

DRAFT
WILDLIFE AND HABITAT SECTION
of the Master Plans for the
Towns of Danville, Fremont and Sandown



Developed by the Rockingham Planning Commission as part of a
I-93 CTAP Phase II Collaborative Grant Project
by the Towns of Danville, Fremont and Sandown

January 2011

TABLE OF CONTENTS

PART I. PURPOSE	1
PART II. APPROPRIATE CIRCUMSTANCES AND CONTEXT	2
PART III. MUNICIPAL AND COMMUNITY PLANNING ACTIONS	5
PART IV. STATE STUDIES AND TECHNICAL RESOURCES	6
PART V. REGIONAL STUDIES AND TECHNICAL RESOURCES	10
PART VI. RECOMMENDATIONS FOR WILDLIFE AND HABITAT PRESERVATION	18

LIST OF TABLES

Table 1. Wildlife habitat and land protection strategies and their benefits	3
Table 2. Parcels in the green infrastructure identified for preservation as open space	11

LIST OF FIGURES

Figure 1. Green infrastructure priority preservation areas for Danville, Fremont and Sandown	13
Figure 2. Map of the Exeter River and towns located in the watershed	14

Cover Photo (right) by Mark West, West Environmental, Inc.

PART I. PURPOSE

The purposes for protecting wildlife and their habitat are to:

- A. Preserve habitat to sustain viable wildlife populations and biodiversity.
- B. Protect and maintain healthy ecosystems.
- C. Provide for open spaces of adequate proportions.
- D. Protect the public benefits of habitat protection, including flood control, water recharge, carbon sequestration, pollutant removal, and recreation.

Wildlife and wildlife habitat serve important ecological functions while also benefiting the public. Important ecological services are often provided by particular wildlife habitats, which may serve as buffers to streams, act as flood retention areas, provide carbon sequestration, filter environmental contaminants, and be source areas for drinking water supplies. Diversity of plant and animal life contributes to the versatility and long-term health of the food supply and the ecosystem as a whole. Protecting wildlife and their habitat also contributes to the rural character of New Hampshire, as hunting, fishing, and wildlife watching are long-standing features of the culture and attract tourism to a rural area. Habitat protection can occur at multiple levels: state-wide, regional, and community master planning and development approval. Habitat protection can be accomplished with regulatory, market-based or voluntary measures.

Rationale for Protection of Wildlife

With population growth and the expansion of developed and urbanized areas, wildlife and their habitat continue to be adversely impacted at the species, population, habitat, parcel and regional scales by a wide variety of activities including: landscape alteration and degradation; habitat conversion; habitat fragmentation (roads and trails, subdivision of large unfragmented blocks); hydrologic regime alteration; invasion by exotic species; and erosion and sedimentation.

As reported in the NH climate Action Plan, regional air and water quality issues scored among the most threatening problems for wildlife, both in terms of broad cumulative degradation and intense localized impacts. These impacts are primarily human induced, resulting from how we use and manage our land air and water resources. Proper municipal planning is a critical component to successful implementation wildlife and habitat conservation measures.

Public Benefits of Natural Resource Conservation

Conserving land to protect wildlife and their habitat serves multiple goals within a community and provides the following public benefits:

- Supports of resource based tourism economy
- Protects farms and agricultural lands
- Promotes sustainable development patterns
- Protects environmental resources (surface water, groundwater, aquifers, air, forests)
- Provides recreational and educational opportunities

Land and wildlife habitat conservation practices further shape the landscape of a community by:

- Helping maintain the rural character of a community,

- Creating more centralized, dense development patterns in exchange for conserving open space for habitat,
- Creating more efficient municipal service areas, and
- Providing aesthetic and recreational benefits by preventing degradation of the environment (water quality, flood mitigation, climate attenuation).

PART II. APPROPRIATE CIRCUMSTANCES AND CONTEXT

Scales of Implementation

Ideally, protection of wildlife habitat begins at the largest scale appropriate for prevalent species in the region. This scale is determined through study of the range of the particular animal and the extent of its habitat across a multi-state and/or a multi-regional area. In order to coordinate across political boundaries and biological boundaries, most municipalities rely on either:

- a coordinated approach with neighboring municipalities, or
- a regional approach that acknowledges cross-boundary considerations such as geographic extent of critical habitats, existing land uses, and other natural resource and infrastructure limitations.

The New Hampshire Wildlife Action Plan, which was mandated and funded by the federal government, identifies statewide strategies for identifying, restoring and maintaining critical habitats and populations of nongame species of conservation and management concern. The plan is a proactive effort to define and implement a strategy that will help keep species off rare species lists by protecting their populations and critical habitats. Use of this state-wide data can facilitate coordination among municipalities and within regions. Refer to PART IV. STATE STUDIES AND TECHNICAL RESOURCES for a summary of the New Hampshire Wildlife Action Plan.

Local Protection Strategies

At the municipal level, protection occurs often on a town wide basis through various land preservation methods, regulations and voluntary stewardship. Municipal protection strategies can be expanded and refined by using local wildlife habitat mapping and inventories for both town wide and parcel based approaches, including both publicly and privately owned properties. Most municipal wildlife protection starts in the master planning process when areas are identified for protection through the use of natural resource inventories and maps, protection goals are defined, and recommendations are developed to implement these goals.

Priority wildlife and habitat areas can then be protected through stewardship of private lands, voluntary conservation, land acquisition, zoning ordinances and site development regulations. These strategies are described in greater detail in the table below.

Table 1. Wildlife habitat and land protection strategies and their benefits

Protection Strategy	Benefit	\$ Expended*
Land Acquisition (by towns, land trusts, state or others)	Purchase of land at fair market value or as a bargain sale where the difference between fair market value and sale price becomes a tax-deductible donation; Benefits include public access, and leveraging property value for securing funding future acquisitions	High
Purchase of Easements/ Development Rights	Growth management tool; retain development density and tax base if rights transferred to growth areas	High
Regulatory Protection	Preservation of public resources and their functions and values to the community; federal, state and local implementation	Low/No
Land Use Regulations	Adoption of an incentive based Conservation Subdivision ordinance can provide large tracts of open space lands as part of development approval	Low/No
Voluntary Protection and Conservation Easements	Voluntary conservation easements involving donation of development rights; Private stewardship and management; public access permitted in some cases	Low/No
Land and Resource Management	Fosters public participation and stewardship	Low/No
Transfer of Development Rights	Voluntary transfer of development rights from designated open space areas to designated growth areas that allow greater development density	Low/No

* **\$ Expended** refers to the use of municipal and/or public funds to implement a specific land protection strategy (i.e. use of Land Use Change Tax contributions, bonds, and other municipal funding sources).

To narrow the focus of interest, towns may wish to focus their efforts on a particular wildlife species and/or habitat type by:

- identifying local or regional interests and areas of significance, or
- using information in New Hampshire's Wildlife Action Plan for species and habitats identified as rare, threatened, or endangered.

Towns may also wish to address existing or potential future impacts of development by adopting strategies to address those impacts, such as regulations to protect sensitive areas (i.e. limits for allowable tree clearing for new development, requiring vegetated buffers from streams or protecting riparian areas).

NH's Enabling Statutes

Several state statutes enable towns to implement protective strategies, land use planning and zoning for the purpose of environmental protection. Protection of wildlife is referenced and or supported in the following state laws which are implemented at state and local levels:

Implementation by Municipal Planning Board

Master Plan; Purpose and Description - RSA 674:2: This section states that a master plan may include the following section: (subpart (d)) "a natural resources section which identifies and inventories any critical or sensitive areas or resources, not only those in the local community, but

also those shared with abutting communities. This section provides a factual basis for any land development regulations that may be enacted to protect natural areas.”

Subdivision Regulations. RSA 674:36II(l) and (m): This section gives the planning board the authority to adopt subdivision regulations which “provide for efficient and compact subdivision development that promotes retention and public usage of open space and wildlife habitat, by allowing for village plan alternative subdivision” and “require innovative land use controls on lands when supported by the master plan.”

Site Plan Regulations - RSA 674:43 and 674:44: These sections give the planning board authority to adopt site plan review regulations which “provide for the safe and attractive development or change or expansion of use ... and guard against such conditions as would involve damage or injury to health, safety, or prosperity” including environmental considerations, and “require innovative land use controls on lands when supported by the master plan.”

Implementation by Zoning Amendments (require approval by governing body and/or town vote)

Innovative Land Use Controls - RSA 674:21: This section allows a municipality to adopt innovative land use controls when supported by the master plan including ordinances that address land use and development, environmental characteristics zoning and site-level design. Although not specifically defined, this provision gives planning boards the authority to adopt an innovative land use control based upon the environmental characteristics as shown in a local or regional natural resources mapping and inventory project. Examples of environmental characteristics could include aquifers, wetlands, unfragmented forest blocks, or specific habitat types such as grasslands or forest types.

Village Plan Alternative Subdivision - RSA 674:21: This section defines village plan alternative as “an optional land use control and subdivision regulation to provide a means of promoting a more efficient and cost effective method of land development. The village plan alternative’s purpose is to encourage the preservation of open space and more efficient use of land.”

Implementation by State and Municipalities

Comprehensive Shoreland Protection Act - RSA 483-B:2: This section states that the standards set forth in the chapter shall serve to “protect fish spawning grounds, aquatic life, and bird and other wildlife habitats” and “promote wildlife habitat, scenic beauty, and scientific study.”

Implementation by State and River Local Advisory Committees (with municipal representation)

Rivers Management and Protection Program - RSA 483:6: This section provides a process for any New Hampshire organization or resident to nominate a river or segment of a river for protection by submitting a description of the river and its values and characteristics, including “an assessment of fisheries ... vegetation, and ... wildlife and provides standards for classification and management of rivers.” Following designation, a Local Advisory Committee is formed, consisting of representatives from all communities through which the river flows.

PART III. MUNICIPAL AND COMMUNITY PLANNING ACTIONS

Municipal Action - Writing a Wildlife Conservation Plan

The purpose of creating a municipal wildlife conservation plan is to:

- Identify and describe the most important species, resources and habitat types
- Promote conservation of these resources and natural features
- Guide municipal and private voluntary land conservation planning
- Document conservation priorities and recommended policies in a municipal master plan
- Suggest regulatory protection for some features and resources

A Wildlife Conservation Plan can help coordinate various strategies implemented by a municipality including land preservation methods, regulations and voluntary stewardship, guide collaborative efforts to preserve land wildlife habitat, and ensure uniform protection of wildlife habitat on a regional basis. Such a plan can inform others engaged in wildlife and habitat protection by identifying common goals and issues of concern and facilitating cooperative efforts.

The NH Wildlife Action Plan (NHWAP) and maps (showing highest ranked habitats and supporting habitats) can serve as the initial planning tool and database for developing a municipal wildlife conservation plan as well as other technical resources and data available for the region and the town.

Refer to Part IV *State and Regional Studies and Technical Resources* section for more information about the NHWAP and additional resources.

The NH WAP maps are based on *habitat models* that rely heavily on predicting the possible location a particular habitat. Therefore, the WAP habitat maps should be used as an initial planning tool. Where more detailed maps are necessary, field verification is advised to verify the data and refine the location of specific habitat types and species.

Results of the Exeter River Bio-Inventory Study for Danville, Fremont and Sandown (funded through the I-93 CTAP) can supplement the NHWAP database and the U.S. Fish and Wildlife, National Wetlands Inventory with local field observations and photo interpretation data.

Municipal and/or Voluntary Action - Habitat Sensitive Site Design and Development Practices

Habitat sensitive site design and development practices are an effective method for ensuring consistent long –term protection of crucial habitats. These practices may be used as:

1. An educational tool for citizens and developers to encourage voluntary practices for habitat sensitive site design.
2. A guide for planning boards, zoning boards and conservation commissions in reviewing applications, they can be particularly helpful in encouraging voluntary alternative site designs and development practices in the early stages of project development and site design.
3. Elements of a performance based zoning ordinances that award density bonuses or require compliance as a condition of site plan or subdivision approval.
4. Standards for development of a conservation subdivision ordinance or amendments to existing open space ordinances to protect sensitive wildlife habitat and corridors through open space preservation.

The following practices can significantly enhance the protection of wildlife habitat at the site level and contribute to the protection of habitat at the watershed and regional level by:

1. Maintaining the ability of ecological systems to provide ecosystem functions necessary to maintain wildlife habitat and the multiple benefits to wildlife and humans provided by such habitat.
2. Maintaining large unfragmented habitat blocks that contain locally and regionally important habitats (i.e. meadows, forests and riparian areas).
3. Connecting habitat types and facilitating wildlife movement through corridors and connections between large unfragmented blocks.
4. Protecting wildlife from the negative impacts of development, not only negative impacts to the habitat itself, but also to animal behavior and life cycle activities.
5. Requiring site-specific habitat assessment and site design considerations to minimize or eliminate the negative impacts of development.

Voluntary Action - Encouraging Land Conservation and Stewardship

Volunteer participation by willing and engaged land owners can protect wildlife by:

1. Protecting important resources with non-regulatory methods through stewardship and voluntary protection and management.
2. Promoting education, outreach and leadership by example to instill in-depth knowledge of where these resources are (or potentially are) in your town and what is necessary to protect them.
3. Holding pre-application meetings with applicants as part of the current site plan review and subdivision application process.
4. Providing resource protection and management recommendations for properties prior to any approvals (or construction).

PART IV. STATE STUDIES AND TECHNICAL RESOURCES

New Hampshire Wildlife Action Plan

In 2005, the New Hampshire Fish and Game Department together with partners in the conservation community created the state's first Wildlife Action Plan (WAP). The plan, which was mandated and funded by the federal government through the State Wildlife Grants program, provides New Hampshire decision-makers with important tools for restoring and maintaining critical habitats and populations of the state's species of conservation and management concern. The plan is a pro-active effort to define and implement a strategy that will help keep species off of rare species lists by ensuring protection of viable populations and essential habitat.

The WAP identifies risks that common among species and habitats and suggests strategies to address these risks. Rapid urban development in many parts of the state was identified as the most potent risk to our wildlife, devastating the health of many terrestrial, wetland, and aquatic populations and irreversibly fragmenting their habitats. Urban development is outpacing land protection.

The Plan offers recommendations to help communities integrate wildlife habitat conservation into decisions about development. These recommendations are:

1. Provide public and private entities at all levels in the urban development and planning communities with information and assistance, including conservation science, maps, and mitigation guidelines to encourage sustainable development in sensitive wildlife areas.
2. Consider proactive strategies such as landowner incentives and voluntary land protection
3. Promote the inclusion of wildlife in structured risk assessments by agencies engaged in energy, transportation, and industrial development projects
4. Promote regional and national policies and funding that improve air and water quality for New Hampshire's wildlife and people (identified among the most threatening problems for wildlife, both in terms of broad cumulative degradation and intense localized impacts).

Some habitats have been degraded to the point that wildlife species associated with them will be lost without human intervention. To maintain biodiversity and landscape integrity the following actions are recommended:

1. Guide management and restoration of rare and declining plants, animals, habitats, and natural communities
2. Address human and ecological issues that threaten New Hampshire's biodiversity with strategies such as population management, habitat management and, when necessary, regulatory protection

The Wildlife Action Plan includes several tools to assist communities with integrating wildlife habitat conservation into decisions about land use. These tools are described below.

Maps of Highest Ranked Wildlife Habitats

An important first step in planning for statewide wildlife protection is mapping the distribution of habitats across the state. Showing habitats on a map statewide was a high priority of New Hampshire's Wildlife Action Plan. Using Geographic Information Systems (GIS) data, New Hampshire Fish and Game (NHFG) biologists developed models of habitat. While it was not possible to go everywhere in the state to locate specific habitats, it is possible to predict where habitats would be, based on known information. This known information included soils, elevation, climate, landforms, broad vegetative classes, and data from the NH Natural Heritage Bureau about natural communities. Based on this data, NHFG predicted the type of vegetation that would grow at that particular location.

In 2010, the statewide WAP habitat map was updated to include soils data in Belknap and Merrimack Counties that previously did not have this digitized data, three more years of rare wildlife and plant communities data, grasslands less than 25 acres, shrub-lands and openings incorporated into forests, and wildlife data that reflects the 2008 revised state Threatened and Endangered Species List and the 2008 revised Species of Special Concern List.

The NH Land Cover data, which shows locations of various categories of developed and undeveloped land, was also used as well as the National Wetlands Inventory data for wetlands.

Habitat Types and Species Profiles

The New Hampshire landscape is rich with habitats for fish and wildlife -- from granite peaks, forests, and wetlands to grasslands, coastal islands, and nearly a thousand lakes and ponds. The Wildlife Action Plan (WAP) and habitat maps identify 19 different habitat types -- some of them common and some extremely rare in the state. All New Hampshire lands and waters correspond to one or more of the habitats described in the plan. The habitats were mapped using digital

technology to be easily accessible by various users to plan habitat protection or restoration, research, or many other activities related to wildlife and habitat related.

NH Wildlife Sightings On-Line Database

The NH Wildlife Sightings Database is a web-based tool for sharing wildlife sightings online directly with NH Fish and Game. The NH Fish and Game (NHFG) created the database in order to gather more information on the distribution of wildlife species across NH, a goal of the New Hampshire Wildlife Action Plan. Collecting observations from landowners, recreationists, birders, hunters and fishermen, foresters, and general wildlife enthusiasts gathers potentially useful information that supplements existing wildlife databases and may even provide locations where future surveys may be conducted. Each observation submitted to the database is reviewed carefully by NHFG biologists for accuracy before any data is released for public use. Submission of photos, while not required, are encouraged to help biologists confirm observations with a higher level of accuracy.

The NH Wildlife Sightings On-Line Database provides the following tools and information:

- ✓ Report observations of some wildlife species (see the website for a list).
- ✓ Use a mapping tool to identify the location of an observation.
- ✓ Upload photographs to allow wildlife professionals to verify your species identifications.
- ✓ View town distribution maps for wildlife species.
- ✓ Track wildlife observations for a particular area over time.

Participants in NH Wildlife Sightings On-Line Database must obey all local, state, and federal laws while collecting wildlife location data. Observers are strongly encouraged to get landowner permission before going onto private property. To get started, go to <http://nhwildlifesightings.unh.edu/> and click on Request an Account.

NH Climate Action Plan

In 2008, Governor Lynch created the Climate Change Policy Task Force to develop the New Hampshire Climate Action Plan. The Plan aims at achieving the greatest feasible reductions in greenhouse gas emissions and protecting natural resources and the environment while also providing the greatest possible long-term economic benefits to the citizens of New Hampshire. It is envisioned that with participation from all communities, the New Hampshire Climate Action Plan will benefit the economy, increase state and regional energy security, and improve overall environmental quality. The Plan recommends 67 specific actions, including the following to goals relating to natural resources and environment protection:

- Protect natural resources to maintain the amount of carbon sequestered.
- Develop an integrated education, outreach and training program.
- Adapt to existing and potential climate change impacts.

There are many significant implications of climate change for New Hampshire's ecosystems and wildlife populations. Many species are already stressed by land-use changes, pollution, invasive species, and habitat loss and fragmentation. These changes to land, air and water in combination with changes in climate result in greater overall stressors and impacts. These combined impacts can reduce the health of ecosystems and species and their ability to successfully adapt to climate change. By conserving large

Adaptation refers to adjustments in ecological systems – comprised of interactions of land, water and air - in response to actual or expected climatic changes that effect their extent, function or productivity.

unfragmented blocks of lands, ecosystems and habitats remain intact and more able to recover from frequent severe environmental changes resulting from events such as storms, droughts and land and water degradation. Effective conservation of ecosystems and habitats requires knowledge of the current location of plants, animals and natural communities as well as where they might be located in the future based on predicted environmental and landscape conditions.

Fragmentation of ecosystems by roads, buildings, and other land alterations presents obstacles to potential species migration and adaptation. Future climate adaptation strategies may require the preservation of wildlife corridors between protected areas to serve as stepping stones to ensure that species can continue to move to and from habitats required for food, shelter and reproduction. Protecting New Hampshire's ecosystems and wildlife requires evaluating strategies that:

- Plan for development and growth while avoiding large unfragmented natural areas.
- Develop a system of protected natural areas to preserve ecosystems and provide wildlife corridors.

PART V. REGIONAL STUDIES AND TECHNICAL RESOURCES

The Land Conservation Plan for New Hampshire's Coastal Watersheds

New Hampshire's coastal watersheds comprise 990 square miles and 46 towns, containing exceptional and irreplaceable natural, cultural, recreational and scenic resources. The State of New Hampshire, through the NH Coastal Program and the NH Estuaries Project (now the Piscataqua Region Estuaries Partnership), developed a comprehensive, science-based land conservation plan to support a regional approach to setting land conservation priorities and strategies to protect these resources. *The Land Conservation Plan for New Hampshire's Coastal Watersheds* (2006) was developed in partnership with The Nature Conservancy, Society for the Protection of New Hampshire Forests, Rockingham Planning Commission, and Strafford Regional Planning Commission, with substantial funding support provided by the New Hampshire Charitable Foundation's Piscataqua Region.

The plan identifies 75 Conservation Focus Areas within the coastal watersheds as the most important lands to retain for conserving living resources and water quality. These highest priority areas - which include Core Focus Areas and their Supporting Landscapes - were based on consideration and distribution of the following resources: 1) large unfragmented forest blocks; 2) intact floodplains and riparian zones; 3) high quality stream networks and small watersheds; 4) irreplaceable coastal and estuarine features; 5) significant fish and wildlife habitats; 6) critical habitat supporting rare species and exemplary natural communities; and 7) important connectivity zones.

Implementation Strategies

An important component to the plan's implementation strategy is to provide guidance and tools to limit the impacts of development that does occur in Conservation Focus Areas, with the goal of maintaining important conservation values. A total of 190,300 acres, or slightly more than one-third of the land and water in the coastal watersheds, are identified as Conservation Focus Areas. Of this total, only 41,387 acres or about 22 percent are currently protected, leaving approximately 150,000 acres for which some form of protection is still needed. The plan recommends that a three part strategy be implemented to protect and minimize development impacts in unprotected portions of the Conservation Focus Areas:

1. Adoption and use of the plan at state, regional, and local levels to establish the policy framework for land conservation in the coastal watersheds.
2. Protection of land through conservation easements or land acquisition, especially in the Core Focus Areas.
3. Implementation of the plan's model zoning ordinance - the Coastal Watersheds Land Conservation Overlay District (COD) - developed as a tool intended to help guide development in these especially sensitive areas. The primary goal of the COD is to accommodate development within Conservation Focus Areas in such a way that minimize harmful impacts and maintains, to the extent possible, the ecological functions and natural services provided by these areas.

Refer to Appendix B1 of *The Land Conservation Plan for New Hampshire's Coastal Watersheds* available online at <http://www.rpc-nh.org/coastal-conservation.htm>

CTAP Open Space Reports

The I-93 Community Technical Assistance Program (CTAP) was developed in cooperation with the State of New Hampshire's Department of Transportation, Office of Energy and Planning, Department of Environmental Services, and the Regional Planning Commissions to provide planning assistance to the 26 I-93 corridor communities expected to experience additional growth that may result from the I-93 expansion project. One such planning effort was to produce open space reports for the towns to identify and prioritize the most valuable lands for preservation based on their natural resource features and public benefits they provide or the "green infrastructure".

In the Rockingham Planning Commission region, Open Space Reports have been completed for the towns of Windham, Salem, Danville, Fremont and Sandown. These reports and maps are available to the public at the Planning Office in each community's Town Hall. Collectively, these reports and the open space preservation maps for each community provide a regional perspective on the location of valuable resources and wildlife habitat, and how they might best be preserved through open space land acquisition and preservation efforts by these towns. The maps also may inform where future land preservation efforts may be conducted collaboratively to benefit the shared wildlife and habitat preservation goals of these towns. Following is a summary of statistics from these reports.

Table 2. Parcels in the green infrastructure identified for preservation as open space

Danville	Priority Ranking	Acres
35 percent of total town area	High Priority Parcels (58)	1,315.7
	Medium Priority Parcels (103)	1,340.3
	Total (161 parcels)	2,656
Fremont	Priority Ranking	Acres
25 percent of total town area	High Priority Parcels (49)	1,810.5
	Medium Priority Parcels (5)	133.4
	Low Priority Parcels (34)	775.5
	Total (88 parcels)	2,719.4
Sandown	Lands of Conservation Priority	
39 percent of total town area	Priority Parcels (167)	3,596
Total Priority Parcels = 416		Total Acres = 8,971

Danville

At their January 24th meeting, the Danville Board of Selectman acting as the Open Space Task Force accepted the final draft of the Open Space Report, and forwarded the document to the Planning Board and Conservation Commission for review and consideration. RPC will present the final document to the Planning Board at a hearing in either February or March 2011.

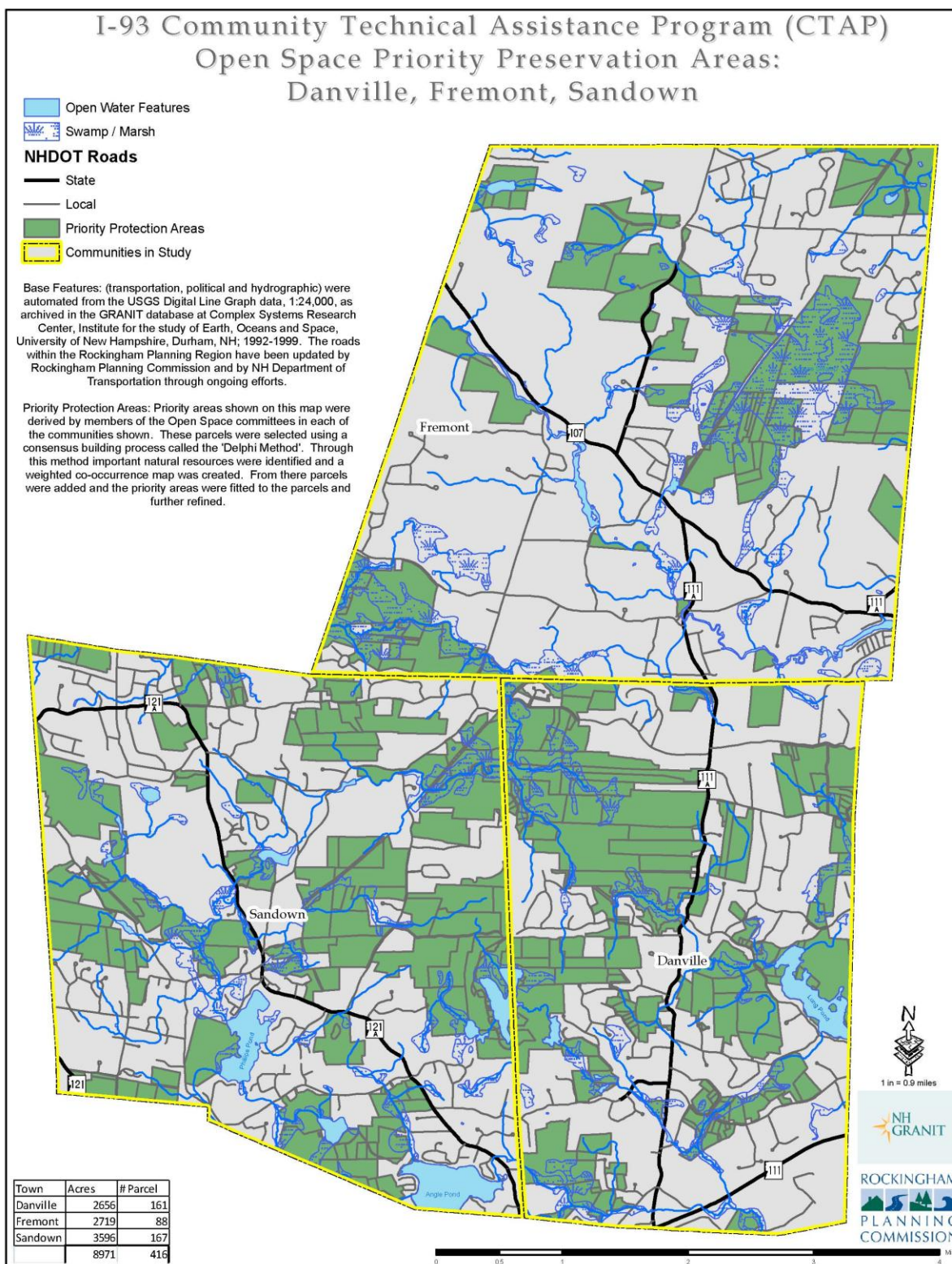
Fremont

In October 2010, the Fremont Planning Board adopted the Fremont Open Space Report as a subsection to the town's Master Plan. The report and maps are available to the public at the Planning Office in Town Hall.

Sandown

With assistance from the Rockingham Planning Commission, the Sandown Conservation Commission acting as the Open Space Task Force will complete their final review of the draft Open Space Report in February 2011, and forward the document to the Planning Board their consideration.

Figure 1. Green infrastructure priority preservation areas for Danville, Fremont and Sandown



Spotlight on the Exeter River Watershed

The Exeter River watershed is located in southeastern New Hampshire and spans fifteen towns in Rockingham County. The watershed area is approximately 109 square miles, comprising 67,700 acres of the 695,040 acre Piscataqua and Great Bay coastal watershed in New Hampshire. The Exeter River headwaters are found in the Towns of Raymond and Chester, and the main stem flows in an easterly direction for approximately 32 miles before terminating over the Great Falls in Exeter into the tidal zone of the Squamscott River which outlets to the Great Bay.



Figure 2. Map of the Exeter River and towns located in the watershed

Statistics for the Exeter River and Watershed

Watershed Area	67,700 acres (fresh water portion)
Mainstem Length	33 miles
Drainage Basin	126 square miles
Forested Land	67 percent
Developed Land	16 percent
Farmland	6 percent
Water and Barren Land	6 percent
Wetlands	3 percent

[source: Exeter River Local Advisory Committee]

The Exeter River is one of fifteen rivers in New Hampshire designated for greater protection of outstanding natural and cultural resources under the New Hampshire Rivers Management and Protection Act. The Lower Exeter River is also the municipal drinking water source for the Town of Exeter. The watershed contains some of the fastest growing towns in New Hampshire, which has led to increased development pressure which has affected the ecological health of the river in recent years. Increases in impervious cover, forest fragmentation, and ground water withdrawals accompanying this growth have led to heightened concerns about the protection of the river's water quality and quantity and health of the river's aquatic resources.

In response to these environmental concerns, the New Hampshire Department of Environmental Services (NHDES), the Exeter River Local Advisory Committee (ERLAC), and other stakeholder groups have made the Exeter River watershed a priority for protection and restoration efforts.

Refer to the following sections for descriptions of watershed studies and initiatives in the Exeter River watershed.

Exeter River Geomorphic Assessment and Watershed Based Plans

The technical information in the Exeter River Geomorphic Assessment and Watershed Based Plans of the Lower Exeter River and Middle Exeter River– and the recommended restoration projects - can be used to enhance local and regional efforts to protect and preserve valuable wildlife habitat within the Exeter River corridor.

Fluvial geomorphology is the study of how running water shapes the landforms on the Earth's surface. ***Fluvial erosion*** is the wearing away of a river channel bed and banks by the action of water. ***Fluvial erosion hazard zones*** are those areas where active fluvial process are occurring and will likely occur in the future (i.e. channel changes and migration within the floodplain or river valley).

Fordway Brook, Upper Exeter River, Dudley-Bloody Brook, and Lower Exeter River (2009)

Bear Creek Environmental, LLC and Fitzgerald Environmental Associates, LLC

The 2009 Exeter River Geomorphic Assessment and Watershed Plan focuses on geomorphic assessments of four subwatersheds of the Exeter River - Fordway Brook, Upper Exeter River, Dudley-Bloody Brook, and the Lower Exeter River. Field data was collected for a total of 48.4 river miles of the Middle Exeter River. The main objectives of this study are to assess fluvial geomorphic and habitat conditions in the four subwatersheds and develop a watershed-based restoration and protection plan for Exeter River stakeholders. A planning strategy based in fluvial geomorphic science was chosen because it provides a holistic, watershed-scale approach to identifying the stressors on river ecosystem health. This science provides communities, planners and resource managers the ability to predict stable and unstable river reaches, and recommendations which can help avoid public and private property damage over the long term. NHDES and the Exeter River Local Advisory Committee (ERLAC) intend to use the results of this study to guide future restoration efforts and educate the larger community in the watershed about the importance of protecting the Exeter River. An implementation schedule has been developed to focus financial resources on high priority restoration projects.

Middle Exeter River (2010)

Bear Creek Environmental, LLC and Fitzgerald Environmental Associates, LLC

The 2010 Middle River Exeter River Geomorphic Assessment and Watershed Plan focuses on the middle section of the Exeter River main stem from the Raymond/Fremont town line downstream to the confluence of the Little River in Brentwood. A total of 12.5 river miles of the Middle Exeter River watershed were assessed through field data collection and mapping.

The Middle Exeter River Geomorphic Assessment provides site and watershed-specific recommendations for restoration and protection actions. The river corridor planning team has identified 20 potential protection and restoration projects that could successfully restore portions of the Middle Exeter River subwatershed. These projects have been identified as high, moderate or low priority based on their effectiveness and feasibility.

The NHDES staff will work in the future with ERLAC, Rockingham Planning Commission, and watershed communities in the study area to develop an implementation plan and schedule to address actions recommended in the plan. Future restoration and protection projects will be selected on the basis of local capacity, funding availability and environmental benefit.

Exeter River Local Advisory Committee

In 1995, a group of watershed residents were successful in enrolling the Exeter River in the State of New Hampshire's Rivers Management and Protection Program. This program is administered by the New Hampshire Department of Environmental Services and its purpose is to "ensure the continued viability of New Hampshire's rivers as valued economic and social assets for the benefit of present and future generations." The Exeter River Local Advisory Committee, known as ERLAC, was established in 1996 to oversee the development and implementation of a river management plan. Committee members are residents from watershed communities working to protect and maintain the river's natural character.

ERLAC completed the Exeter River Corridor and Watershed Management Plan in 1999 and since that time has designed many public education and outreach programs to increase awareness of the natural resources in the watershed. Each May, in time for the annual migration of Alewives from the Atlantic Ocean to their spawning grounds in the Exeter River, ERLAC holds the Exeter River Alewife Festival, a day-long celebration of the river and its watershed. ERLAC meets monthly and committee members are sought to represent each of the ten watershed communities. For more information, please contact: ERLAC, c/o Rockingham Planning Commission, 156 Water Street, Exeter, NH 03833.

Exeter River Bio-Inventory Study

The Exeter River Bio-Inventory Study was completed by West Environmental, Inc. in January 2011 with collaborative grant project funds from the I-93 Community Technical Assistance Program (CTAP). The Exeter River Bio-Inventory study was one of four tasks in a collaborative project between the towns of Danville, Fremont and Sandown to document resources in the Exeter River corridor and develop technical and planning tools to address wildlife and habitat protection within the three towns. Other project tasks included completion of this draft Master Plan Wildlife and Habitat Chapter, completion of an Open Space Report for Sandown, and providing outreach on the collaborative project within the three towns.

Summary of the Study and Findings

The floodplain of the Exeter River in Danville, Fremont and Sandown supports a wide variety of wetland plant communities that protect and enhance water quality of the River filtering surface water and trapping and attenuating pollutants and sediments. Red Maple Forested Swamps, Oxbow Marshes, Buttonbush Swamps and Vernal Pools, can be found in floodplains and these wetlands provide critical habitat for several rare and endangered plant and wildlife species. Habitat for wood turtle, State endangered Blanding's turtle, and spotted turtle is present in these wetlands. Habitat also exists for rare bird species including sedge wren, American and least bittern, pied-billed grebe and American black duck. Mapping and inventorying these habitats will help to provide these three towns the important planning tools. The information collected from this project can be used in future grant requests and to prioritize habitat and water quality protection.

This study included mapping and evaluating wetlands within the FEMA mapped floodplain of the Exeter River in the three towns, field data collection to verify plant communities and wildlife habitats, preparation of final report with maps and data, and presentations of the report and its findings to the three towns at public meetings in January 2011.

Study Area Information

Overall reach of Exeter River within Study Area – approximately 15 miles and almost half of the rivers reach. Most of the study area in Danville and Sandown represents the headwaters of the Exeter River and therefore is critical to the overall health of the river.

<u>Total Study Area</u>	<u>1882.27 acres</u>
Study reaches include:	
Sandown	5 miles
Danville	1 mile and tributaries
Fremont	south reach 2 miles
	north reach 7 miles

Note: Portions of the FEMA mapped floodplain in these towns do not contribute to the Exeter River and in some cases is not part of its watershed.

Copies of the Exeter River Bio-Inventory Study are available at the Rockingham Planning Commission and on its website, and the town Halls of Danville, Fremont and Sandown.

PART VI. RECOMMENDATIONS FOR WILDLIFE AND HABITAT PRESERVATION

Following are preliminary recommendations offered by the Conservation Commissions of Danville, Fremont and Sandown during the development of this draft document.

Danville Conservation Commission

1. Recommend development of standards for placement of time of year restrictions for certain types of development activities in the Site Plan Review Regulations and Subdivision Regulations
2. Encourage improved stewardship and management of wildlife habitat
3. Support protection of riparian habitats and upland wildlife corridors
4. Recommend that applicants provide a review of rare threatened and endangered species by the Natural Heritage Bureau with an application for a variance or special exception to an environmental standard in the zoning ordinance (ie buffers, setbacks, uses, overlay districts)
5. Encourage use of the NH Wildlife Sightings On-line Database by residents
6. Utilize data and maps of highest ranked habitats from the NH Wildlife Action Plan as a basis for priority protection of open space lands.

Fremont Conservation Commission

1. Consider integrating wildlife and their habitat in the scoring criteria for selection of open space land acquisitions.
2. Utilize data and maps of highest ranked habitats from the NH Wildlife Action Plan as a basis for priority protection of open space lands.
3. Encourage use of the NH Wildlife Sightings On-line Database by residents.
4. Consider adopting incentives for protection of wildlife and their habitat in the existing Open Space Preservation Ordinance (Article XVIII Section 10, pages 76-84).
5. Encourage easements to expand upon existing state and local regulatory buffers to surface waters and wetlands.
6. Adopt standards for placement of time of year restrictions for certain types of development activities in Site Plan Review Regulations and Subdivision Regulations.
7. Require that applicants provide a review of rare threatened and endangered species by the Natural Heritage Bureau with an application for a variance or special exception to an environmental standard in the zoning ordinance (i.e. buffers, setbacks, uses, overlay districts).

Sandown Conservation Commission

1. Encourage implementation of Low Impact Development practices to enhance stormwater management for water quality benefits and reduced land disturbance.
2. Evaluate existing Open Space Development ordinance (Article II, Part D) for inclusion of incentives to protect wildlife and habitat.
3. Support protection of riparian habitats and upland wildlife corridors.
4. Encourage improved stewardship and management of wildlife habitat.
5. Recommend development of standards for placement of time of year restrictions for certain types of development activities in Site Plan Review Regulations and Subdivision Regulations.
6. Encourage use of the NH Wildlife Sightings On-line Database by residents as a way to increase community participation in wildlife and habitat protection.