



Satellite image showing a boreal forest habitat mosaic on Nenana Ridge, Alaska in 2019. Brighter green patches in upper portion are where mature aspen was cut or burned to stimulate young trees as habitat. Lighter green patches in lower portion are experimental cuts for reducing fire risk, with scars of both prescribed and natural fires nearby stimulating growth of young trees as habitat.



Managing Alaska Boreal Forest for Wildlife

Why is forest succession important to boreal forest management?

Succession is the change in plant and animal communities after a disturbance. **Disturbance** is an event that changes an ecosystem or community. Succession in boreal forest usually begins with the new growth of herbaceous plants, and eventually leads to mature spruce forest. Disturbances result in a landscape diverse in **successional stages**, or stands of trees of different ages. Disturbances in the boreal forest include both natural and human-caused events.

Fires are a part of natural boreal forest succession, though they can also be caused by humans. Fires disturb forest unevenly depending on weather and vegetation type. Some areas burn completely, while others remain untouched. Fires often have unburned “islands” of mature trees. These islands advance regrowth of young forest by providing seeds, and connect patches of mature forest habitat across the landscape. Over time, the result of many disturbances of differing types and severities is a **habitat mosaic** of forest patches of various ages, sizes, and successional stages.

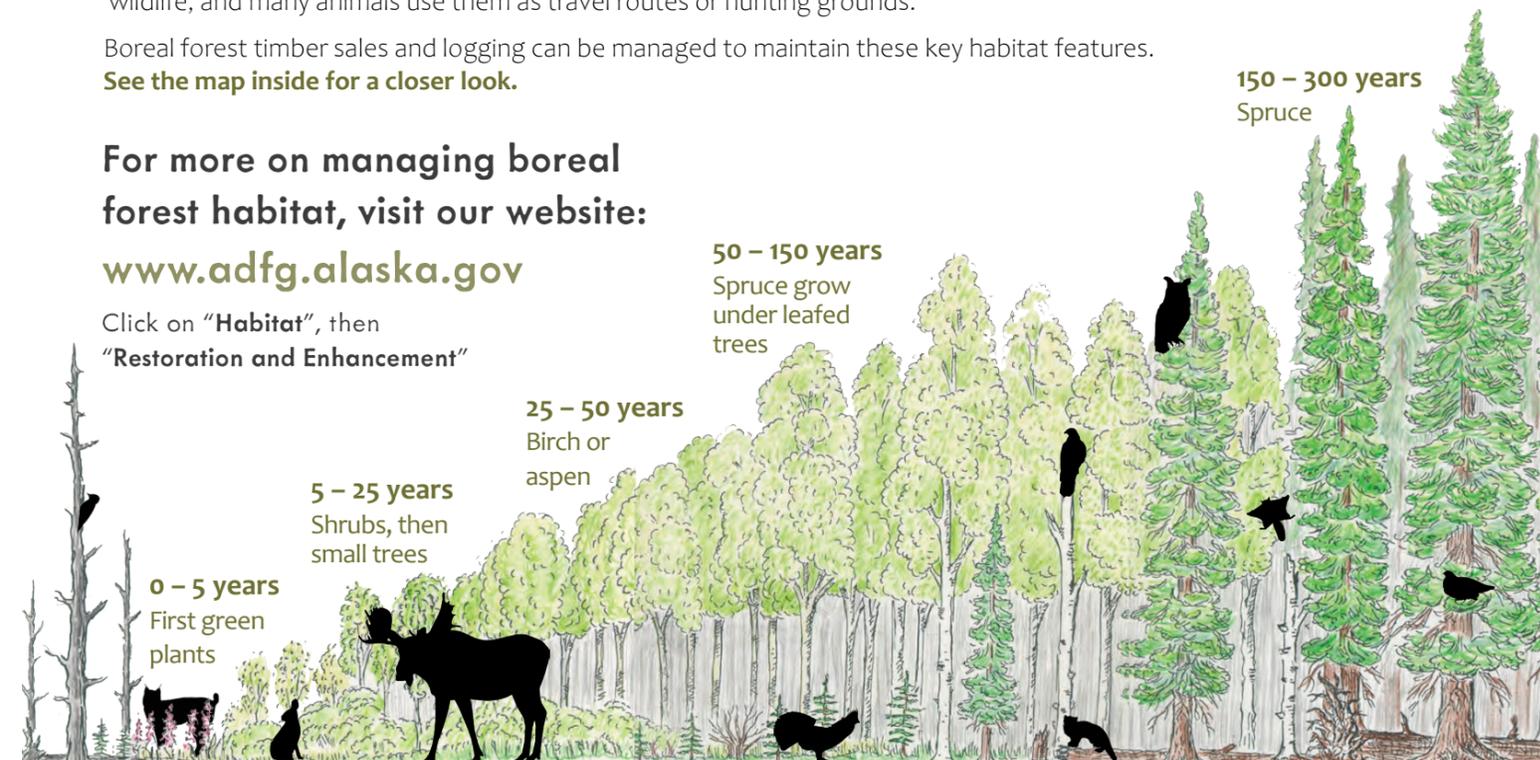
A habitat mosaic is key to plant and animal diversity. Each successional stage of forest supports different species of wildlife, and many species use more than one stage to forage, reproduce, or seek protection from predators. Patches of varying forest stages also produce **edges**, where two different plant communities meet. Edges support the greatest diversity of wildlife, and many animals use them as travel routes or hunting grounds.

Boreal forest timber sales and logging can be managed to maintain these key habitat features.
See the map inside for a closer look.

For more on managing boreal forest habitat, visit our website:

www.adfg.alaska.gov

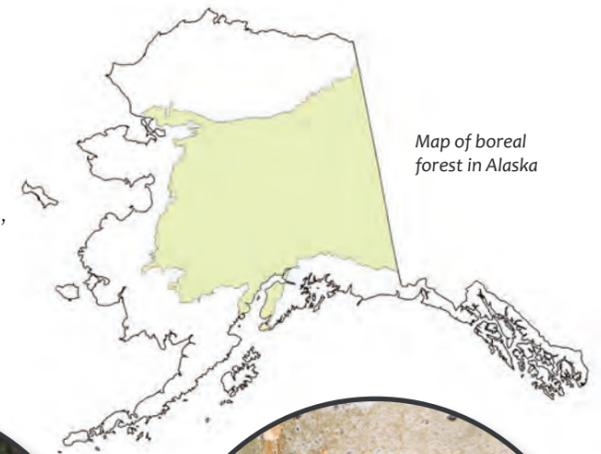
Click on “Habitat”, then “Restoration and Enhancement”



Wildlife species from early herbaceous growth to mature forest (note that some species use more one forest stage): Black-backed woodpecker, Canada lynx, snowshoe hare, moose, ruffed grouse, Northern goshawk, American marten, great-horned owl, Northern flying squirrel, spruce grouse.

Disturbances shape boreal forests. The Alaska Department of Fish and Game (ADF&G) is invested in understanding how human disturbances influence bird and mammal habitat, such as fire management and timber harvest. As the human population and resulting development increases across the state, forest and wildlife managers will seek to maintain the ecological functions that make forests resilient to short-term environment change, while allowing people access to desired natural resources: lumber, fuel, food, fish and wildlife, and recreation.

ADF&G has identified three key factors to maintaining wildlife habitat in boreal forests:



Natural disturbances (fire, floods, insects) produce young vegetation that provides cover and food for wildlife.

It is possible to mimic some aspects of natural disturbance through logging, which can expose the ground to sunlight and encourage the growth of young vegetation.



Connectivity of habitat patches is important to birds and mammals.

Connecting small patches of mature forest by keeping them in close proximity to one another is particularly important for animals foraging while avoiding predators. This connectivity can be achieved across managed landscapes through careful planning of timber sales and forest road expansions.



Habitat features in mature forest benefit both predators and prey.

Habitat features of older forests include fallen dead trees, standing dead trees, and cavity trees (dead or alive).

Images left to right: Mature spruce forest disturbed by fire; a ruffed grouse in mid-successional forest habitat (© Ted Swem); hairy woodpeckers in a tree cavity (© Ted Swem).



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Boreal forest habitat mosaics help maintain wildlife diversity

- 1** South facing slope with mature mixed hardwood and conifer forest.
- 2** North facing slope with mature black spruce in flatter, lower elevation areas with colder soils.
- 3** North-facing mature forest of mixed hardwoods and conifers.
- 4** Wildland fire scar with unburned “islands” inside the perimeter. Larger trees from higher elevations have been cleared, while snags and downed trees remain beyond the logging road.
- 5** White spruce harvest in a river floodplain. Harvest is spaced so that there is connectivity between logged patches. Note that a buffer of large trees is required to be retained in order to provide dead fallen trees in the river as habitat for young fish.
- 6** Previous timber sale with regenerating vegetation in an early successional stage, and uncut “islands” of large trees and snags left standing. These islands maintain connectivity with surrounding mature forest, creating “edge” habitat with young forest, but allowing animals close proximity to the protection of mature forest.

Watercolor artwork by Erica Craig

