

Species Focus of conservation concern

Wood thrush

This large thrush is smaller than a robin, has a spotted breast and brown back, and makes a beautiful, flute-like call that sounds like “ee-oh-layyy.” Wood thrushes nest in mature, deciduous forests with a thick understory, moist soil, and heavy leaf litter on the forest floor. Populations of these birds are declining, partly due to the destruction of forests in their wintering grounds in Mexico. Providing large forest blocks, unfragmented by development, may help sustain this species.



Wood thrush

Bobcat

Bobcats use sunny, south-facing cliffs and rocky outcrops to sun themselves during the winter. Since the 1960s, bobcat populations have declined in New Hampshire, likely because our forests have matured. There is much less dense, young forest to provide habitat for bobcat prey, including snowshoe hare and other small mammals. Managing forests for different age classes (both young and old trees) will increase prey and benefit bobcats.



Bobcat

Northern goshawk

This steel-colored hawk is a forceful predator in northern hardwood-conifer forests. Goshawks build nests – and aggressively defend them – in mature forests with large trees and an open understory. They hunt over a large area for rabbits, mice, squirrels, songbirds, and ruffed grouse. These prey animals are most abundant in patches of young forest, so forest openings are also important to goshawk survival. Goshawk habitats are threatened by human development which can disturb nest sites and make prey less available.



Northern goshawk

Eastern red bat

These bats migrate to New Hampshire for the summer from their wintering grounds in the southern United States. They spend the day roosting in the foliage of large, mature trees, often near streams or other water bodies. There are relatively few records of red bats in New Hampshire, but their secretive roosting behavior makes them difficult to locate in the forest. Like other migratory bats, eastern red bats can be killed by wind turbines, a concern given the increasing interest in wind power. Fortunately, eastern red bats do not appear to be susceptible to white-nose syndrome, a lethal disease that affects cave-hibernating bats.



Eastern red bat

Wildlife found in northern hardwood-conifer forests

The wildlife species listed here use northern hardwood-conifer forests. Be on the lookout for these species and follow stewardship guidelines to help maintain or enhance northern hardwood habitats. Species of conservation concern--those wildlife species identified in the Wildlife Action Plan as having the greatest need of conservation--appear in **bold** typeface.

- American woodcock
- Black bear
- Black-throated blue warbler
- **Blue-spotted salamander**
- Bobcat
- Canada lynx***
- Canada warbler
- Cooper's hawk
- Eastern pipistrelle
- Eastern red bat
- Eastern wood-pewee
- Flying squirrel
- Gray fox
- **Hoary bat**
- **Mink frog**
- Moose
- **Northern goshawk**
- **Northern long-eared bat**
- Ovenbird
- Pileated woodpecker
- **Purple finch**
- Red-eyed vireo
- Ribbon snake
- **Ruffed grouse**
- **Silver-haired bat**
- **Smooth green snake**
- Turkey
- **Veery**
- White-breasted nuthatch
- White-tailed deer
- **Wood thrush**
- **Wood turtle**

*** state-endangered, federally-threatened species

Where to get help

If you have information about a wildlife species of conservation concern, contact NH Fish & Game's Wildlife Division at 603-271-2461. Contact the UNH Cooperative Extension Wildlife Specialist at 603-862-3594 for technical assistance for landowners or your community.

Publications and assistance on forestry and wildlife topics are available through the UNH Extension Educators in Forest Resources in each county. Contact information for each UNH Cooperative Extension office is provided below. Additional publications, contact information, resources, and web versions of all brochures in the Habitat Stewardship Series are available on the UNH Cooperative Extension website at: nhwoods.org.

Belknap County	603-527-5475	Grafton County	603-787-6944	Rockingham County	603-679-5616
Carroll County	603-447-3834	Hillsborough County	603-641-6060	Strafford County	603-749-4445
Cheshire County	603-352-4550	Merrimack County	603-225-5505	Sullivan County	603-863-9200
Coös County	603-788-4961				

Authorship

The Habitat Stewardship brochures are produced by UNH Cooperative Extension, an equal opportunity educator and employer. University of New Hampshire, U.S. Department of Agriculture and N.H. Counties cooperating. Partial funding for this publication was provided by The Sustainable Forestry Initiative. Additional support came from the New Hampshire Fish & Game Department. Written by Malin Ely Clyde.

About the Habitat Stewardship Series

Much of the land in New Hampshire is privately owned. These individuals are the primary stewards of our wildlife and forests, and also our clean water, scenic views, fresh air, natural and cultural heritage, and recreational resources. The Habitat Stewardship Series has been created to help landowners and land managers recognize the habitats critical for wildlife species at risk, and to illustrate the role private landowners can play in sustaining those species through conservation, management, and sound land stewardship.

Photo Credits

Ben Kimball - NH Natural Heritage Bureau; Sean Kirwin; Michael Marchand - NH Fish & Game; Steve Maslowski & Karen Laubenstein - USFWS Photo Archives; Merlin D. Tuttle - Bat Conservation International; Scott A. Young ©2007.



Northern Hardwood-Conifer Forests

Habitat Stewardship Series

NEW HAMPSHIRE WILDLIFE ACTION PLAN

Recognizing northern hardwood-conifer forests



Thousands of acres of northern hardwood-conifer forests grow on well-drained, fertile slopes of hillsides in New Hampshire, typically between 1,500 and 2,500 feet in elevation. Here, sugar maple, American beech, and yellow birch are the dominant tree species, mixed with red maple, white ash, and patches of hemlock at lower elevations, and red spruce and balsam fir at higher elevations.

Striped maple, witch hazel and hobblebush shrubs are typical in the understory of northern hardwood-conifer forests, with wild sarsaparilla, starflower, and blue-bead lily on the forest floor. Our vast expanses of northern hardwood-

conifer forests in northern and western New Hampshire are famous for both spring wildflower displays and brilliant fall foliage.

The best examples of northern hardwood-conifer forests have patches of large trees in the canopy, young trees in the understory, many standing dead trees (snags), and abundant dead and decaying trees on the ground. Large cavity trees, pockets of wetlands, seeps and interspersed patches of conifers make some areas of northern hardwood-conifer forest especially rich for wildlife.



Starflower

Where are northern hardwood-conifer forests in New Hampshire?

Northern hardwood-conifer forests cover about 20% of the state, with Grafton and Coos counties containing 80% of that habitat. A band of northern hardwood-conifer forest is also found in the southwestern highlands in Sullivan, Cheshire and parts of Hillsborough Counties. Public lands with extensive examples of northern hardwood-conifer forests include many parts of the White Mountain National Forest, Mountain Pond in Chatham, Cardigan Mountain in Orange, and Fitch Mountain in Stratford. Northern hardwood-conifer forests are shown in the shaded areas of the map at left.



Why are northern hardwood-conifer forests important?

Many of New Hampshire's northern hardwood-conifer forests remain unfragmented by development and roads, making them an important ecological refuge for plants and animals. These forests provide habitat for hundreds of species of wildlife, including forty-two mammals and seventy-three birds.

Keeping common wildlife common

Northern hardwood-conifer forests help keep our common wildlife common, providing space for everything from the smallest insects to the widest-ranging mammals and birds. Today, sightings of black bears, scarlet tanagers, pileated woodpeckers, and fisher are commonplace. If they are to remain common, these and other species require a forested backdrop within our rapidly-developing landscape.



Pileated woodpecker

Uniformity

Many stands of northern hardwood-conifer forest in New Hampshire are the same age, roughly 80-100 years old. They grew back after extensive timber harvesting and abandonment of farms throughout the last century. Many wildlife species of conservation concern found in northern hardwood-conifer forests are attracted to patches of old or young trees within the larger forest area. Today's forests don't support the same high diversity of wildlife species as older forests that contain a diversity of live and dead trees of different ages and sizes. Complicating matters, the public may prefer to view extensive, unbroken mature forest. As a result, managers are less likely to make large openings (e.g. clearcuts) which will re-grow into the young forests required by many wildlife species.

Refuge for forest birds

New England forests are home to the highest concentration of breeding songbirds in the United States. Migrating birds such as eastern wood-pewee, black-throated blue warbler, wood thrush and many others carefully time their arrival to coincide with the swarms of insects (such as black flies and mosquitoes!) that are an important food source for young birds. Maintaining rich and healthy breeding areas for these birds is especially important given extensive habitat loss in the birds' southern wintering sites in South America, Mexico, and the Caribbean.

Habitat loss to development

Residential and second-home development in northern hardwood-conifer forests has increased in the last quarter century. The problem is cumulative, as each new development fragments the forest into smaller and smaller blocks, eliminating habitat, separating wildlife populations, inhibiting migration, increasing predation and promoting wildlife collisions on roads.

High-grading

High-grading is a non-sustainable logging practice where the best trees are cut and poor quality trees are left to grow. Some northern hardwood-conifer forests have been repeatedly high-graded, and are now dominated by low-quality, low-value trees and are less dense, less mature, and less diverse. High-grading affects wildlife by removing the larger diameter trees, which reduces the development of large nut-producing trees, large diameter cavity trees, and lessens woody material on the forest floor.

Stewardship Guidelines for northern hardwood-conifer forests

- **Conserving large blocks (>1000 acres) of northern hardwood-conifer forest from development** will provide habitat for wide-ranging wildlife such as black bear, bobcat, Canada lynx and northern goshawk.
- For both land conservation and land stewardship efforts, focus on northern hardwood-conifer habitat characterized by unique features such as:
 - **Large trees** (>18" diameter) which are important for roosting bats, goshawk nests, and as future snags (standing dead trees) and den trees for bears, bats, birds, and other species.
 - **Rocky cliffs** which provide sunning areas for bobcat.
 - **Forested areas near wetlands, streams, ponds, or seeps** which provide moist habitat for wood turtle, blue-spotted salamander, ribbon snake, and many songbirds.
 - **Areas of young, regrowing forest**, which provide critical habitat for many wildlife species of conservation concern such as American woodcock, Canada warbler, and bobcat. Patches at least five (5) acres in size will benefit the most wildlife.
 - Areas of **mature forest with characteristics of old-growth**, such as:
 - many snags and cavity trees;
 - a diversity of tree sizes including both young and old trees growing at all levels of the forest;
 - fallen, decaying trees on the forest floor;
 - gaps in the canopy where trees have fallen or been cut.
 - **Pockets of spruce, fir, pine or hemlock trees** (conifers), used as winter shelter by northern goshawk, great horned owl, red squirrel, porcupine, and white-tailed deer.
- **Using forest management, work to regenerate a mix of tree age classes and tree species.** A full range of age classes, well-distributed across the landscape, is important to support the great diversity of wildlife dependent on northern hardwood-conifer habitats. For more information about how forestry can enhance habitat, consult the publication *Good Forestry in the Granite State, 2nd edition*.
- **Provide a supply of patches, over time, of young, regenerating forest habitat** (>2 acres) to enhance cover for wildlife, berry-producing shrubs, hardwood stump sprouts, and other key features of "early successional" habitats (refer to Shrublands brochure in this series). The larger the forest opening or clearcut, the greater benefit it has for breeding birds, including those breeding in surrounding forests. To maximize the benefit of new forest openings to wildlife, create new patches, at least 5 acres in size, near utility corridors, shrub wetlands, or brushy old fields.
- Northern hardwood-conifer forests are critical for many migratory forest birds such as black-throated blue warbler, eastern wood-pewee, and wood thrush. Populations of many forest birds are declining, but most are still common in New Hampshire. An initiative by Vermont Audubon (www.vt.audubon.org) details **bird-friendly management practices** such as softening edges between habitats and limiting management activities during the breeding season (April-August).
- Wildlife don't recognize property boundaries. **Discuss land stewardship plans with neighboring landowners**, and consider cooperating to create on-going, coordinated habitat management projects.
- **Always consult a licensed New Hampshire forester before conducting a timber harvest on your property.** Understand and follow all laws pertaining to the harvesting of trees near wetlands and waterbodies. Follow established best management practices, and harvest timber near wetlands only when the soils are either frozen (winter) or very dry (summer).



Downed woody material