

# Identifying Characteristics of Northeastern Old-Growth Forests

*by Bob Leverett*

**An old-growth forest is an ecological community with a component of old trees that has developed through natural processes over centuries.**

## The Trees

**An abundance of old trees**, however, all ages are likely to be represented.

**Mature and older trees showing asymmetry, stag-headed tops**, relatively narrow crowns, and relatively long trunks before branching—branches are frequently gnarled and thick. The old trees are not merely expanded versions of their younger forms. The bark changes dramatically, to include thickening, color change, balding. The branches become noticeably thicker. There is greater trunk water retention, and limb growth forms (like reiterated trunks) develop, especially for species like eastern hemlock.

**Conspicuously larger trees**, i.e., tree sizes at an advanced age, versus what they were when younger at that particular site. Not all old-growth trees are large, e.g., on mountaintops or in challenging growing environments.

**An abundance of late successional species** (settler species) like eastern hemlock, sugar maple, and American beech along with lesser populations of species that require higher light levels to flourish (pioneer species). High altitude old growth is dominated by balsam fir and red spruce.

**Standing dead snags**—seen in all old growth, but more prevalent in conifer stands.

**Lichen and fungal species** associated with older trees. There are countless lichen and fungal species, but only a few have been identified as old growth obligates. This category applies to the trees, the forest floor, and under the ground.

### Forest Floor

**Logs in all stages of decay** and generally scattered randomly, known to ecologists as coarse woody debris. This feature gives old-growth forests a cluttered look, and in fact, structural complexity that creates micro-habitats is a distinguishing feature of old growth.

**Thick duff layer** acquired over several centuries. Colder climates have more.

**Well-developed plant communities** of native species.

**Forest floor** often comprised of **pits and mounds** (or pillows and cradles) where trees have fallen. The mounds are from the remains of upturned root structures, and the pits are the holes left by the upturned roots. This feature is *not* found in an oak/hickory old-growth forest.

### Forest Structure

**A fairly well-developed layering of the vertical space from underground to crown** consisting of:

- (1) underground mycorrhizal network connecting tree roots
- (2) a ground cover of herbaceous plants, ferns, and bryophytes, and a shrub layer
- (3) understory of trees that are either immature or of species that don't occupy space in the canopy
- (4) canopy layer
- (5) there can be a super canopy when species like white pines are present.

**Tree fall gaps** of different sizes.

### Disqualifying Characteristics

**Visible signs of human occupation** such as rock walls, fruit trees, wolf trees. Trees that grew up in an opening may have partial open-grown shapes, but if branching is very low and crown spread is very wide, the tree may have grown up in an old field—these are wolf trees and may disqualify a site as old growth.

**Presence of non-native species** such as barberry, euonymus, bittersweet, Japanese knotweed, multiflora rose, etc.