

2.1 NEW HAMPSHIRE FOREST TYPES

BACKGROUND

Forest types are distinctive associations of trees, shrubs and herbaceous plants. They are named for the predominant tree species.

There are other ways to group and describe forests. Natural communities and wildlife habitat are commonly used. Natural communities describe current and potential vegetation in the absence of disturbance. A comparison of these three methods is in the *New Hampshire Wildlife Action Plan* (Appendix C of the plan).

Forest types describe large expanses of land, or site-specific forest stands (grouping of trees similar in species, age and site). The common forest types in New Hampshire are white pine, northern hardwood, spruce-fir, red oak, hemlock, and aspen-birch.

Climate, elevation, soil conditions, and land use history all play a role in determining which forest type is growing in a particular area. Forest type, in turn, influences the variety of wildlife inhabiting an area and the silvicultural options available.

A forest type may be dominated by a single tree species or by several species growing together. White pine often occurs in a single-species stand. Northern hardwood, composed of sugar maple, beech, yellow birch and smaller amounts of other species, is a multiple-species type. Two types can blend together to form a mixed-wood type. Mixed-wood stands often occur in transition zones between major types. Two common mixed types are the pine-oak and spruce-fir-northern hardwood combinations.

White Pine

This type is most common in southern New Hampshire. White pine occurs in pure stands or mixed with red pine, hemlock, red oak or other hardwoods.

White pine often colonizes abandoned agricultural land. On fertile sites it is gradually replaced by hardwood or hemlock through succession. On less fertile, sandy soils the type is more persistent.

On sandy soils, acid-loving plants such as blueberries, starflowers, and pink lady's slippers are common. Associated wildlife include red squirrel, deer mouse, pine warbler, and red-breasted nuthatch. Owls often use white pine for winter roosting.

Northern Hardwood

Most common in central and northern New Hampshire, northern hardwood is usually a mix of sugar maple, beech, yellow birch, red maple, and white ash. Sugar maple is typically the most abundant species on sites with fertile soils. Beech increases in abundance on drier sites and yellow birch becomes more prominent on moist sites.

Northern hardwood tends to be a relatively stable and permanent forest type. Stands typically grow on the slopes of hills and mountains, where the soils are fertile and well-drained. Sugar maple and beech are shade-tolerant trees that can reproduce and grow in the shade of a forest canopy. Yellow birch and white ash are less tolerant of shade and require more sunlight to reproduce and grow.

Common understory trees and shrubs include striped maple, witch hazel, and hobblebush. Associated wildlife include gray fox, flying squirrel, red-eyed vireo, white-breasted nuthatch, and ovenbird.

2.1: New Hampshire Forest Types

Spruce-Fir

Most common in the north, red spruce and balsam fir dominate this type, which grows on poorly drained flats and the shallow, rocky soils of mountaintops.

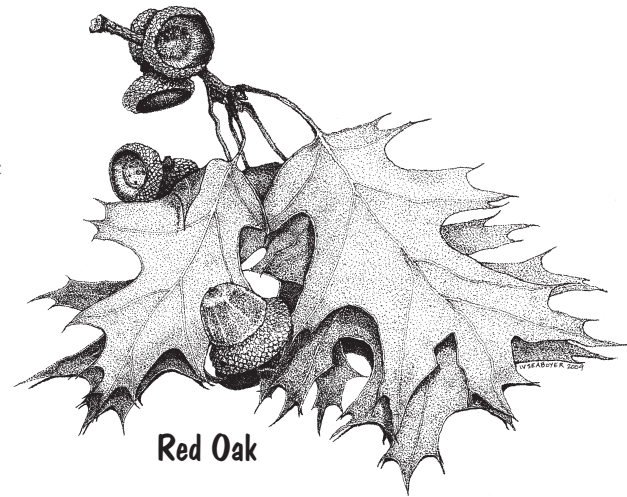
Because of where they grow, these trees are susceptible to windthrow. The spruce budworm is a native insect which can impact vast areas during periodic outbreaks. Heart-rot fungi can affect overmature balsam fir.

Bunchberry, goldthread, and trilliums are common wildflowers and associated wildlife include pine marten, snowshoe hare, spruce grouse, gray jay, black-backed woodpecker, and ruby-crowned kinglet. Deer often use spruce-fir stands for winter cover.

Red Oak

The red oak type occurs in close association with white pine in southern New Hampshire. Stands of nearly pure red oak are common on ridge tops. On abandoned agricultural land, red oak mixes with white pine to form the pine-oak type. Red maple and black birch are common associates. Maple-leaved viburnum, bracken fern, and whorled loosestrife are common understory species.

Deer, turkey, gray squirrel, and many other species eat acorns. Blue jays, tufted titmice, scarlet tanagers, and eastern towhees are some of the birds that commonly nest in red oak and pine-oak stands.



Hemlock

Hemlock occurs on wet flats, rocky ridge tops, and moist slopes in southern and central New Hampshire. Its ecological characteristics are similar to the spruce-fir type of the north.

Striped wintergreen and downy rattle-snake plantain sometimes grow under dense hemlock. Hobblebush and maple-leaved viburnum may grow in small canopy openings. Red-breasted nuthatches, solitary vireos, black-throated green warblers, and hermit thrushes are typical breeding birds. Deer often use hemlock stands for winter cover.

Aspen-Birch

Aspen-birch is a pioneer type relatively uncommon in the state. The type is composed primarily of quaking and big-toothed aspen and white birch and occurs on a wide variety of soils.

Aspen and white birch require full sunlight to grow. Disturbances such as fire, windstorms, or clearcutting create the conditions necessary for reproduction. In the absence of disturbance, natural succession leads to aspen-birch stands being replaced by other types.

Common associates in young stands are raspberries and blackberries. Aspen-birch provides valuable habitat for ruffed grouse, woodcock, Nashville warbler, mourning warbler, and beaver.

OBJECTIVE

Manage a diverse forest to meet landowner objectives and for the environmental, economic and social well-being of the state.

CONSIDERATIONS

- New Hampshire is 84 percent forested and most is privately owned. Forests provide a wide variety of goods and services to meet our everyday needs and comforts. Forests are a source of aesthetic and recreational enjoyment, a critical habitat for wildlife, and a natural filter assuring water quality. Maintaining viable forest products industries that provide enough economic incentive for landowners to hold and manage forest land will encourage landowners to implement many of the recommendations in this manual.
- Each forest type poses its own management challenges.
- Perhaps the most important sustainability issue facing all forest types is the conversion of forest land to urban uses. When forest land is converted to residential or commercial uses, its ability to produce timber products, wildlife habitat and other amenities is usually lost forever.
- High grading is an important sustainability issue. High grading occurs when the best trees are cut and poor-quality trees are left to grow. Over time, a forest repeatedly high-graded will become dominated by low-quality, low-value trees.
- The current forest type on a property may be there because of past human and natural disturbance and may not be the type most suited for the site.
- Without active management white pine may gradually disappear from many former agricultural lands, especially on better soils.
- An important sustainability issue for spruce-fir concerns the forest age-class structure. Due to the cyclical nature of spruce budworm outbreaks and historic cutting patterns, the type tends to grow in a boom-and-bust cycle. Because of the 1970's budworm epidemic and the heavy salvage cutting that followed, there is a relative shortage of mature and middle-aged stands of spruce-fir. This boom-bust cycle affects regional timber supply and wildlife habitat.
- The hemlock woolly adelgid, a non-native, exotic insect, poses a serious threat to hemlock. The insect has already moved into southern New Hampshire. To help prevent its spread, authorities have imposed a quarantine in the area where the adelgid is found. Any hemlock material from within the quarantine zone needs to be certified clean of adelgid before shipment out of the zone (5.1 Insects and Diseases).
- Other non-native insects and plants are potential threats to long-term forest health.
- The aspen-birch type is becoming less common as fire and clearcutting become less common (6.7 Aspen Management).

RECOMMENDATION PRACTICES

- ✓ Use the silvicultural techniques and other recommended practices in the following chapters to manage the mix of species most appropriate for the site and most appropriate to help you achieve your objectives.

CROSS REFERENCES

2.2 Forest Structure; 2.3 Regeneration Methods; 2.4 Managing for High-Value Trees; 5.1 Insects and Diseases; 6.7 Aspen Management; 7.1 Natural Communities and Protected Plants.

ADDITIONAL INFORMATION

New Hampshire Fish and Game. *New Hampshire Wildlife Action Plan appendix C: Comparison between forest types, natural communities and wildlife habitat*. 2005. http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_pieces/WAP_App_C_Nat_Comm_Crosswalk.pdf Accessed March 5, 2010.