

Succession of the Boreal Forest After Fire

Student Handout



Herb Stage (0-5 years)
 Fire has burned the forest, returning minerals to the soil in the form of ash. Herbs (wildflowers, grasses, sedges) may grow from seeds and sprout from roots. Mosses and lichens may revegetate as well. In addition, seeds from outside the area may be brought in by wind or animals. Shrub seedlings often sprout from unburned roots, and many trees sprout from stumps. If the fire occurred in a mature or over-mature forest, dead trees called snags may still be standing.

Shrub Stage (6-25 years)
 Shrub and tree seedlings grow larger and begin shading the grasses and other small plants. Shrubs and tree seedlings offer good cover for many animals such as birds, mice, and snowshoe hares. Foods for wildlife, including berries, seeds, buds, and leaves are plentiful. Tree snags that have fallen are decaying.

Young Forest Stage (26-50 years)
 Sapling trees such as birch, aspen, and poplar (all hardwoods) have grown too tall for their leaves to be eaten by most animals. The forest canopy has become more dense, shading the forest floor. Only shrubs, herbs, and mosses that are shade-tolerant can grow under low light conditions found in this stage. Spruce begin growing among the hardwoods; however, their growth is slow. Most tree snags have fallen.

Mature Forest Stage (51-150 years)
 Mature hardwood trees become less abundant as some die, opening the canopy for spruce to grow taller. Hardwood saplings, tall shrubs, herbs, mosses, and lichens also grow in the canopy openings.

Climax Forest Stage (150-300 years)
 The canopy is more open. The forest is mostly spruce trees. Hardwoods, tall shrubs, herbs, mosses, and lichens grow in the openings. There are dying and dead trees still standing which provide food and cover for some animals.

Boreal forest succession depends on soil, climate, water, and the presence or absence of permafrost. For example, in cold climates where there is permafrost and little rainfall or snow, succession may not progress beyond the shrub stage. Only dwarf trees and shrubs can grow in such environments.