



University of New Hampshire Cooperative Extension • Forestry, Wildlife and Water Resources Programs Newsletter

Vol. XV, No. 1

Winter 1999

## Welcome to the New *Habitats*

To create this new *Habitats* the UNH Cooperative Extension Forestry and Wildlife and Water Resources Programs merged several newsletters. This change weaves together the goals of our educational programs of “en-

hancing the ability of New Hampshire citizens to make informed natural resource decisions.” We look to you our readers—landowners, loggers, teachers, foresters, volunteers, businesses, biologists, decision-

makers, conservationists, students, and others—to lead NH citizens toward a stewardship ethic on the land and water and in our communities. Welcome to the new *Habitats*.

*Ellen Snyder, Editor*

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## Ice Storm '98 Revisited

*by Karen Bennett*

Severe, unpredictable weather is as much a part of New England as stunning fall foliage, baked beans, seafood and maple syrup. On January 5-16, 1998, a series of freezing rainstorms blanketed three Canadian provinces and much of New Hampshire, Vermont, Maine, and New York. Ice developed when warm moist air from the Gulf of Mexico flowed over cold, dense arctic air. As the moisture fell, it cooled and froze. Homeowners in the severely hit areas talk of hearing hours of thunderous “rifle shots” as tree limbs broke. An estimated 800,000 acres were damaged in New Hampshire.

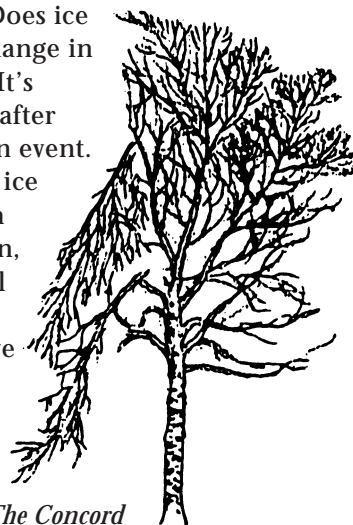
Trees experienced three

kinds of damage: leaning and bending, broken branches, and broken tops. The severity of the damage related to the aspect and slope of the land. Trees on south and southeast slopes and at elevations of at least 1300 feet in the southern part of the state and 1600 feet in the North Country were hit hardest. Though some softwoods were affected, this storm damaged mostly hardwoods.

### A Look Back and A Look Forward

Weather events become mythic, passing into legend because they're memorable, a little more extreme and unusual than the norm. Ice storm '98

joins the hurricane of '38 and the blizzards of '69 and '77 as just such events. Does ice storm '98 signal a change in the earth's climate? It's natural to speculate after experiencing such an event. Though the January ice storm is the worst on record for this region, other storms are well documented. Eight major ice storms have hit this area. The most similar in geography and severity occurred in 1929. At that time, *The Concord Monitor* reported the storm was “...One of the most severe



*continued on page 2*



**CARING FOR OUR FORESTS, WATERSHEDS, AND WILDLIFE HABITATS**

## Ice Storm '98 Revisited *(continued from page 1)*

storms to hit New England for several years...did untold damage for several days." This description could have easily been written in 1998.

Though emerging consensus among the scientific community is that the global climate is changing, we don't know if the ice storm of 1998 means anything more than the right (wrong) jet streams mixed at the right time. Regardless, the storm had an immediate and long lasting affect on New Hampshire's forests and trees.

### Help Available

UNH Cooperative Extension, NH Division of Forests and Lands, and the USDA Forest Service are cooperating to help communities and landowners with long-term recovery. Cost share assistance is available through the special ice Stewardship Incentive Program (SIP). This program helps landowners who own between 10-5,000 acres assess the damage and develop a long-term recovery plan. Funds are also available for clearing debris from access roads and trails, marking storm-damaged trees for removal, planting, fire reduction and other practices.

### Assessing Trees and Forests

A decision to harvest damaged trees is based on the severity of the damage to individual trees, the number of trees, their location in relation to each other, landowner objectives, and opportunities for improved wildlife habitat.

Trees can survive the loss of much of their top. The likelihood that an individual tree will survive can be predicted by the amount of top that remains. Trees that lost more than 75% probably won't survive. However, not all trees with this amount of damage should be removed. Leaving them will result in loss of timber value, but the contribution they make to overall forest health may far outweigh the economic loss, especially when they're scattered and in areas difficult to harvest. A variety of wildlife uses standing dead and dying trees for nesting, roosting, and foraging. Hardwood and softwood trees over 18 inches in diameter have particular value. As trees of all sizes die and fall, they contribute to coarse woody debris on the forest floor that is important for nutrient recycling and wildlife habitat.

Most trees that lost between 50 and 75% of their top will survive with different degrees of internal infections and suppressed growth, depending on where the breakage occurred. Outer branch breakage results in limited infection. Breakage of large tops and

lower branches results in more extensive infection.

Most trees that lost less than 50% of their top have a good chance of full recovery. Growth in some trees slows because of crown loss, though growth in lightly or undamaged trees on the edges of disturbed areas may increase due to additional sunlight. Unless there is substantial damage to the main stems, it's probably not necessary to salvage. As long as the main stem is intact, loss of wood should be minimal.

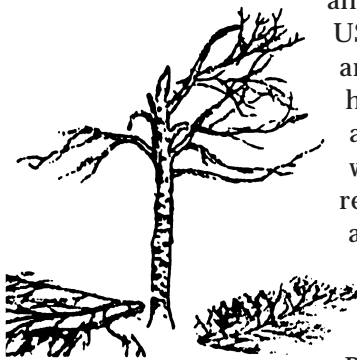
### Silvicultural Recommendations

This past growing season trees used starch and sugars stored from the previous year. This was a "crown building" year. Regardless of the amount of crown loss, whether or not trees survive will be evident in the next two or three years. Even trees with more than 75% crown loss have one to three growing seasons before decay and discoloration fungi affects wood quality. Loss of tree value due to increased epicormic branching may prove more important than actual tree death.

Bill Leak, silviculturalist and researcher with the USDA Forest Service, stresses the need to assess and monitor. Light levels that reach the forest floor tend to favor regeneration of moderate to tolerant species. For better sites this means sugar maple and for poorer sites, beech. To increase the amount of intolerant species, openings of as small as a 1/4 acre work. Partial cutting aimed at removing groups of trees more heavily damaged is probably an appropriate strategy in most stands.

**"How fragile our  
human infrastructure  
and how durable  
and resilient  
the forest is."**

Kevin Smith,  
Plant Physiologist,  
U.S. Forest Service  
January 29, 1998



Foresters and landowners observed that stands recently cut by thinning or selection were the most heavily damaged by the ice storm. This raised the question, "Should we bother managing our forests?" Bill reminds us a managed forest has the potential to produce twice the volume and twice the quality as an unmanaged forest. Management is worth the risk.

### Lingering Concerns

Widespread scattered debris and impeded woodland access heightens hazards for anyone who works and recreates in the woods and increases the likelihood of wildfire. Using history to predict forest fires is complicated because this storm left debris in a different pattern than past hurricanes and windstorms. The '38 hurricane, for example, left heavy amounts of large, softwood fuel that took years to decay and set the stage for some of our most disastrous fires. However, this storm left primarily small to medium size hardwood fuel that should decay more quickly. This difference in fuel size and type may be in our favor, however, many more people live in and recreate in the forest than 50 years ago, increasing the chances of a forest fire and the damage that may result to life and property.

### Opportunities for Research

The silver lining to the "ice" cloud is the unique opportunity for research. Dr Kim Babbitt, UNH Department of Natural Resources, is examining how changes in the forest canopy affects the microhabitat features important to amphib-

ians. Walter Shortle and Kevin Smith of the USDA Forest Service are monitoring individual tree growth, health, and insect and disease response of 500 individual trees. Practicing foresters are making observations and reporting them to each other "on the stump" and at professional meetings. These informal reports help build our collective knowledge, hopefully putting us in a better position to respond to the next natural disaster.

### For Additional Information

For more information about ice storm '98 and its effects on our forests and trees, visit our web site at <<http://ceinfo.unh.edu.icestorm.htm>> or call the UNH Cooperative Extension Forestry Information Center at 1-800-444-8978.

Portions of the following references were adapted for this article:

- *An Evaluation of the Severity of the January 1998 Ice Storm in Northern New England- Report for FEMA Region 1* by K.F. Jones and N.D. Mulherin for the Cold Regions Research and Engineering Laboratory
- *Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire*, presented by the New Hampshire Forest Sustainability Standards Work Team
- *Ice Storm '98 Information Sheets* prepared by the USDA Forest Service.

*Karen Bennett is the Forest Resources Specialist for UNH Cooperative Extension.*



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NEW HAMPSHIRE  
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### Forestry and Wildlife Program

The UNH Cooperative Extension Forestry and Wildlife Program has cared for New Hampshire's forests since 1925. Our mission is to educate New Hampshire's citizens about rural and urban environments enhancing their ability to make informed natural resources decisions. The Forestry and Wildlife Program is funded, in part, by memoranda with the New Hampshire Division of Forests and Lands and with the New Hampshire Fish and Game Department.

### Water Resources Program

UNH Cooperative Extension's Water Resources Program promotes the protection, conservation and wise use of New Hampshire's natural resources through education and outreach.

Forestry and Wildlife and Water Resources Programs can be contacted at:  
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Water Resources can also be reached at:  
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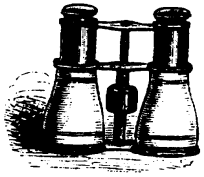
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College of Life Sciences and Agriculture, County Governments, NH Division of Forests and Lands, Department of Resources and Economic Development, NH Fish and Game Department, US Department of Agriculture, US Forest Service, and US Fish and Wildlife Service cooperating.



1999



# Field Findings

*Results of current research on New England forests, watersheds, and wildlife habitats*

## Frog Deformities Perplexing

*(With permission from a NH Fish and Game press release dated January 8, 1999)*

Frogs with multiple appendages, missing or misplaced eyes and other deformities were found in New Hampshire, and biologists don't know why. A survey last summer revealed the average rate of deformities for the 17 sites studied was 3.6%. Great Bay National Wildlife Refuge had the highest rate of frog deformities at 9.3%. The town of Bow had the second highest, with 9.2%.

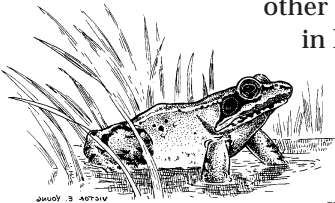
Frog deformities have occurred in a number of states. No one knows how widespread the

deformities are, or what is causing them. Pesticides, ultra-violet radiation from ozone-layer depletion, water contaminants, and natural parasites are possible causes being discussed.

Fifty-eight percent of the deformities occurring in New Hampshire consisted of missing front or hind legs. Dr. Kim Babbitt, a UNH professor involved in the survey, ruled out predation for the forelegs. "Front limbs grow protected inside the body cavity until just before metamorphosis," she said. "The chance that something would be malformed or missing on the front limbs due to predation is very, very low." Babbitt and a fellow UNH researcher, Dr. Sower, are studying frog hor-

mone levels to see if hormone-altering chemicals in the environment might be a factor.

Volunteers captured at least 50 frogs at each site included in the survey, which took place mainly in the southeastern part of New Hampshire over a two-week period. They looked for young frogs that were just turning into froglets from tadpoles—the stage at which most deformities can be seen. Although the incidence of deformities is a cause for concern, it's too soon to draw conclusions, according to Angela Archer, a biologist with the NH Department of Environmental Services, which coordinated the survey.



## How Well Do Stormwater Controls Work?

Treatment of runoff from urbanized areas is increasingly common as non-point pollution control efforts focus more closely on this major non-point source. Although there are a number of practices to modify the quantity and quality of runoff from parking lots and other areas with a large percentage of impervious surfaces, the effectiveness of these controls isn't always highly predictable under New Hampshire conditions. Several UNH researchers are studying the pollution control capabilities of various control techniques and how this relates to design characteristics.

In one study, Drs. Stephen Jones and Richard Langan of UNH's Jackson Estuarine Laboratory found considerable differences between some treatment methods in reducing contamination. Jones and Langan expect their research, sponsored by the Office of State Planning's New Hampshire Coastal Program, to prove useful in considering changes to state stormwater treatment rules as well as leading toward greater understanding of the public health implications of treated and untreated stormwater runoff.



# The Effects of Ice Damage on White Pine: A Case Study

by Sarah Smith

A timber sale on the Hemenway State Forest in Tamworth provided an opportunity to make observations about ice storm damage to white pine. Sarah Smith, UNH Cooperative Extension Forest Industry Specialist and Bob Hardy and Brad Simpkins, NH Division of Forests and Lands spent 3 days evaluating logs during a harvest and again in the mill yard. The timber sale occurred within the nearly 2,000 acre state forest on a southeastern slope with level hilltop areas, ranging in elevation from 800-1,000 feet.

## Methods

The successful bidder started logging with two cable skidders in November, after a brief delay due to heavy rains over the 1998 Thanksgiving Day weekend. Following the main skid trail the harvest area opened to a predominately white pine stand, now reduced to about 10 square feet of basal area per acre due to salvage cutting. Despite the loss, the white pine regeneration (1 year) was well established.

Initial stump observations showed that some white pine trees had blue stain while others didn't. Blue stain is a fungal infection of wood that causes a blue discoloration that can't be removed by planing or sanding. No hardwood stumps showed signs of insect or stain infestation. The stumps weren't good indicators of the condition of trees previous to felling, so most observations and conclusions were based on trees felled with the specific purpose of observation.

Observations were made on November 30 and December 16, 1998 and January 5, 1999. Standing white pine trees were selected, both in the area already harvested as well as adjacent areas. Two general categories of white pine trees were selected—those with no top and those with less than 25% crown left. Sizes varied, although the most common were 12-16" diameter at breast height. Height at the break ranged between 40-60 feet. About 20 trees total were felled and, in some cases, dissected to observe the advance of blue stain and insect activity. In addition, observations were made of ice storm damaged white pine logs from Hemenway when they were sawn at the mill.

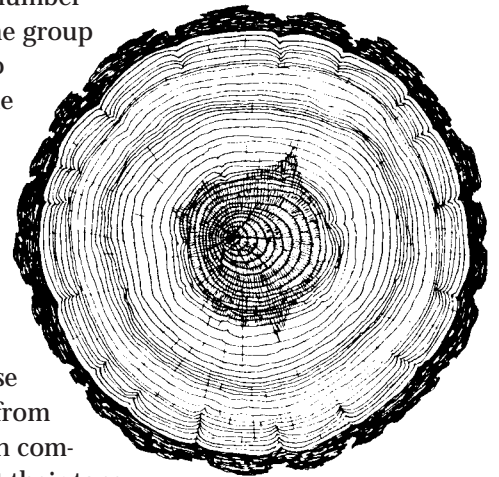
## Observations

Although the sample size is small, a pattern emerged as to how the blue stain advances in the white pine. White pine trees with the tops gone (i.e., no living crown) showed blue stain, insect activity and in some cases, bird peck, in the tops for about 5-6 feet. These trees also exhibited blue stain and insect activity in spots around the base. This stain also progressed about 5-6 feet up from the base of the tree. The middle sections of these trees weren't affected. A logger and a forester operating about 1/4 mile up the road made similar observations.

White pine trees with some live crown, as little as 20% seemed to have resisted the insects and consequent blue stain by exuding pitch from the wound at the break. These trees

didn't exhibit visible blue stain. In a red pine stand, outside the timber harvest area, a tree was cut for observation. The red pine was either completely broken off or unscathed. Few trees suffered damage. After felling and dissecting the red pine severe blue stain was observed to within 2" of the core. Unlike most of the white pine, the bark was sloughing off.

Some ice-storm damaged white pine logs were set aside at the sawmill to make observations about the lumber quality. The group was able to observe the logs in the mill yard, noticing blue stain, insect holes, and some bird peck. These were logs from trees which completely lost their tops in the ice storm. As the logs were sawn, it was easy to observe the blue stain and holes (of various sizes) scattered throughout the outside boards. In most cases the damage was limited to the first 2 inches of diameter. We didn't attempt to assign a percent decrease in quality or value with such a small sample. Generally, those outside boards that had the potential for a higher grade, were severely degraded due to the stain and holes. These boards remain useful for lower value products.



*Sarah Smith is the Forest Industry Specialist for UNH Cooperative Extension.*

# New Hampshire Coverts Project

The NH Coverts Project, a volunteer education and outreach program promoting wildlife habitat conservation and forest stewardship, is entering its fifth year. Nearly 100 volunteers, also known as Coverts Cooperators, are active throughout the state, motivating their neighbors and community members to become involved in forest and wildlife stewardship. UNH Cooperative Extension as program coordinator will accept applications in May for the fall training session scheduled September 15-18. To receive an application or for more information contact UNH Cooperative Extension, NH Coverts Project, 55 College Rd., 110 Pettee Hall, Durham, NH 03824 or call 603-862-1029.



## A Blueprint for Biodiversity Conservation in the Granite State

(The following article was excerpted with permission from *Wildlines*, the quarterly newsletter of the Nongame and Endangered Wildlife Program of the NH Fish and Game Department)

Here's a quick quiz on New Hampshire conservation. Did you know?

- There are 22 plant species, 30 animal species, and 25 natural community types in New Hampshire considered globally rare or imperiled?
- Eleven species of animals and 13 species of plants have been eliminated from the state?
- New Hampshire is losing roughly 10,000 acres of open space to development each year?

These are some facts behind a recently completed report called *An Assessment of the Biodiversity of New Hampshire with Recommendations for Conservation Action*. This report, a product of the NH Ecological Reserve System initiative, draws together the expertise of plant and animal scientists to detail the state's biological resources, assess their status, and present an action plan for conserving them.

The report is a blueprint for conservation to aid decision-makers in making a solid, scientifically-based case for conservation funding. Among the report's main findings is that the biodiversity of New Hampshire is threatened at the species,

natural community, and ecosystem levels. Part of the problem is that existing conservation lands don't contain high concentrations of many of the state's rarest species. More than 80% of known rare vertebrate species, for example, have two or fewer known occurrences on conservation lands. And many of the state's imperiled species exist in areas experiencing the most rapid rate of development.

One leading recommendation of the report is to create a system of ecological reserves by working with landowners to augment conservation lands and better protect areas where rare species and habitat occur. Although the state system of private and public conservation lands covers approximately 20% of the land base, it doesn't include the full range of habitat types. Areas like pine barrens, river valleys, and coastal habitats are poorly represented.

The report also points out the urgent need to develop long-term strategies to keep common species common. Fragmentation by development divides habitats, reducing its capacity to support even common plants and animals. If you would like a copy of the report or an executive summary, contact the NH Chapter of The Nature Conservancy at 603-224-5853.



# Ecological Profiles

## Floodplain Forests

by Karen Bennett

Floodplain forests are forested wetlands that occur within periodically flooded bottomlands along rivers. Over time, this natural community has been fragmented or altered for agriculture, wood products, by development, and other human activities. It's a rare ecosystem type, though until recently not much was known about floodplain forests in New Hampshire. In 1997, the NH Natural Heritage Inventory Program embarked on a study to identify, inventory, and classify floodplain forest natural communities along the large rivers in New Hampshire.

### Description

Floodplain forests are highly variable, dominated by mature, woody species forming a closed canopy. These forests flood periodically with varying frequency, intensity, and duration. Floodplains can be defined as the area flooded every one to three years. Floodplain plants must survive periods of dry soils, as well as the disturbance related to variable floodwaters. Floodplain forests are connected on the landscape to other aquatic and upland plant and animal communities, and their role, function, and importance is linked to other habitats.

### Floodplain Habitat

Floodplains provide unique structural characteristics, plant communities, and food resources for wildlife. They serve as daily, seasonal, and annual migration routes and provide nesting and resting sites for wildlife. Floodplain forests leaf-out early in

spring, serving up a hearty supply of insects for migrating songbirds such as common yellowthroats and yellow warblers. Frogs, salamanders, and insects breed in these bottomland forests, and many mammals, like otters, minks, and black bears find shelter and food among floodplain plants. The complex tree stand structure produces ideal conditions for species such as rose-breasted grosbeak, Baltimore oriole, least flycatcher, and warbling vireo. Floodplain tree types produce a large number of cavities for woodpeckers and great crested flycatcher and provide roost and nest sites for raptors.

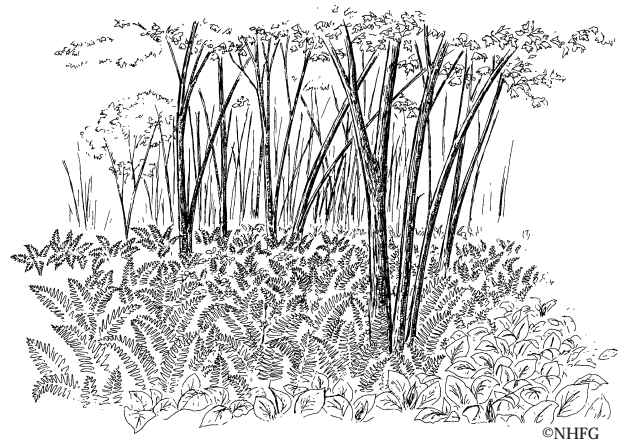
Regularly disturbed by flooding, floodplain forests provide a range of successional habitat. Sand, gravel, and cobble support unique insects such as cobblestone tiger beetles and provide important nest sites for spotted sandpiper, common nighthawk, bank swallow, and belted kingfisher. Fruiting vines and shrubs are common in floodplains, providing an array of food sources. Floodplain forests support different plants which in turn support unique wildlife species. For example, the hackberry tree is adapted to grow in floodplain forests and hosts hackberry butterflies.

### Range and Distribution

Only 1,200 acres of silver and sugar maple dominated floodplain forests and associated communities are known to occur in New Hampshire. They're often in small fragmented patches, sometimes barely more than a tree wide. The Natural

Heritage Inventory identified four major floodplain forest natural communities:

- Silver Maple/Wood Nettle-Ostrich Fern Floodplain Forest
- Silver Maple/False Nettle-Wood Reed-Sedge Floodplain Forest
- Sugar Maple/Ironwood/Short Husk Floodplain Forest
- Sugar Maple-Silver Maple-White Ash Floodplain Forest



### Management

The prudent management recommendation for protecting these unique habitats is to recognize them and avoid impacts. A number of threats and management issues are common to most floodplain forests. These include:

- **Invasive species** are a concern at some floodplain forest sites, particularly those along major rivers. The study identified 34 non-native plant species including some aggressive invaders (such as Japanese knotweed and oriental bittersweet) that threaten native plants.

- The long-term impact of **hydrologic flow regime alteration and controls** on NH floodplain forests isn't well documented and is a concern.
- **Conversion and fragmentation**, primarily due to development and agricultural uses, has led to loss of extended lengths of unaltered, ecologically intact floodplain ecosystems.
- Systematic **commercial collection** of ostrich fern fiddleheads for the restaurant market has been documented along the

Connecticut and Merrimack Rivers.

- Secondary **impacts of development**, including regional and local water quality, recreational use of floodplains, dumping, and other local impacts affect some floodplain forests.

#### For more information

Abridged copies of the Natural Heritage report are available by contacting the UNH Forestry Information Center at 1-800-444-8978. For additional information, contact the NH Natural Heritage Inventory at DRED-

Division of Forests and Lands, PO Box 1856, 172 Pembroke Road, Concord, NH, 03302-1856 or phone 603-271-3623.

Portions of this article were adapted from: "What Is a Floodplain Forest?" from *Wildlines*, a quarterly newsletter of the Nongame Endangered Wildlife Program of the New Hampshire Fish and Game Department, and *Floodplain Forest Natural Communities Along Major Rivers in New Hampshire* by Douglas Bechtel and Daniel Sperduto, New Hampshire Natural Heritage Inventory Program.



## Keeping Flood Waters Down: How We Can All Help

*(Reprinted with permission from GREENWorks, NH Dept. Of Environmental Services, 7/98)*

Last June was particularly wet for the season, with rainfall accumulations in the state from 244 to 351% above normal, depending on where in the state one was. Roads washed out, basements flooded, camps, homes, and businesses were evacuated, crops were submerged, and many fair weather plans had to be changed. June's torrential rains were beyond our control, but we all can take steps to reduce the impacts of stormwater on the land.

One of the most important steps you can take is to help protect wetlands. During a flood, wetlands act like sponges, slowing the water's flow and temporarily storing it. The less water to reach a river or lake during flood conditions, the less severe the subsequent flooding. It doesn't matter whether the wetland is high in the watershed on a small stream or further down in the watershed on a large stream or river. Its contribution to flood control may be significant.

Many New Hampshire towns have adopted regulations to help

protect wetlands. The State also has laws and a permitting process through the NH Department of Environmental Services to minimize the loss of wetlands. But wetland protection ultimately depends on the individual landowner, land planner, homebuilder, or highway designer, and avoidance of impacts is the first and best line of protection.

Another step to reduce flooding is to minimize the amount of impervious area. Roads, paved parking lots, driveways, and buildings prevent water from soaking into the ground and speed it on its way to the nearest water body. By diverting roof and driveway runoff to flat, grassy areas where it can seep into the ground, you can help recharge the ground water and slow down any residual surface flow.

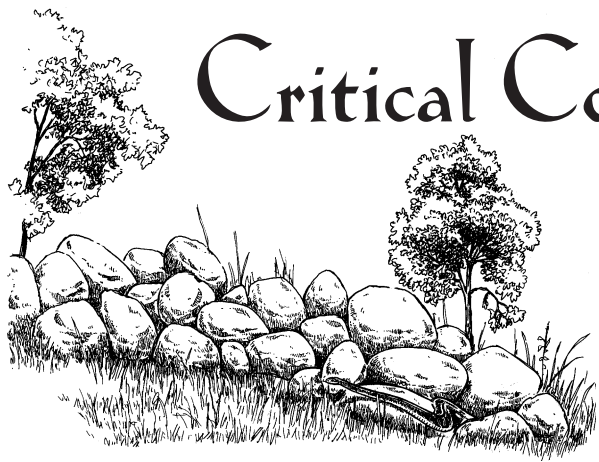
By modifying subdivision and site plan review regulations to minimize impervious surfaces and include stormwater control provisions, town planning boards can also help keep flood waters down. Simple design changes, like sunken vegetated islands in parking lots and permeable

overflow parking areas, can make a big difference in stormwater runoff control.

Vegetation plays an important role in surface runoff. Where the vegetation is thick, as in a forest, a wetland, even a field of grass, plants tend to break the fall of rain, retain it on leaf and stem surfaces where some water evaporates, and take up water through their roots. Plant roots also facilitate the flow of water through the ground, increasing the land's ability to absorb rainfall. Given a choice between a short-cropped lawn and a groundcover or ornamental plants, go with the groundcover, the shrubs, and the trees. Vegetation along streams, rivers, and lakes also helps to stabilize banks and filter out pollutants that would otherwise run into the water.

These may seem like small steps, but like the raindrops they're designed to control, the small steps add up. For copies of a model stormwater regulation prepared by the NH Association of Conservation Districts or for more information contact the NH Department of Environmental Services Nonpoint Source Program at 271-2457.





# Critical Conservation Initiatives



Land conservation initiatives are occurring around Great Bay, in the North Country, in southwestern and southeastern New Hampshire, in the Mount Washington Valley, in nearly every corner of the state. Henry Tepper, NH Chapter of The Nature Conservancy Director, highlights the shift toward these landscape scale conservation efforts: "The developing science of conservation biology taught us that we must think much more broadly if we seek to protect biodiversity over the long term."



More than 30 local, regional, and statewide land trusts are active in New Hampshire. In addition, many Conservation Commissions are identifying and prioritizing conservation lands within their communities, contacting landowners about conservation easements and other voluntary land protection measures.



NH Land and Community Heritage Commission – This Commission was created by the 1998 NH Legislature to determine the feasibility of creating a new public-private partnership to protect natural, cultural, and historical resources. In an interim report issued January 4, the Commission recommends creation of a new permanent program funded at \$12 million annually. The Commission is continuing its work in 1999 with a goal of introducing legislation in the 2000 legislative session to create the new program. The Commission staff can be reached via email: <nhlchc@aol.com>, on the web: <<http://nhlchc.conknet.com>>, or by mail: P.O. Box 679, Concord, NH 03302-0679.



Citizens for New Hampshire Land and Community Heritage – This is a broad-based grassroots coalition building support for increased public and private commitment to the conservation of natural, cultural, and historical lands and resources. For more information contact Brian Hart, Coordinator, P.O. Box 1566, Concord, NH 03302-1566, or by phone 603-230-9729, or email at <bhart@igc.org>.



Conservation License Plate – A new conservation license plate will become a reality by the year 2000. Plate proceeds will be shared among an array of conservation organizations: NH Fish and Game Department Nongame and Endangered Wildlife Program, NH Natural Heritage Inventory, NH Division of Parks and Recreation, NH Department of Cultural Affairs, NH State Conservation Committee, and NH Department of Transportation wildflower program.



Habitat Stamp – A new \$2.50 wildlife habitat stamp, required on each hunting license, is expected to raise \$164,000 this first year. The fund, managed by NH Fish and Game, is dedicated to funding habitat projects on public and private lands. On-the-ground projects will include restoring early successional habitat, releasing wild apple trees, maintaining grasslands and old fields, as well as protecting significant habitats through conservation easements.



President Clinton announced a proposal to significantly increase funding to conserve farms, forests, and other open spaces through several existing programs. The

*continued on page 10*

proposal would appropriate more funds for the Land and Water Conservation Fund, Forest Legacy Program, and Farmland Protection Program.



**Teaming With Wildlife** – A bipartisan group of US Senators and Representatives is drafting legislation to use offshore oil and gas receipts to help fund state fish and wildlife agencies. The program would be especially beneficial to nongame species programs. Initially, the Teaming With Wildlife effort focused on establishing a sales tax on all outdoor recreational equipment but has now shifted to offshore drilling as the potential funding source.



**Licensing of Natural Resource Professionals** – Since 1990 foresters who offer services for compensation are required to be licensed. Soil scientists must be certified and on November 10, 1998, the NH Board of Natural Scientists adopted rules for the certification of wetland scientists. Informa-

tion about the licensure and certification of these natural resource professionals is available from The Joint Board, 57 Regional Dr., Concord, NH 03301 or by phone at 603-271-2219. Their web site address is: <<http://www.state.nh.us/jtboard/home.htm>>.

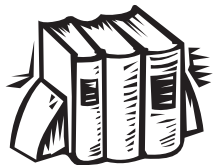


**Stewardship Incentive Program**– Not all news about conservation initiatives is good. In 1999, the Stewardship Incentive Program (SIP) wasn't funded. This federally funded program helps landowners develop comprehensive plans integrating natural resources. Over 350,000 acres of private lands are now managed with the benefit of a multi-resources plan because of SIP and its sister program, Forest Stewardship. For more information contact Karen Bennett, Extension Specialist in Forest Resources, UNH Cooperative Extension, Room 108 Pettee Hall, 55 College Rd., Durham, NH, 03824; or email <[karen.bennett@unh.edu](mailto:karen.bennett@unh.edu)>; or phone at 603-862-4861.

## Upcoming Events

***Check the event calendar on the UNH Cooperative Extension Forestry and Wildlife Program web site at <<http://ceinfo.unh.edu>>***

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| March 23-25                              | New England Society of American Foresters Winter Meeting<br>Radisson Burlington Hotel, Burlington, VT.<br>For more information call Bill Kropelin at 802-865-7484.   |
| April 7-9                                | NE National Marine Fisheries Service/Sea Grant Colloquium on Fish Habitat<br>Sheraton Harborside, Portsmouth, NH. Contact: E-mail: <a href="mailto:brian.doyle@unh.edu">brian.doyle@unh.edu</a><br>Phone: 603-749-1565   |
| April 11-14                              | 55 <sup>th</sup> Annual Northeast Fish and Wildlife Conference Center of NH – Holiday Inn,<br>Manchester, NH. For registration information contact NH Fish & Game Department,<br>2 Hazen Drive, Concord, NH 03301; 603-271-3211 or check their website:<br><a href="http://www.wildlife.state.nh.us">http://www.wildlife.state.nh.us</a> .                 |
| May 20,<br>June 21-25,<br>June 28-July 2 | Environmental Education Institute: Community Mapping<br>Durham, NH. To register or for more information contact: UNH Cooperative Extension<br>Water Resources Program Pettee Hall, Rm. 108 Durham, NH 03824<br>Ph: (603)862-1029 Email: <a href="mailto:water.resources@unh.edu">water.resources@unh.edu</a>   |
| June 22-24                               | Symposium: Sustainable Management of Hemlock Ecosystems in Eastern North America.<br>UNH, Durham, NH For more information contact Ted Howard at<br>603-862-2700 or < <a href="mailto:tehoward@christa.unh.edu">tehoward@christa.unh.edu</a> > or Dennis Suoto at 603-868-7717<br>or < <a href="mailto:dsuoto/na_du@fs.fed.us">dsuoto/na_du@fs.fed.us</a> > |
| August 3-6,<br>August 9-13               | Environmental Education Institute: Watershed Ecology<br>To register or for more information contact: UNH Cooperative Extension Water<br>Resources Program Pettee Hall, Rm. 108 Durham, NH 03824 Ph: (603)862-1029<br>Email: <a href="mailto:water.resources@unh.edu">water.resources@unh.edu</a>   |



# From the Reference Library

## New Hampshire's Living Legacy: The Biodiversity of the Granite State

A new full-color 20-minute video of New Hampshire's biodiversity is available. Produced by UNH Cooperative Extension and UNH Media Services, the film takes you on a tour of the beauty and diversity of NH's living legacy from seacoast saltmarshes to northern spruce-fir forests, from vernal pools to alpine tundra. The video also highlights the pressures that face biodiversity and ultimately each of us who plays a role in using and conserving our biological diversity. Copies are available from UNH Cooperative Extension Publications for \$10. Send requests to UNHCE Publications, with checks payable to UNH Cooperative Extension, at 120 Forest Park, Durham, NH 03824.

For a special presentation of the biodiversity video and program contact Ellen Snyder, Extension Specialist Wildlife, UNH Cooperative Extension, 110 Pettee Hall, 55 College Rd., Durham, NH 03824 or call 603-862-3594.

## UNH Cooperative Extension Forestry Information Center

The following publications are available from the UNH Cooperative Extension Forestry Information center. Call 1-800-444-8978 for more information:

- *A First Look at Tree Decay*, by Kevin Smith and Walter Shortle  
A colorful brochure with examples of what signs trees will show if they have inner damage or decay.
- *A Landowner's Guide to Building Forest Access Roads*, by Richard Weist  
A guide for road planning, construction, maintenance and closure, with recommendations for culvert sizing and placement and wetlands crossings.
- *Northern Red Oak Regeneration: Biology and Silviculture*, by Kenneth Desmarais  
An important resource for timber and wildlife, the red oak is not an easily regenerated tree. Take a look at the problems with regeneration, biology of seed production and how to improve the chances of this valuable species.
- *Crop Tree Management in Eastern Hardwoods*, by Arlyn Perkey, Brenda Wilkins, and H. Clay Smith  
A management tool for forestland managers is called "crop tree management." It's described as a system of forest resource management that offers private, non-industrial forestland owners a means of accomplishing stewardship goals.

## UNH Cooperative Extension Water Resources Brochure

The Extension Water Resources and Sea Grant Program has a new brochure describing the breadth of programs offered. It presents a variety of freshwater, estuarine and marine educational opportunities. The brochure is available on the UNHCE web site at <<http://ceinfo.unh.edu.watrprog.htm>>.

## New England's Own Groundwater Curriculum

A new groundwater curriculum for grades 7-12 is available from the New England Interstate Water Pollution Control Commission. "That Magnificent Groundwater Connection" is a compilation of existing materials and some original additions. Activities cover a range of academic disciplines adapted to groundwater study in New England. The curriculum joins a previously released K-6 version. The curriculum materials include activity plans, background information, resource lists, and glossary. Each curriculum book is \$25. To order, contact New England Interstate Water Pollution Control Commission, 2 Fort Road, South Portland, ME 04106 or phone 207-767-2539.

## Legal Aspects of Owning and Managing Woodlands

By Thom McEvoy, associate professor and extension forester at the University of Vermont, this 208-page book is "an accessible overview of the privileges, rights, and obligations that accompany forest ownership, and a guidebook to help active forest managers use laws to their advantage and avoid the pitfalls of expensive and exhausting litigation." Published by Island Press (1-800-828-1302 or <[www.islandpress.org](http://www.islandpress.org)>).

# Habitats

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## Butterflies and Skippers in Managed Forests

(*Northeast Wildlife*. 1996. Transactions of the Northeast Section of The Wildlife Society. Vol. 53: 1-9)

Penn State University Professor Richard Yahner studied seasonal abundance and habitat use by butterflies and skippers on a large forest managed for ruffed grouse in central Pennsylvania. In addition to being “charismatic micro-fauna”, these invertebrates are of interest because they’re important plant pollinators and indicators of environmental change such as forest fragmentation. Recent declines in butterflies have been

attributed to pesticide use, loss of host and nectar plants, and habitat loss.

Yahner surveyed patch, corridor and contiguous forested habitats of different ages as well as logging roads and herbaceous forest openings. He observed 26 species in these habitats, the most common were little wood-satyr, spicebush swallowtail, red-spotted purple, and great spangled fritillary. Although some species were found in forested habitats, a majority was found only on logging roads and in herbaceous openings. Yahner attributes this to a lack of flowering nectar plants in the forest.

Yahner offers two important recommendations:

- Delay mowing of herbaceous openings containing nectar sources in forested areas until at least early September. Many nectar sources bloom in late summer.
- Butterfly surveys should be conducted 3-4 times per year to ensure efficient sampling of the community. Some species are present for only a certain time of the year.

