



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

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## Introducing the New Hampshire Wildlife Action Plan

For the past three years, the NH Fish & Game Department has worked together with partners in the conservation community to create the state's first Wildlife Action Plan – a comprehensive assessment of the status of wildlife statewide, and an outline of specific steps that can be taken to conserve wildlife and their habitats in New Hampshire.

Funded by State Wildlife Grants, this federal program was created through bipartisan legislation signed by President Bush in 2001. The law provided much needed funding, and mandated that each state complete a comprehensive management plan in order to qualify for these grants.

**In the end the way we treat the land affects not only fish and game but all life, including our own.**

Wildlife conservation is sometimes portrayed as a choice between growth and no growth – a question of whether to protect wildlife or build roads, homes and businesses. Today it is becoming more obvious to many people that the choice is not that clear cut. While it is true that many species of wildlife require open space, clean air and water, and habitats provided by forest, fields and agricultural land, people also thrive in a clean and healthy environment. In the end the way we treat the land

affects not only fish and game but all life, including our own.

Communities, private landowners, business and industry, as well as the conservation community all have a stake in this issue. At Fish and Game we are reaching out to these varied interests to form a coalition to secure the necessary funding for this important work. In partnership with UNH Cooperative Extension, we hope to continue not only our work with individual landowners, but to expand our efforts toward helping communities gain a greater appreciation of the natural world and how they might act to insure that wildlife remains a part of it. In the end, by protecting wildlife and some wild places, we will ensure a better habitat for us and our neighbors.

*Lee Perry*  
Director,  
New Hampshire Fish and Game Department



**To read a copy of the NH Wildlife Action Plan, go to the NH Fish & Game website:  
[www.wildlife.state.nh.us](http://www.wildlife.state.nh.us)**



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

# Current Conditions for Wildlife & Habitats

by Malin Clyde

UNH Cooperative Extension, Coverts Project Coordinator



The bulk (and I do mean bulk!) of the NH Wildlife Action Plan (WAP) contains a wealth of information about the distribution and abundance of 123 wild-

life species that are in greatest need of conservation in New Hampshire. There are “species profiles” for 107 of the species, along with 27 additional “habitat profiles” for the habitats that are in the greatest need of conservation. Many of these habitats were identified several years ago by the NH Living Legacy Project, with scientists identifying habitats based on the requirements of the wildlife most at risk in the state. In this way, the critical habitats and the critical species are inexorably linked, but the WAP uses different analyses to better understand both components of wildlife conservation: the actual critters – “species of conservation concern”, and the kinds of habitats they need to survive – “critical habitats.”

You can find profiles in the WAP for all different types of wildlife:

- invertebrates (such as the dwarf wedgemussel),
- insects (such as the ringed boghaunter dragonfly),
- fish (such as rainbow smelt and Atlantic salmon),
- amphibians (such as mink frog),
- reptiles (such as smooth green snake),

- birds (such as Eastern meadowlark and American woodcock), and
- mammals (such as American marten).

But what do the profiles tell us? The species profiles, written by expert biologists and researchers, give us information about the animal’s habitat, its regulatory status, where existing populations are located (including distribution maps), where suitable habitat exists in the state (predicted for 14 of the species

**The habitat profiles are rich in information, providing tantalizing data on the condition of wildlife habitats throughout the state.**

so far), the quality of that existing habitat, and an assessment of major threats to that species. Although the profiles vary in the amount of detail (e.g. research on bobcats is much more complete than research on mink frogs), all provide the basic components of habitat description, known distribution, and likely threats.

The habitat profiles are also rich in information, providing tantalizing data on the condition of wildlife habitats throughout the state. They describe the habitats in detail, and include a map showing the locations

of each habitat across the state. These maps, the creation of which was a major undertaking, show the *predicted* location of each habitat, based on geographic, hydrographic, and vegetative data combined using a mapping system (GIS). One of the most interesting tables (found in section 3.3 of the plan) summarizes the condition of 17 critical habitats in the state including:

- # of (predicted) acres of the state covered by each habitat
- % of NH Area covered by that habitat
- % of that habitat that remains unfragmented by roads or development
- % of that habitat that is already protected
- % of that habitat that is considered “buildable” (e.g. able to be developed)

From this table I learned that Appalachian Oak-Pine forest (which is the habitat around my own home) only covers 7% of the state. Of that, only 13% is protected from development. And while 64% of it is unfragmented by roads, 65% of it is also considered “buildable.” It gives me food for thought for the conservation efforts in my town.



## Bobcat (*Lynx rufus*)

Summarized based on the profile authored by John Litvaitis & Jeffry Tash, UNH

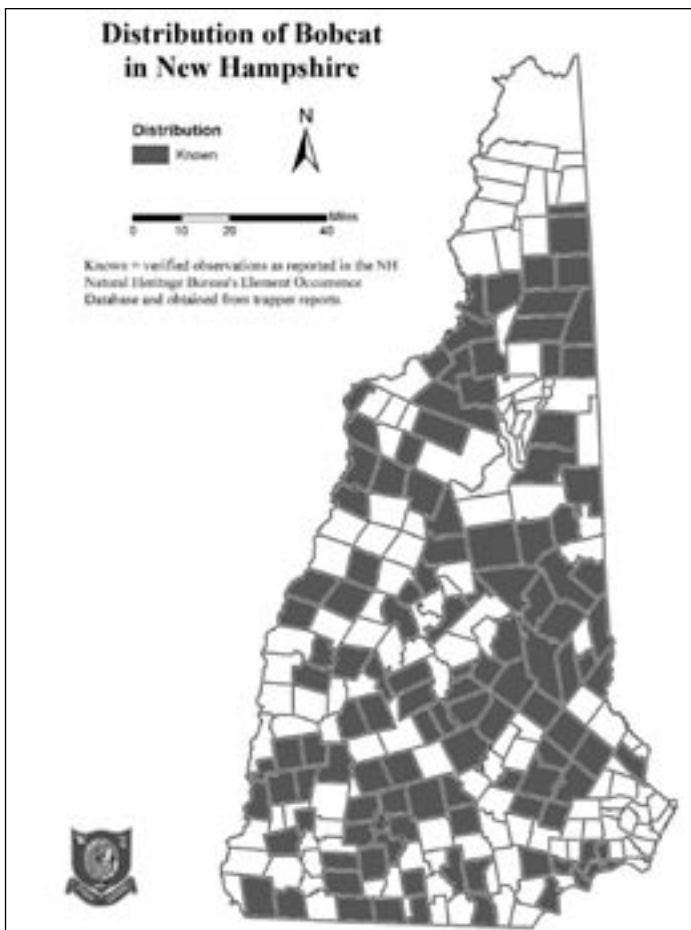
### Habitat

Bobcats occupy wooded habitats that provide cover and allow for stalking or ambush. In the eastern U.S., lagomorphs (e.g. rabbit, snowshoe hare) are an important prey for bobcats, and their populations thus affect the distribution and abundance of bobcats. In New Hampshire, bobcats are associated with uplands or wetlands with dense understory vegetation, and with rugged terrain that may include rocky outcrops.

### Population and Habitat Distribution

Historic accounts of bobcats in NH are limited. There is some research suggesting that bobcats initially benefited from land clearing by early European settlers, their populations expanding from the southwest portion of the state toward the north and east as forests were cleared for subsistence agriculture. Based on bounty harvest records (1931-1965), core bobcat habitat appears to have been mainly in southwestern NH. This area continues to support a disproportionate number of bobcats.

*continued on page 4*



This map, compiled from observations and captures between 1990 and 2004, shows that a large portion of the state is still occupied by bobcats.



UNIVERSITY of NEW HAMPSHIRE  
COOPERATIVE EXTENSION



### 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.

### Seagrant, Water & Marine Resources Program

E-mail: [water.resources@unh.edu](mailto:water.resources@unh.edu)

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

### Community Conservation Assistance Program (CCAP)

CCAP provides communities and conservation groups with assistance for locally initiated conservation projects, with a focus on dovetailing natural resources inventory work with land conservation planning.

The above programs can be contacted at:

UNH Cooperative Extension  
214 Nesmith Hall, 131 Main Street  
Durham, NH 03824  
603-862-1028 FAX 603-862-0107

Editor: Malin Clyde

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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.



# Floodplain Forest

### Justification

Riparian forests support diverse natural communities, protect and enhance water quality (they filter and sequester pollution), and control erosion and sediment. Research has shown that in Europe and North America, up to 90% of flood plains are under cultivation and are functionally extinct.

These forests support a variety of important wildlife, including:

American woodcock  
Blanding's turtle  
Canada warbler  
Cerulean warbler  
Cooper's hawk  
Eastern red bat  
Jefferson salamander  
Migrating/wintering birds  
Mink frog  
Northern leopard frog  
Red-shouldered hawk  
Ribbon snake  
Silver-haired bat  
Spotted turtle  
Veery  
White-tailed deer  
Wood thrush  
Wood turtle

### Habitat Distribution

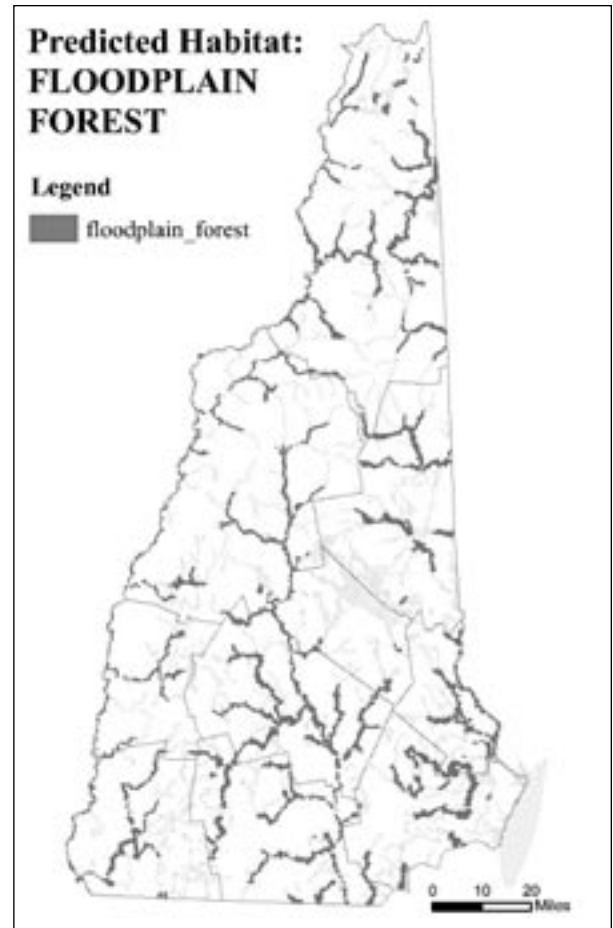
Floodplain forests are found along rivers throughout NH. The majority of forested floodplains exist in an elevation range of

up to 21 feet up the bank away from associated rivers (mapped, at right). These forests cover approximately 1.9% of New Hampshire's land area.

- Approximately 11.6% of NH floodplain forests are protected from development
- 73% of floodplain forests are unfragmented (more than 400 ft. from road or development)
- The largest montane/near-boreal floodplain is in the Upper Ammonoosuc River drainage
- The largest silver maple floodplain is in the Middle Androscoggin River watershed
- The largest temperate minor river floodplain is in the Lamprey River watershed

### Threats to Habitat

The most challenging issues facing floodplain forests are human development and transportation infrastructure (roads). Agricultural fields, roads, and residential and commercial development all contribute to the fragmentation of floodplain forests and their associated wildlife. Other threats include the prevention of natural flooding in floodplains (modi-



fied by dams) and invasion by non-native plant species which spread easily in the frequent disturbances created by flooding and which thrive in the rich soils of floodplains.

## SPECIES PROFILE - SAMPLE *(continued from page 3)*

# Bobcat

### Habitat Condition

Although bobcats may span a larger portion of the state today than at the time of European settlement, bobcats are also confronting increasingly modified landscapes and new threats (vehicle collisions). Maintaining viable populations of bobcats will

require an understanding of how these factors influence local populations. Increasing human development will likely degrade existing bobcat habitats. Maintaining large blocks of continuous forest, a recognized conservation goal in NH, would be beneficial to maintaining current populations of bobcats.

### Threat Assessment

Because bobcats are wide-ranging carnivores, they are likely to encounter and cross roads, where collisions are more likely. Such collisions will reduce local populations and deter immigrants from reaching unoccupied or low-density habitats.

# In Harm's Way

## Threats to Wildlife In New Hampshire

by Malin Clyde

UNH Cooperative Extension, Coverts Project Coordinator

Scientists and wildlife biologists across the state used an elaborate protocol in the WAP to describe the many risks to species and habitats in our state. They came up with 18 factors which pose significant threats, and systematically described what threats worked against which species or habitats. For example, the threat of oil spills is limited to a small area, but the impacts could be serious for sand dunes, coastal islands, and their associated species (roseate and common terns, piping plovers).

Using a scoring system, experts ranked the threats according to variables such as scope, likelihood, and quality of information available, and came up with a summary chart of the habitats and species most at risk. According to their analysis, some of our most at-risk habitats include pine barrens, grasslands, salt marshes, and vernal pools. The list of most-at-risk species includes Atlantic sturgeon, common tern, northern leopard frog, and timber rattlesnake (see WAP, section 4.4). Although the authors recognize the qualitative nature of these lists, it is still instructive to have the list of 107 species broken down into groups according to the level of risk they may be facing. With a task as monumental as conserving all wildlife in the state, any way to simplify and categorize the information is helpful to us as decision-makers, landowners, resource managers, or even simply interested readers.

But what about these risks? What kinds of effects will they have? Below is a summary of several of the greatest threats to species and habitats in our state:

### Development

The risk to wildlife from development tops the list of many of the rankings, as, according to the plan, "all habitats and species are affected by development to varying degrees" (WAP 4-23). Contributing factors to this threat (or "known wildlife exposure pathways") are rapid population growth, filling and draining of wetlands, unregulated upland development, fragmentation of habitats, light pollution, and commercial extraction (such as gravel mining). Although some effects are subtle (light pollution can disorient moths), most effects are direct, with habitats lost or fragmented, and wildlife destroyed during or after construction. The WAP attributes the threat of development affecting 9 habitats and 10 species at the highest ranking level.

### Non-point Source Pollution

Non-point source pollution results from land use that allows harmful substances such as sediments, road salt, fertilizers and petrochemicals to be flushed into water bodies by rain or snowmelt. This type of pollution is pervasive and difficult to fix, and improving water quality will require broad efforts to identify and address the many pathways by which pollutants enter aquatic habitats. Pathways include storm-water runoff, erosion, and the broad application of herbicides and insecticides to our forests and fields. The threat of non-point source pollution, though affecting no species or habitats at the highest level, affects more than 30 species and habitats at the lowest grade level, therefore raising its level of importance as a threat to our wildlife.



Development poses a real risk to many of our critical wildlife species and habitats.

### Recreation

The threat to wildlife by recreation comes out near the top of several of the risk tables in the WAP. While this may come as a surprise, several highly threatened species are greatly impacted by specific recreational activities, and these combine to raise the threat level of recreation as a category. For example, peregrine falcon nest sites can be disturbed by rock climbing, the Concord population of Karner blue butterflies is threatened by illegal ATV use, boat use disturbs nesting loons, and nesting piping plovers are threatened by beach-goers and their pets. The WAP attributes the threat of recreation affecting 1 habitat (coastal dunes) and 2 species (piping plovers and common loons) at the highest ranking level, while also affecting 46 species and habitats at the lowest level (a more dispersed level of risk).

# Conservation Strategies: What Can You Do To Help?

by Darrel Covell  
UNH Extension Specialist, Wildlife



Spotted turtles are one of the critical species described in the WAP.

The Wildlife Action Plan is the most comprehensive wildlife assessment ever completed in New Hampshire. It pulls together a vast amount of data, analyzes much of it to assess how species and habitats are doing, and, finally, outlines ways to help conserve the wildlife and habitats that are most at risk in our state – “conservation strategies,” as the plan calls them.

These strategies are the vehicles for putting the WAP into action, and this won't be easy. However, I encourage you to find a conservation strategy or two to which you can contribute in a meaningful way. The Wildlife Action Plan guides land use, stewardship and protection efforts. It points out risks to wildlife and habitats, so that we can find ways to reduce or avoid those risks. Making New Hampshire a better place for wildlife is the goal of the conservation strategies identified in the plan. Here is my take on some of the key strategies that will move wildlife conservation forward in the next decade:

## My “Top 10” List of Wildlife Conservation Strategies

(taken from a “first cut” of the 25 most feasible conservation strategies)

### 10 Facilitate funding of priority conservation research.

To facilitate priority survey, monitoring, and research efforts, we must communicate priorities to other entities that fund conservation research in New Hampshire. With limited research funding available from NH Fish & Game, we can encourage other funders to focus their dollars on priority research identified in the Wildlife Action Plan. Also, encouraging researchers to seek answers to priority conservation research questions (also identified in the WAP) can help.

### 9 Protect riparian and shoreland habitats and other wildlife corridors.

We can promote the protection or restoration of wildlife corridors, including riparian and shoreland habitats. Maps of prioritized wildlife habitat can be used as guides when selecting areas to protect or restore.

### 8 Restore and maintain watershed continuity.

Stream crossings (e.g., bridges, culverts, railroads) and dams fragment aquatic ecosystems. Reducing fragmentation in a watershed will be especially beneficial for species such as migratory fish that require different habitats throughout their lives. Think of ways that you can make a difference in your

community – for example, encourage the use of flat-bottom culverts when culverts are replaced or new ones proposed.

### 7 Promote a sustainable development working group.

Promote a New Hampshire non-regulatory working group that proactively identifies opportunities to improve decisions on how and where development occurs. This would help maintain and improve the ecological integrity of landscapes and would promote a commitment to environmentally sustainable development. In your community, if a development is proposed, rather than being for or against the developer, talk with him/her about more environmentally friendly ways to design the development. Check out these two DES publications for ideas:

- a) Habitat-Sensitive Site Design and Development Practices to Minimize the Impact of Development on Wildlife <http://www.des.state.nh.us/factsheets/id/id-4.htm>
- b) Minimizing the Impact of Development on Wildlife: Actions for Local Municipalities <http://www.des.state.nh.us/factsheets/id/id-5.htm>

## **6 Develop protocols for limiting activity in sensitive habitats.**

Fragile and sensitive ecosystems can be damaged by human presence, even when no harm is intended. To prevent disturbance, sensitive threatened and endangered species areas can be buffered from human disturbance. In the near future look for more information on the location of these habitats and how you can help from Fish & Game.

## **5 Develop stream crossing guidelines and restoration protocols.**

Roads, driveways, and trails may impede passage of aquatic organisms and change the natural flow and structure of streams or rivers. Upgrading or replacing ineffective structures (e.g., culverts and bridges) with well-designed ones will help keep wildlife populations connected (also see #8 above).

## **4 Promote sustainable forestry practices.**

Continue to work with partners in the forestry and conservation communities to strategically promote sustainable forestry. The key to improving wildlife habitat through sustainable forestry is providing ecologically sound recommendations to foresters and owners of larger lands that have significant wildlife resources. We will be doing this in the coming months, so look for workshops, publications and resource people describing sustainable forestry in terms of helping New Hampshire's wildlife.

## **3 Advise conservation commissions and open space committees.**

Many conservation commissions are permanently protecting lands. Fish and Game will play an important role in helping to identify critical wildlife habitats in their communities for protection using conservation funds, open space bonds, and through engagement in land use planning decisions within their community. You can help by actively seeking out maps and technical assistance related to the Wildlife Action Plan. UNH Cooperative Extension will be engaged in this process as well.

## **2 Identify and implement conservation actions through education, information, and technical guidance.**

While we have already identified some key conservation actions that can be addressed through education, information and technical guidance, there will be more to come. Public support will lead to additional conservation, management, and legislation that will protect wildlife and habitat. If you have ideas for publications or tools that would help you conserve wildlife, by all means let us know. Be on the lookout for lots of educational products coming out soon.

## **1 Produce a landowner education series.**

Fish and Game wants to work with partners to develop and distribute a homeowner/landowner education series including brochures, web-based information, and program presentations. These projects would address issues such as living with wildlife, landscaping with native plants and preventing the spread of invasive species. Additional publications would target land managers interested in providing habitat for wildlife of conservation concern. Look for these in the coming months as we add details and think creatively about how best to break up the habitat management elements of the Wildlife Action Plan into useful pieces. Again, our ears and minds are open to your suggestions.

*Thank you for whatever you can do to help us conserve New Hampshire's wildlife.*

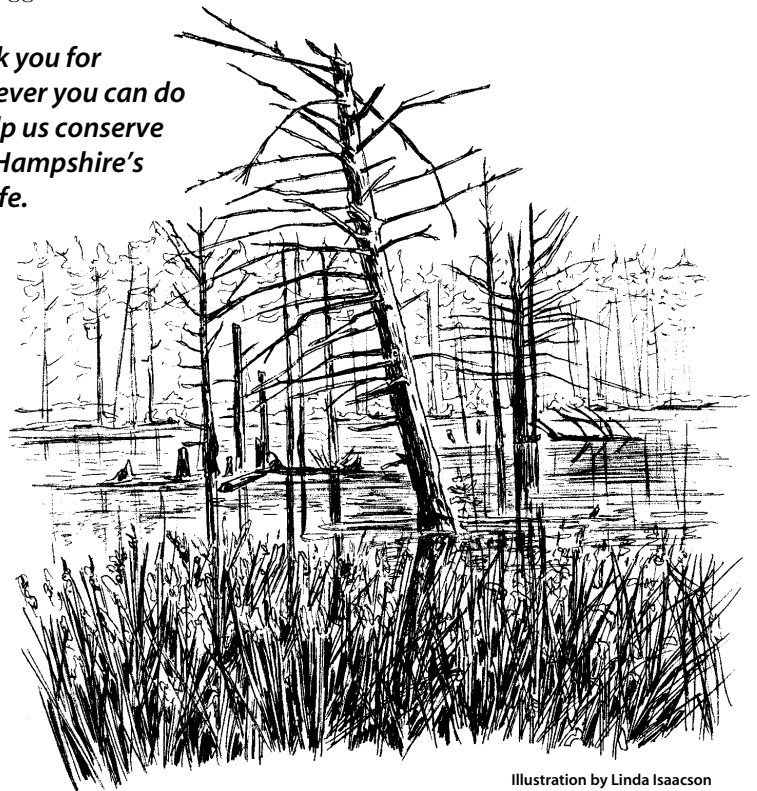


Illustration by Linda Isaacson

# Is the Wildlife Action Plan Relevant to Landowners and Foresters?

by Karen Bennett  
*Extension Professor and Specialist, Forest Resources*

The New Hampshire Wildlife Action Plan is full of strategies and recommendations that are certain to guide public agencies and conservation organizations for years to come. But with nearly 80% of New Hampshire in private ownership and wildlife roaming freely, certainly there must be something in the plan for the “average Joe” landowner or forester.

## As an outgrowth of the plan, New Hampshire has additional funds to be made available through the Landowner Incentive Program.

One benefit is the wealth of information available to incorporate into management plans and activities. Already, “coarse filter” habitat maps have been made available to conservation commissions and open space committees. The plan is full of references to improving databases and the intent is for these to be available on the web. With the goal to make this information widely available, it should be reasonably accessible and user-friendly. Imagine being able to have the map of a critical habitat on your property. This kind of information will help you better achieve your wildlife-related objectives. In a loftier sense, it will make ecosystem approaches to management, sustainable forestry, and landscape-level management more “doable”.

123 priority species and 27 habitats in greatest need of conservation have been identified and habitat and species profiles have been written for most them. Though the plan doesn’t contain “how to” recommendations for the landowner, it provides direction to the wildlife professionals developing them. Work is still needed to make this information useable, and the plan is chock full of direction for those of us who provide natural resource education to many different audiences. Expect to see workshops, fact sheets and publications galore based on the plan.

As an outgrowth of the plan, New Hampshire has additional funds to be made available through the Landowner Incentive Program. These funds will help landowners implement wildlife improvement practices, and will also go towards permanently protecting critical habitats from development. Details for this program are available from NH Fish & Game.

## How Planners & Communities Can Use the WAP

by Theresa Walker,  
*Rockingham Regional Planning Commission*

For town and regional planners, the Wildlife Action Plan will provide towns with co-occurrence maps and habitat maps, as well as critical information about the specific species and habitat types that are most at risk in our state. We can use this information in working on local and regional master plan chapters and in master plan visioning sessions. Information from the plan can also help with encouraging towns to conduct a Wildlife Habitat Inventory (now they will have an excellent starting point), in working with Conservation Commissions and Planning Boards on reviews of development proposals, and in developing site-level checklists or regulations that will better protect wildlife habitat by addressing issues like wildlife crossings, riparian habitat, stream buffers, lighting, and overall site design. The plan’s Implementation Strategies can provide direction and support in town and regional master plans, and in support of regional-level environmental planning efforts.

Not to be corny about it, but this plan provides all of us with the opportunity to know we are contributing to a bigger whole. There is a strong vision for the future and some direction on how to get there. You can contribute to the “getting there” on your own land, or by helping your clients apply recommended practices on critical habitats and to benefit species of concern. For those who have an urge to participate in the public process, the plan has a number of recommendations to develop “working groups.” Especially relevant is the suggestion to update “Good Forestry in the Granite State.” Originally published in 1997, it has worn well, but needs some updating.

The Wildlife Action Plan contains the most relevant and up-to-date knowledge we have about managing New Hampshire forest land for wildlife. How relevant the plan proves to be will depend greatly on all of our efforts to implement it.



Ospreys are listed as a state-threatened species.



# What the WAP Means to Conservationists

by Frank Mitchell,

Extension Land and Water Conservation Educator

As pointed out in the article by Darrel Covell in this issue, the New Hampshire Wildlife Action Plan (WAP) is an unprecedented effort to identify and conserve habitats for the state's most vulnerable wildlife populations. Turning the plan into action will require the involvement of many different groups and individuals. Land trusts, municipal conservation commissions and other conservation groups have an important role to play and can benefit from the plan in several ways.

If you are part of a New Hampshire group concerned with wildlife conservation, you'll appreciate the goals of the WAP. One of the top challenges in wildlife conservation today is how to maintain or expand populations of species of concern – those species that are most vulnerable to habitat loss or degradation from land fragmentation and other effects of rapid development. The WAP focuses on these species and the habitats they need to survive.

**Local and regional conservation groups will benefit from the quality of the WAP, which was developed by some of the state's most experienced and knowledgeable biologists – something that would otherwise be beyond the reach of local and regional groups.**

As part of the development of the WAP, the New Hampshire Fish & Game Department analyzed the state's habitat base for the species of concern and created a series of maps that identify where there are concentrations of these critical habitats. The Department will make the maps available to people and groups that can use them in conservation planning and, in association with UNH Cooperative Extension, will provide information and guidance on how lands can be managed and conserved to support critical habitats.

In the coming year, NH Fish & Game and UNH Cooperative Extension will host a series of workshops and visits to outdoor sites to explain the WAP and its underlying conservation biology principles, actions conservationists can take to conserve critical habitats and how conservationists can inform landowners about WAP opportunities. We will also be creating educational materials, engaging our staffs in direct discussions with interested landowners and providing landowners with technical assistance as needed.

As mentioned in the article by Karen Bennett in this issue, the WAP is linked with a Landowner Incentive Program (LIP) which will make funds available to cooperating landowners who agree to manage or conserve their lands in a manner consistent with the goals and recommendations of the WAP. The LIP will be a good way for conservationists to interest landowners in considering their land use practices to support the WAP (along with the goals of local and regional conservation groups). The credibility of the WAP as a statewide plan, based on scientific analyses and principles, will elevate many people's perceptions of the importance of their individual actions. In addition, landowners and conservation groups may be able to make a more convincing case to funding organizations for conservation projects that protect critical habitats.

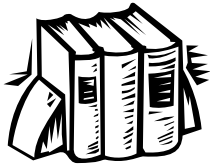
The extensive analysis and presentation of the results on maps and other forms will give conservationists a new tool with which to refine (or begin) their conservation planning. This will allow them to direct their resources to where they can do the most good in terms of habitat protection for wildlife species of concern. Local and regional conservation groups will benefit from the quality of the WAP, which was developed by some of the state's most experienced and knowledgeable biologists – something that would otherwise be beyond the reach of local and regional groups. These aspects of the WAP can increase the influence of conservation groups in their communities by demonstrating a thorough, reasoned approach to habitat protection.

Another benefit of the WAP for conservationists is that they will learn from the plan themselves, increasing their knowledge of species of concern, critical habitats and ways to manage them sustainably. This will make them stronger as conservationists and add a new level of excitement to their chosen work.

If you live in or own land in New Hampshire, the WAP is for you. You'll be hearing more about it in the near future as we present the WAP to the state's residents and landowners in a variety of ways. If you're a member of a conservation group, you'll be invited to attend one of our regional workshops and other events. To be sure you're kept informed, you may contact Sharon Hughes at UNH Cooperative Extension at 862-1029 or at Sharon.Hughes@unh.edu.



Timber rattlesnakes are a state-listed endangered species in New Hampshire.



# From the Resources Library

by Karen P. Bennett, Extension Professor and Specialist, Forest Resources

## UNH Cooperative Extension Forestry Information Center

The following publications are available from the Forestry Information Center. Unless noted, all publications are free. For charge publications, make check payable to UNH Cooperative Extension and remit to Forestry Information Center, Room 211 Nesmith Hall, 131 Main St, Durham, NH 03825. To request copies, call 1-800-444-8978 or email [forest.info@unh.edu](mailto:forest.info@unh.edu)

***Diameter-Limit Cutting and Silviculture in Northeastern Forests: A Primer for Landowners, Practitioners, and Policy-makers*** by Laura Kenefic and Ralph Nyland, published by the USDA Forest Service, August 2005. This brief (18 pp.), easy-to-read publication explains the basic silvicultural systems practiced in the northeast and demonstrates why "diameter-limit cutting," a practice where only trees larger than a certain size are cut (and "high-grading," where only the valuable trees are cut), fails as a long-term strategy for sustainable forestry. Evidence is presented showing both the ecological and economic problems associated with diameter limit cutting, and explains strategies landowners can use to rehabilitate heavily cutover stands.

***Guide to Invasive Upland Plant Species in New Hampshire*** by NH Dept. of Agriculture, Markets & Food & the NH Invasive Species Committee. A full-color guide to the 25 plant species that are prohibited (or will be prohibited) to collect, sell, propagate or transplant in New Hampshire. Excellent photos and information on the specific problems caused by each plant and best control methods for each.

***Best Management Practices for Forestry: Protecting New Hampshire's Water Quality*** edited by Sarah Smith and published by UNH Cooperative Extension is "hot of the press." It is a fully-illustrated handbook describing a wide range of recommended techniques to use before, during, and after logging. These techniques were developed over many years by loggers, foresters and scientists based on practical experience and research. It costs \$6.00 and an order form can be downloaded

at: <http://ceinfo.unh.edu/Forestry/Docs/FormBMP.pdf>. The complete manual is also available for download in the "What's New" box on our website (see above).

***Silvicultural Options for Managing Hemlock Forests Threatened by Hemlock Woolly Adelgid*** by David Orwig, Harvard Forest and David Kittredge of UMass Extension is a fold-out brochure that suggests three approaches for hemlock-dominated forests and two for hemlock-hardwood or hemlock-conifer mixes. It is available on the web and easily reached from our "What's New" box on the web (see above).

***The Place You Call Home: a Guide to Caring for Your Land in the Upper Valley*** is an "owner's manual" for people who live in the upper valley, but has plenty of good information if you live outside the region. In magazine format, it was produced by "Northern Woodlands" magazine with support from the NH Charitable Foundation's Wellborn Ecology fund and others. It gathers wide-ranging topics on wildlife, land protection, woods roads, forestry professionals, stone walls, tree value and much more.

***New Hampshire Fire Lookout Towers***, a brochure by the NH Division of Forests & Lands. This pamphlet describes a new "Fire Lookout Tower Quest," designed to increase the public's recognition and appreciation of the role fire towers play in the protection, stewardship and sustainable use of New Hampshire forests. Visit any five of the 15 towers statewide (described in the brochure) and you can send away for a complimentary tower quest patch and recognition certificate.

## New to the Web

**BOTHERED BY LONG WEB ADDRESSES?** Though we list the actual URL to find web information, you can save your typing fingers by going to the UNH Cooperative Extension main page [www.extension.unh.edu](http://www.extension.unh.edu) and clicking on the "Forest and Trees" button and then clicking on the buttons of interest.

**WE NOW HAVE** a simplified address for the NH Coverts Program (a wildlife and forest stewardship volunteer program, currently seeking applicants for the fall training workshop): [www.nhcoverts.org](http://www.nhcoverts.org)

**CHECK OUT** the "What's New" box at: <http://ceinfo.unh.edu/Forestry/Forestry.htm> for new publications, workshops and news stories. It is updated regularly.

***The Directory of Licensed Foresters Offering Services to Forest Landowners in NH*** is now on-line. You can:

- Search for foresters by name, town, county and/or services provided.
- Print a county or state directory.
- View or print an expanded list of services provided with a description of each service displayed in "pop-up" windows or as a comprehensive list.
- View or print information about hiring foresters, selling timber, and more.

Visit <http://ceinfo.unh.edu/Forestry/Forestry.htm> and click on the "Directory of Licensed Foresters" on the left hand side of the page or request "hard copy" from the information center.

**IN CASE YOU MISSED IT, *The Guide to New Hampshire Timber Harvesting Laws*** is also on the web at: <http://ceinfo.unh.edu/Pubs/ForPubs/gtnhthl.pdf>.

It is also available as a hard copy for \$5.00 and an order form is posted here: <http://ceinfo.unh.edu/Forestry/Docs/lawform.pdf>

**FOR ACCESS TO** the complete Wildlife Action Plan, broken up into chapters and appendices for ease of downloading, go to: [http://www.wildlife.state.nh.us/Wildlife/wildlife\\_plan.htm](http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm)

## Viewpoint:

# For the Health of the Land... and Ourselves

by Ellen Snyder  
Ibis Wildlife Consulting

I live in the southeastern corner of New Hampshire, within a matrix forest of Appalachian oak-pine, one of the most at-risk habitats in the state. I share this habitat – embedded with vernal pools, emergent marshes, shrub thickets, floodplain forests, rivers, and fields – with Blanding’s and spotted turtles, blue-spotted salamanders, towhee, wood thrush, Cooper’s hawk, other common wildlife, and a growing number of fellow humans. I know this from my own observations and from the Wildlife Action Plan (WAP) recently developed by New Hampshire Fish and Game.

The WAP is a collection of facts and figures about the health of New Hampshire’s wildlife diversity, threaded together with a suite of broad and specific conservation strategies. Our eyes are drawn to the maps. These images depict the distribution of matrix forest types, cliffs and alpine, large grasslands, caves and mines, pine barrens, rocky ridges and talus slopes, and my favorite, the network of floodplain forests or river systems, what I consider the bones and sinew of New Hampshire’s ecological landscape. Without this foundation of free flowing clean waters, intact connected wetlands, corridors of floodplain forest, and chunks of large unfragmented upland, the landscape starts to weaken and lose function, needing artificial pins

and screws to fix problems or needing replacement parts, often at great financial cost.

To stay strong and healthy we drink clean water, eat uncontaminated food, exercise to keep bones, muscles and ligaments strong and flexible...or at least we know we’re supposed to. This is hard work, and we often stray from these life strategies. Consider then why it is so hard to maintain the health of New Hampshire’s wildlife diversity, yet so rewarding when we do. We feel good. Not only because we delight at sights of fisher tracks in the snow, piping plover chicks scurrying on the beach, or when we see a Karner blue butterfly alight on wild lupine, but because it is our habitat too. It’s the water we drink, the soil where we grow food and wood, and the air we breathe.

Acid rain, mercury, polluted runoff, altered hydrology, invasive species, and climate change are all risks to wildlife described and ranked in the WAP, and these issues need concerted attention. Ultimately though, as each of us can support with local anecdotes, the greatest risk to New Hampshire’s wildlife is urban development and the associated effects of roads and recreation. I nod in agreement to this finding, as I watch the new “Fox Hollow” subdivision in my neighborhood claim roosting habitat for woodcock and cover for cottontails, creating

another potentially deadly barrier for the Blanding’s turtles and blue-spotted salamanders that I help across the road each year, and ironically, replacing the hunting grounds of a resident red fox with houses and driveways. Yet this is an open space development, designed to maximize the amount of land and water for wildlife, a cornerstone of “smart growth.” This land use planning tool helps save pieces of our natural landscape, but more is needed if we’re to retain healthy habitats for wildlife.

The WAP offers up a menu of actions. Some are broad and expansive, affecting national and New England air quality, mercury deposition, and even climate change. For these, we need strong state and federal leadership with prodding and support from all of us. Some actions are local, ones that each of us can take—use native plants, retain natural vegetation, not lawns, around lakes, rivers and wetlands, help turtles across roads, actively promote town conservation bonds, and call legislators to support statewide programs such as LCHIP and drinking water protection. Every bit helps. The actions that I find most appealing are regional—seamlessly crossing town political boundaries just like the affected fish and wildlife—encompassing watersheds, ecosystems, or large wetland complexes. Here I find that

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**The actions that I find most appealing are regional—seamlessly crossing town political boundaries just like the affected fish and wildlife—encompassing watersheds, ecosystems, or large wetland complexes.**

Photo credit: Dan Sperduto

# Habitats

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## Viewpoint

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Photo credit: Sara Cairnes

local and regional land trusts, watershed associations, and river committees are making great strides, with strong support from member communities, state agencies, and other conservation organizations.

In my town we've conserved lands that protect wildlife habitat and our drinking water, protect wildlife habitat and a working farm with new young farmers, protect wildlife habitat and provide outdoor recreation. We've done this by garnering the support and trust of our fellow residents who supported a land conservation bond despite rising taxes and other community needs. We leveraged these funds with hugely important grants from LCHIP, NH DES, the Great Bay Resource Protection Partnership, and Lamprey River Advisory Committee. These groups provide critical funds and leadership in helping us maintain wildlife diversity and provide other important community benefits. This is happening across New Hampshire with other coalitions and needs to continue and expand.

The WAP offers an opportunity for a renewed land (and water) ethic pioneered by Aldo Leopold, the father of wildlife conservation in America, who wrote over half a century ago in *A Sand County Almanac*, "A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity."

*Ellen Snyder is a Certified Wildlife Biologist and owner of Ibis Wildlife Consulting who lives in Newmarket, New Hampshire. She worked for UNH Cooperative Extension for 9 years as the Wildlife Specialist and then Biodiversity Specialist and Coordinator of the Living Legacy Project.*