



Descriptions of Successional Stages

NOTE: An area of the forest has been clear-cut and abandoned. A fire occurred on the site after it was abandoned.

3-5 years. The first plants to invade prefer bright sunlight. The fire released many of the nutrients in stumps and branches left behind during the cutting of the area. Grasses (such as broom straw), goldenrod, and other herbaceous plants have taken over the area. The area is also green with sprouts from the tree stumps that were not killed by the fire. Woody shrubs—such as blackberry, wild grape, sumac, and viburnums—are beginning to grow. Here and there, a young coniferous tree—such as red cedar or white pine—is beginning to reach above the grasses.

6-25 years. The vegetation is dense as the plant community converts from grasses to shrublands. Blackberry, blueberry, serviceberry, and other shrubs shade out most of the grasses and wildflowers. Thickets of raspberries and brambles provide dense cover for wildlife. Red cedar and white pine join the shrubs, growing and maturing as the years pass. There are occasional young deciduous trees and white pines reaching up past the shrubs and red cedars, giving the shrubland some vertical layering. Seedlings and saplings of trembling aspen, black cherry, and beech compete with the shrubs for space, thriving in the sun-filled land. Poison ivy and young grape vine join the tangle of shrubs and seedlings.

26-50 years. The vertical layers of a forest are becoming defined as the shrublands convert to forest. Trembling aspen, black cherry, and an occasional beech and oak join the white pine and red cedar. The older trees have shaded out most of the “sun-loving” shrubs such as blackberries and brambles. Other more shade-tolerant shrubs such as blueberry, serviceberry, and spicebush continue to grow, although the blueberry will not produce as many berries. Poison ivy and grape vine start to grow up and around trees in their efforts to reach sunlight. As the forest floor becomes more shaded, few white pine seedlings are growing to replace the mature pines. Hemlock, red oak, sugar maple, and red maple begin to take over the understory, and some reach the canopy of this young forest. Red oaks even begin to produce acorns.

51-150 years. The forest has distinct layers of canopy, understory, shrub layer, and ground layer. As taller plants take over, less light reaches the forest floor. Sugar maple, red and chestnut oaks, hickory, and other shade-tolerant trees form a high canopy layer from 60 to 100 feet above ground. Nuts, acorns, and seeds from the hickories, oaks, and maples provide mast (edible parts of the tree, such as nuts) for wildlife. An understory of dogwood, hornbeam, and saplings is now 40 or so feet high above the shrub layer of serviceberry, spicebush, and arrowwood. Mountain laurel and rhododendron grow in dense thickets throughout the forest. Mayapples, partridge berry, ground pine, and other shade-tolerant plants provide a ground layer of green mixed with the leaf litter of this mature forest, while poison ivy and grape vine span the layers from ground to canopy.

151-300 years. As taller plants occupy the site, less light is available on the surface of the forest. Plants tolerant of shading will outcompete plants that are intolerant of shading, and gradually the composition of the forest will change to favor shade-tolerant species. Distinct layers can be identified in mature forests. The canopy layer consists of trees 60 to 100 feet tall, including mixed oaks, hickories, sugar maple, beech, birch, or other hardwoods, or hemlock and white pine. An understory layer 30 to 40 feet high has trees such as dogwood, hornbeam, and saplings. Below this understory, a shrub layer about 3 to 4 feet high, may include blackberry, arrowwood, spicebush, blueberry, or huckleberry. Poison ivy, Virginia creeper, and the non-native Japanese honeysuckle are vines that span all layers. An herbaceous layer (nonwoody) of perennial, annual, and biennial plants is found at the forest floor layer. This climax forest can remain stable for hundreds of years if there are no major disturbances.

