species that occur in disturbed forests, including harvests. They also supported bird communities that were **a mix of those found in mature/old forest and low-retention stands**. This means understory protection harvests acted like "intermediate" habitats for forest songbirds within the harvested landscape—neither sunny and open nor shady and complex, they were something in between.



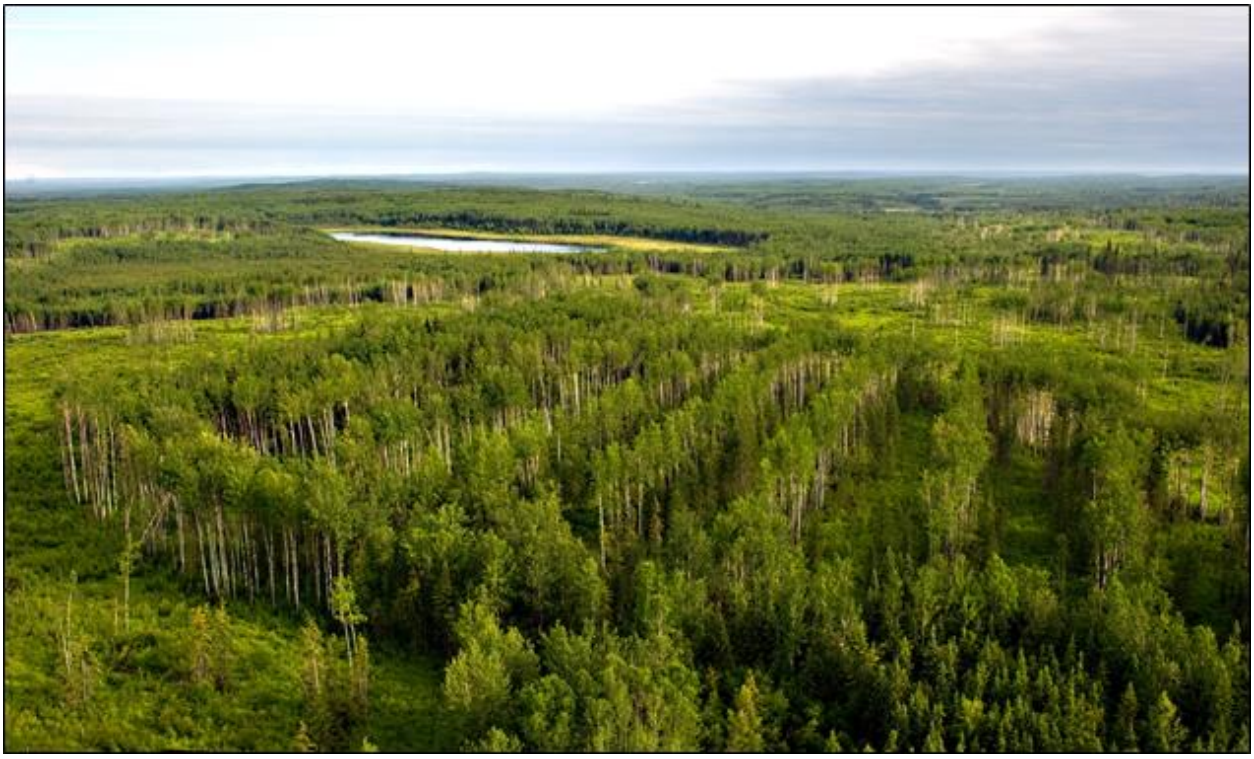
A tool for achieving multiple goals

What these results tell us is that in mixedwood forests, understory protection provides an option for managers to diversify their harvest patterns and the habitats available to birds.

As a harvesting approach, understory protection provides benefits on multiple fronts. When most of the overstory aspen trees are removed, understory white spruce growth rates have been shown to increase by 300%. This means these trees can continue to grow and provide future harvesting opportunities.

As a tool for conservation, understory protection provides a new level of habitat diversity within a harvested area. This in turn may support more diverse bird communities across the Al-Pac forest management tenure. Importantly, these understory protection areas more quickly provide habitat for some species that are sensitive to forest harvesting—species that require older forest habitats or coniferous trees, like the Brown Creeper. These species used understory protection areas less than unharvested forest, but they were more likely to be found in understory protection areas than in traditional harvest areas.

At the landscape scale, this creates a powerful opportunity to provide habitat "stepping stones" for these bird communities, which were absent or very rare in even 33-year-old regenerating traditional harvests.



An area harvested using understory protection on the Al-Pac forest management tenure. The rows of aspen trees shelter the spruce trees below from the wind. Photo courtesy of Alberta-Pacific Forest Industries Inc.

Increasing diversity through innovative techniques

One of the primary concerns with clear-cutting, an approach that was once the dominant harvest method, was that it took the natural complexity of the boreal landscape and drastically simplified it compared with disturbance-origin forests.

The more modern approach used by Al-Pac for diversifying harvest patterns, for example by leaving live trees standing in harvested areas, allows forest managers to maintain more of the landscape's natural complexity. As this study has found, adding understory protection to a manager's toolbox provides yet another way to provide habitat for a more diverse set of birds including more sensitive species.

Alberta-Pacific Forest Industries Inc. (Al-Pac) is located near Boyle, Alberta, where they manage one of the largest Forest Management Agreement (FMA) areas in the province. Al-Pac has a long history of collaborating with researchers and using their results to improve environmental outcomes on their FMA. This series looks at recent research conducted by Dr. Erin Bayne and his students, based at the University of Alberta.