

New Hampshire Native Communities

{ The Nature of New Hampshire

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Natural Communities

Recurring assemblages of plants and animals

- Composition of plants
- Structure of vegetation
- Combination of conditions-
water, light, nutrient levels and
climate



NH has rich variation of natural communities

- Alpine meadows
- Riverbanks
- Forests
- Tidal marshes
- Ponds
- Cliffs



Natural Communities



Native plants form a part of a cooperative environment, or plant community, where several species or environments have developed to support them. This could be a case where a plant exists because a certain animal pollinates the plant and that animal exists because it relies on the pollen as a source of food..

Natural Communities

- Variations in physical settings create predictable patterns
- Each natural community type occurs in specific settings in the landscape, such as wind-exposed rocky summits at high elevations, or muddy coastal river shores flooded daily by tides
- Communities range from common to rare
- 80% of area is forests
- The New Hampshire Natural Heritage Bureau (NH Heritage) created a classification of Natural Communities-over 20 years of work



Triphora trianthophora

Alpine Natural Communities



Arnica lanceolata in bloom in a rill in Tuckerman Ravine



alpine herbaceous snowbank/rill in the Great Gulf ravine



Arcadian Spruce-Fir forests

- High elevations on upper slopes
- Low lying valleys in North Country and White Mountains
- Vegetation remarkably consistent-red spruce and balsam fir
- Frost free for 90-120 days
- Birch colonizes gaps from fallen trees
- Black spruce and heath shrubs in wet low land sites
- Moss, lichens, shrubs-bunchberry creeping snowberry, wood fern, and sorrel in understory



Arcadian Spruce-Fir Forest

- Fir forests adapted for cold-firm waxy needles retained for greater than a year- nitrogen conserved, rapid photosynthesis in spring
- Wind a disturbance factor -blow downs may occur in fir waves
- Choric wind stress produces succession
- Balsam fir forests usually above 4,000 ft.
- Spruce-Fir forests dominate at 2,500-4,000 ft.
- Lowland Spruce-Fir forests include white spruce, black spruce and white pine
- Balsam fir can reach the alpine zone



Arcadian Forest Wildlife

- Marten and fisher
- Marten – a state classified threaten species
- Lynx rare
- Moose winter in spruce-fir forests, browse on buds, twigs, needles
- Black bear den sites
- Mice, voles, hares, rabbits, squirrels, shrews and porcupines
- Boreal chickadees, gray jays, red-breasted nuthatches, ruby-crowned kinglets ,dark-eyed juncos, Bicknell’s thrush ,blackpoll warbler, red and white winged crossbills, black-backed and three-toed woodpeckers, common raven, bay-breasted and blackburian wablers

Marten



Crossbill



Ruby-crowned
kinglet



Laurentian Mixed Forests

- Found on slopes, hills and flats with low to moderate elevations
- Widespread in NH
- Distribution of plants modified by elevation and latitude
- Growing season 120-150 frost-free days
- Conditions favor hardwoods over spruce and fir
- Northern hardwoods dominate in northern and higher elevations 1,500 to 2,500 feet
- Includes sugar maple, beech, birch and red spruce
- Soils productive with nutrients
- Hardwoods mix with hemlock at lower elevations below 1,500 feet
- Soil is acidic till and with areas of granite bedrock



Laurentian Mixed Forest

- Hardwoods mix with hemlock at lower elevations below 1,500 feet
- Hemlocks and white pine out compete hardwoods in poor sites
- Hemlock adapted to rocky and shallow soil
- White pine abundant in disturbed and sandy sites
- Small scale disturbances common
- Diverse understory with shade tolerant shrubs and perennials



Laurentian Forests

- Northern Hardwood-spruce-fir forest
- Sugar maple –beech—yellow birch forest
- Hemlock-spruce-northern hardwood forest
- Hemlock forest
- Beech forest
- Hemlock-oak-northern hardwood forest
- Hemlock-beech-oak forest
- Hemlock-white pine forest
- Dry red oak-white pine forest



Beech Forest



Hemlock-oak –northern –
hardwood forest

Northern Hardwood Forest



Northern hardwood,
spruce, fir

Sugar maple and beech dominant
Red spruce and balsam fir less
abundant

Sugar maples and beech trees
disappear above 2,500 feet

Understory-hobble bush, wood
fern, mountain wood fern,
northern wood sorrel, and
blue bead lily

Grows in cool elevations, in shallow, nutrient poor till or boulder
substrates

Laurentian Forest Wildlife

Spruce grouse

Black-backed woodpecker

Gray-cheeked thrush

Long-tailed shrew

Snowshoe hare

Moose characterize colder conifer sites

Ruffed grouse

Pileated woodpecker

Mourning warbler

Philadelphia vireo

Masked shrew

Northern bog lemming

Northern flying squirrel

Red bat

White-tailed deer characterize the hardwood-conifer sites.

Coyotes, bobcats, black bears (seasonally) are the larger predators today

The spotted salamander, northern two-lined salamander, mink frog, and eastern garter snake characterize warmer areas.

The common loon, osprey, and otter commonly use the lakes and rivers



Appalachian Oak- Pine Forest

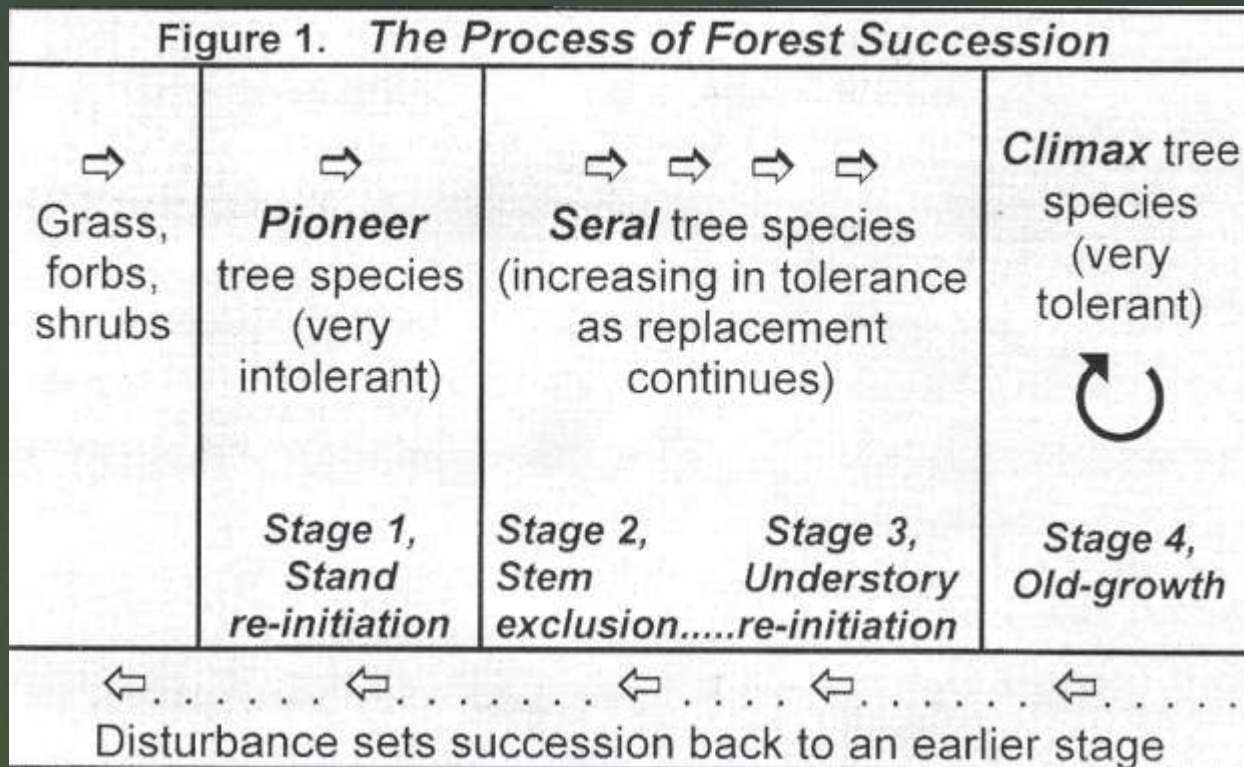
- **Appalachian oak – pine forest systems** are found mostly below 900 ft. elevation in southern New Hampshire- the northern limit
- Associated with the warmer and drier climatic conditions
- Nutrient-poor, dry to mesic, sandy glacial tills, and some large areas of sand plain or shallow-to-bedrock tills
- Spoils dry and well drained
- Dominant trees- oaks , hickories, pitch and white pine
- Drought and fire tolerant
- Shrubs and herbs common in understory
- Has more rare species than Laurentian forests



Appalachian Oak- Pine Forest Wildlife

- Canada warbler, Cerulean warbler
- Common nighthawk, Cooper's hawk
- Northern goshawk
- American woodcock
- Bald Eagle
- Ruffed grouse
- Black bear
- Moose
- Bobcat
- Ribbon snake
- Northern myotis
- Eastern red bat
- New England cottontail rabbit
- Black racer
- Blandings turtle





Each stage creates conditions for the next

- **Grass, forbs and shrubs** dominate. Seedlings may be present
- **Shrub-seedling-trees** begin to dominate. Intolerant species grow rapidly
- **Sapling-pole-trees** overlap. Intolerant species continue rapid growth
- **Young-tree** to tree competition severe. Intolerant species may die
- **Mature-competition** mortality continues. Intolerant and tolerant species share main canopy
- **Climax-stable** . Tolerant species dominate and reproduce in the shade.

Tolerance

Tolerance-tree's capacity to grow in shade

Succession strongly related to tolerance

Tolerant trees

- Have longer crowns
- Have tapered crown
- Grow high in higher stand densities
- Mature slowly and long lived

Intolerant trees

- Have shallow crowns
- Have cylindrical crowns
- Grow in low densities
- Mature early
- Die early



Tree Tolerances

Shade Tolerant

Abies balsamea, Balsam Fir
Acer saccharum, Sugar Maple
Aesculus spp., Buckeyes
Fagus grandifolia, American Beech
Picea glauca, White Spruce
Picea mariana, Black Spruce
Picea rubens, Red Spruce
Thuja occidentalis, Northern White Cedar
Tsuga canadensis, Eastern Hemlock
Acer rubrum, Red Maple



Intermediate Shade Tolerant

Acer saccharinum, Silver Maple
Fraxinus americana, White Ash
Fraxinus pennsylvanica, Green Ash
Fraxinus nigra, Black Ash
Quercus alba, White Oak
Quercus nigra, Black oak
Quercus rubra, Northern Red Oak
Pinus strobus, Eastern White Pine
Betula alleghaniensis, Yellow birch



Tree Tolerances

Shade Intolerant

Betula papyrifera, Paper Birch

Betula populifolia, Gray Birch

Juniperus virginiana, Eastern Red Cedar

Larix laricina, Tamarack

Pinus rigida, Pitch Pine



Average Age of Tree Species

- Beech 300
- Birch 50-100
- Sugar maple 300
- Red Maple 130
- Oak 100
- Hemlock 450
- Balsam Fir 60
- Spruce 60
- White Pine 200

Slow growing trees have a longer life span than fast growing trees

Disturbance

Natural

- Ice storms
- High winds-blow downs
- Fire
- Insect infestation

Human

- Development-land use
- Deforestation



Age of NH Forests

- | | |
|-----------|-----|
| • 1-20 | 2% |
| • 20-40 | 10% |
| • 40-60 | 30% |
| • 60-80 | 45% |
| • 80-100 | 12% |
| • 100-140 | 3% |



- Old growth forests scarce due to historical large scale logging

Old Growth Forests



- Forest that has never been cut
- Old growth characteristics requires 200 years
- Long trunks free of lower branches
- Deeply furrowed or plated bark
- Complex canopy
- Snags and downed logs in various stages of decomposition common
- Standing dead trees
- Most trees shade tolerant

The Bowl

Wonalancet, N.H.

More than 500 acres of virgin forest stand on the western flank of a glacial cirque in the Sandwich Range Wilderness. Left alone by loggers, a tiered collection of native trees shift with changing elevations. On the lower slopes, hardwoods like sugar maple, American beech, and yellow birch dominate; many of them may be over 400 years old. At about 2,500 to 3,000 feet, red spruce take over, joined by aged balsam fir higher up. Take the Dicey's Mill Trail to bisect The Bowl.

Nancy Brook

White Mountain National Forest, N.H.

On the slopes of Mount Nancy east of Bartlett, N.H., the median age of trees is about 254 years. One of the largest remaining tracts of virgin spruce-fir forest in the state, the old growth is accessible via the Nancy Pond Trail, from Route 302. The trail first passes through second-growth northern hardwood forests and climbs before shifting to red spruce and balsam fir at Nancy Cascades waterfall. These ancient trees may be up to 30 inches around and as high as 85 feet.

Rare Plants and Animals Listed by Town

396 plants are listed as rare or threatened

<http://www.nhdfl.org/library/pdf/Natural%20Heritage/Townlist.pdf>



Large-flowered bellwort



Lobelia brook



Sweet Mountain Cicely

Krummholtz



Adapted to take on twisted form to survive
Blowing snow and high winds clip branches

Preserving Biodiversity

- Exotic insects, pathogens, pollution and climate change pose threats to the forests
- Fossil fuel combustion produces acid rain- spruce and fir forests especially susceptible
- Certain non-native plants can out compete natives

Native plants preserve our nature heritage

Reduce use of synthetic fertilizer and pesticides

Incorporate organic material to the soil



Enjoy the Wonderful Nature of New Hampshire

