Beginning *with* HABITAT

An Approach to Conserving Maine's Natural Landscape for Plants, Animals and People

PLEASE NOTE: Maps and fact sheets on high value plant and animal habitats and rare species are included in the *Beginning with Habitat* three-ring binder at your town office. Also included in the binder is a copy of each of the following publications:

- A Response to Sprawl: Designing Communities to Protect Wildlife Habitat and Accommodate Development
- Conserving Wildlife in Maine's Developing Landscape
- The Cost of Sprawl
- What Conservation Looks Like in Maine: Tools to Build a Future for Our Woods, Waters, and Wildlife
- The Economic Arguments for Conservation

CONTENTS

JANUARY 2003

Beginning With Habitat is a cooperative effort of agencies and organizations working together to secure Maine's outdoor legacy. These include the Maine Department of Inland Fisheries and Wildlife, Maine Natural Areas Program, Maine Audubon Society, Maine State Planning Office, United States Fish and Wildlife Service, Maine Cooperative Fish and Wildlife Research Unit, Southern Maine Regional Planning Commission, The Nature Conservancy and Wells National Estuarine Research Reserve.

ACKNOWLEDGEMENTS

Beginning with Habitat owes its success to the valuable contributions of numerous individuals and organizations.

First, the project never would have gotten out of the talking stage and off the ground without the ongoing support and effort of the Beginning with Habitat coalition. In numerous meetings over the past two years, the coalition has provided oversight, input on the format of maps, multiple reviews of draft text, feedback on presentations, varied perspectives on what to convey, how to convey it, and to whom and when it should be conveyed.

Coalition members include the Maine Audubon Society (Barbara Charry and Sally Stockwell), the Maine Department of Conservation (Molly Docherty), the Maine Department of Inland Fisheries and Wildlife (Richard Dressler, Gary Lamb, and Mark Stadler), the Maine State Planning Office (Elizabeth Hertz), the U.S. Fish and Wildlife Service (Bob Houston), and the Southern Maine Regional Planning Commission (Paul Schumacher).

William Krohn and Jeff Hepinstall, from the University of Maine's Cooperative Fish and Wildlife Research Unit (CFWRU), under the direction of the Department of Inland Fisheries and Wildlife (MDIFW), initiated work on this habitat approach to conservation of wildlife. The habitat modeling work they did helped determine the primary components of the landscape approach to conservation. Later in the project, input and data were also incorporated from the Maine Natural Areas Program (MNAP) on rare plants and natural communities and from the U.S. Fish and Wildlife Service (USFWS) on predicted habitat of federal trust species.Dan Coker (MNAP) developed model GIS maps that could be used for the project, made multiple revisions and improvements, and continues to produce high quality maps for use by individual towns. Garrett Schairer (MDIFW) also provided valuable GIS expertise and now shares responsibility for the map making with Dan. Toni Bingel (MNAP) assisted with map generation.

Base layer information was developed and integrated into the project from various sources. More specifically, Bob Houston (U.S. Fish and Wildlife Service) assisted with the incorporation of USFWS high value habitats, Tin Smith (Wells National Estuarine Research Reserve) with private conservation and public lands data, and Elizabeth Hertz (State Planning Office) with wetlands characterization results.

John McPhedran (MNAP) drafted the first version of the Beginning with Habitat booklet, with some text and guidance provided by the coalition, and later incorporated multiple suggestions from multiple reviewers. Sandy Neily further edited and enriched the text with stories and words that made the entire booklet more interesting and accessible to the general public.

In addition to the coalition members, the following individuals provided helpful written or verbal comments and suggestions on drafts of this document: Arnold Banner, Judy Bernstein, Don Cameron, Andy Cutko, Ken Elowe, Will Johnston, Jack Kartez, George Matula, Evan Richert, Tin Smith, Barbara Vickery, and Lois Winter. Sally Stockwell edited the final version, tying together loose ends and linking formerly disparate sections, with Becca Wilson's stellar administrative support.

We are indebted to Bruce Kidman (The Nature Conservancy) for suggesting the title "Beginning with Habitat" and providing guidance on the format of an earlier version of the document. John O'Brien (O'Brien Design) completed the final layout and design. Mount Agamenticus cover photograph was provided by Bill Silliker. Black-crowned night heron cover photo by Johann Schumacher provided by Cornell Lab of Ornithology.

Finally, Gary Lamb (MDIFW) has worked closely with the coalition members to deliver the Beginning with Habitat maps and message to towns. Barbara Charry and Sally Stockwell have shared with towns the presentation "Conserving Habitat in a Developing Landscape".

Throughout it all, project coordinators and facilitators Molly Docherty, Liz Hertz, and Mark Stadler kept the ship sailing toward its goal, tacking along the way whenever necessary. Molly Docherty's ability to always see the far shore was especially valuable.

This project was funded through the generous support of the Betterment Fund, Maine Audubon Society, Maine Community Foundation, Maine Department of Conservation, Maine Department of Inland Fisheries and Wildlife, U.S. Environmental Protection Agency, Maine Outdoor Heritage Fund, Maine State Planning Office, and U.S. Fish and Wildlife Service.

BEGINNING WITH HABITAT is a habitat-based landscape approach to assessing wildlife and plant conservation needs and opportunities. The goal of the program is to maintain sufficient habitat to support all native plant and animal species currently breeding in Maine by providing each Maine town with a collection of maps and accompanying information depicting and describing various habitats of statewide and national significance found in the town. These maps provide communities with information that can help guide conservation of valuable habitats.

Project Overview

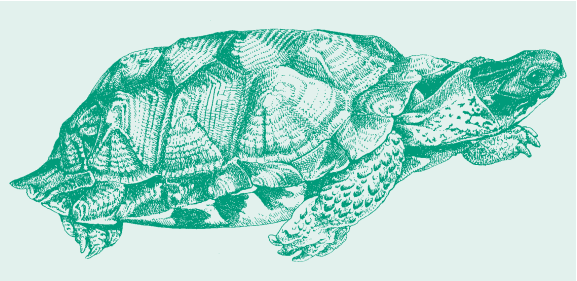
THE LANDSCAPE APPROACH TO HABITAT CONSERVATION WAS initially developed by the University of Maine's Cooperative Fish and Wildlife Research Unit (CFWRU) under the direction of the Department of Inland Fisheries and Wildlife (MDIFW) (Krohn and Hepinstall 2000). Data on plants, natural communities, and wildlife habitats of national interest were later added by the Maine Natural Areas Program (MNAP) and the US Fish and Wildlife Service (USFWS).

By overlaying maps of the habitat needs of all of Maine's vertebrate species with Maine's primary land cover types (forests, fields, wetlands) in a geographic information system (GIS), the CFWRU reports that 80-95% of all of Maine's terrestrial vertebrate species would likely be present if riparian habitats, high value animal habitats, and large habitat blocks are protected.

The *Beginning with Habitat* booklet and accompanying maps provide you with habitat data and conservation recommendations in three primary areas that you can use to build a system of interconnected and conserved lands.

Riparian Habitat is the transitional zones between aquatic habitats and wetlands and dry or upland habitats and includes the banks and shores of streams, rivers, ponds, and lakes, and the upland edge of wetlands. Riparian Habitat provides habitat for many plants and animals occurring in Maine. Towns have the opportunity to protect a large portion of Riparian Habitat simply

by fully enacting and enforcing Maine's Shoreland Zoning provisions. This includes a 75-foot buffer around second order and larger streams and a 250-foot buffer around rivers, lakes, ponds, and non-forested wetlands greater than 10 acres.



WOOD TURTLE

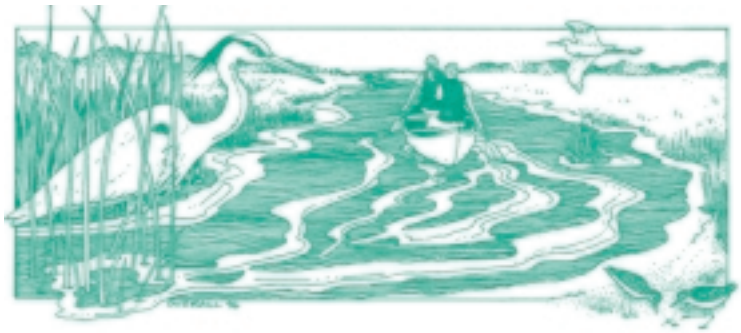
High Value Plant and Animal Habitats include Rare Plant Locations and Rare or Exemplary Natural Communities; Essential Habitat (designated for some endangered animals); Significant Wildlife Habitat (for deer, waterfowl and wading birds, heron rookeries, nesting seabirds, and shorebirds); and Rare Animal Locations (for endangered species and species of special concern) as identified and mapped by the Maine Natural Areas Program and the Department of Inland Fisheries and Wildlife. High Value Habitat for USFWS Priority Trust Species is also included. Several of these habitats are offered some degree of protection under state law but may warrant further local protection.

BREACHES

Large Habitat Blocks provide habitat for certain plants and animals not already included in Riparian or High Value Habitats. These blocks are especially important to species with large home ranges, such as bobcat, and other species, such as the black-throated blue warbler, who may have small home ranges but will only be successful over the long term in larger habitat blocks. Large blocks also are likely to include a wider diversity of species than smaller blocks. Conservation of Large Habitat Blocks also presents opportunities to promote and preserve active farmland and woodlots, provide recreational opportunities, conserve aquifers, and maintain scenic vistas.

Supplemental maps showing private conservation and public lands; watersheds; wetlands; and habitat for USFWS priority trust species give you information you can use in your land use planning and protection efforts.

We hope the data, maps, written material and suggestions for local conservation strategies will help inform and guide your town's growth in such a way that 50 years from now those who want to can still fish, hunt, photograph or watch wildlife and otherwise enjoy the wealth of a rich and diverse outdoor heritage.



Our Wildlife Legacy

When we alter and diminish our natural world, we often destroy habitat. ***Habitat* is the place where a plant or animal lives; it includes everything a plant or animal needs to survive and reproduce.** When natural habitat is lost or degraded, we lose biological diversity and a landscape that has been part of our Maine heritage, the backbone of Maine's economy, communities and sense of place.

We lose a very personal connection with our natural world, one that provides enrichment, recreation, and surprise. We feed the birds in our yards, seek out favorite fields of wildflowers, hike ridges in search of deer, and peer into cold trout streams, because we value this personal connection. Many of us live in Maine for this opportunity to be close to a very special, natural world.

Maine, without its rich landscape of plant and animal life, is just not Maine.

What's Been Lost…And Why

WE CAN ALL RECALL PLACES that have disappeared. The grove of oaks on the ridge above town where partridge and deer gorged themselves on nuts and where hikers shuffled loudly through the leaves in the fall… is now a housing development. The stream hidden in ferns and delicate flowers, where in the spring children caught salamanders and in the winter slid on trays… was flooded and destroyed by runoff from a parking lot. The beach where teenagers exchanged perfect sand dollars while ospreys argued overhead… is covered by a private pier and "no trespassing" signs. The overgrown logging road where bird hunters could always find partridge dusting themselves in the late, warm sun… was absorbed into the school's athletic fields. These places, with the animals and plants that defined them, and many thousands of other special places, have disappeared.

OSPREY

It is simplistic to say that development of land is the cause of habitat loss and the decline of species. More accurately, the pattern of our unplanned development is causing these problems. We are spreading farther and farther out, consuming and fragmenting natural habitats as we scatter homes around the rural countryside. (*Fragmentation* of habitat occurs when roads, utility corridors, buildings, and parking lots break the natural landscape into smaller and smaller blocks.)

Historically, Maine's development pattern was based on the town center with homes nearby so that it was practical to walk to the town hall, store, and post office. Farms were thinly scattered on rural roads. Forests for hunting and wood gathering, and lakes and streams for fishing, were not far from the town centers. Small areas of the landscape were converted for residential and commercial purposes and large contiguous areas were left untouched by development. Today's development, sprawled across the landscape rather than concentrated in and around town centers, is contributing to the loss of habitat and outdoor experiences.

Habitat loss may be swift, as in the case of a large subdivision, or it may be incremental through development of individual lots. Either way, it is happening in your town from the cumulative effects of perfectly legal developments, and it is altering a very special Maine outdoor legacy.

Benefits for Health, Recreation, Community & Economy

WILDLIFE AND PLANT HABITATS ARE part of a rich, complex web of natural cycles. High quality habitat preserves biological diversity by providing an assortment of environments in which plants and animals live. Conserved fish, wildlife, and plant habitat also provides storm water management and flood control features. Natural processes that we take for granted, such as pollination, seed dispersal, and the cycling of valuable nutrients that replenish soil, air and water systems, all depend on the ability of various species to interact successfully with one another and their necessary habitats.

Animal and plant communities are indicators of environmental quality and health. Like the canaries that warned of deadly gas in the coalmines, degraded habitats are an early warning system that alerts us to threats that may affect our own health.

Fish, wildlife, and plant habitat enhances air and water quality and preserves the appeal and character of the human community as well. Property values are maintained and improved through the conservation of habitat. Real estate values for properties near or abutting shorelines are enhanced when water quality is properly protected by buffers and filtering vegetation that guarantees clear, clean water.

The most desired community amenity, after good schools, is open space, greenway and trail systems, and planning that results in maintaining a community's unique character. In Maine, most towns could preserve their unique character by conserving the coastal, forest, farm, and waterway habitats that have always defined and complemented their traditional settlements. Economists are now able to prove that the preservation of community character (especially architectural and landscape conservation) is a strong indicator of the long-term, economic health of a community.

Habitat conservation also delivers other strong economic benefits to Maine communities. In 1996, the economic impact of wildlife recreation in Maine totaled over 1.1 billion dollars. Hunting, trapping, fishing, and wildlife watching combined, have dwarfed Maine's other recreation industries. Wildlife recreation has a larger economic impact than all skiing, whitewater

rafting, snowmobiling, windjammer cruises, or other recreational attractions... combined! Wildlife-generated revenues even surpass the economic value of Maine's commercial fishing industry. Maine's various habitats also deliver another special bonus, our "second paycheck." Living in Maine allows us to duck hunt before breakfast, bird watch at lunch, collect fiddleheads after school, or bike through forest paths and maybe spot a moose before dinner. Clearly, the reason many people stay in Maine or move to Maine is this "second" outdoor "paycheck."

What If We Do Nothing?

UNABATED SPRAWL WILL FRAGMENT the remaining natural habitat left on the landscape, isolating and degrading the value of smaller patches that remain. Beyond the direct loss of habitat to buildings and parking lots, fragmentation of habitat may so isolate some populations of plants and animals that they may not be able to travel, feed, or reproduce. Eventually, it will lead to the elimination of many local populations of plants and animals. Larger populations of many common native species will decline. Fragmentation also creates an *edge effect* where the disturbed areas between developed land and natural habitat are more easily colonized by non-native plants. Some of the state's most rare plant communities have already been lost or altered by development in southern Maine. As fragmentation continues, rare species will be pushed to the brink of extinction.

BLACK-THROATED BLUE WARBLER

Because Maine residents also use these habitat areas for outdoor enjoyment, they will see fewer opportunities for recreation. Large blocks of relatively unfragmented habitat necessary to maintain populations of larger animals will become scarce. **Fishing, hunting, walking in the woods or along the beach, wildlife watching, cross-country skiing, snowmobiling and other outdoor activities will continue to be squeezed into smaller, less accessible areas.** In some communities, these opportunities will disappear altogether. Roads, back yards, fences, power lines, parking lots, and "no trespassing" signs will constantly remind us of what we have lost.

Until recently, abundant habitat and open space were a fortunate accident of Maine's development patterns. These areas were not parks or public spaces; they were large blocks of privately owned land supported by a generous Maine tradition of public access to many private lands. In other words, our outdoor Maine way of life, in most cases, has been supported by the state's private landowners. With development pressures and tax burdens, many landowners have decided to sell or subdivide their properties. The fortunate accident of having private land available for habitat and recreation is ending. While state and federal laws provide protections for our most endangered animal species, there is no guaranteed protection for much of the habitat and open space within most of our communities.

There Are Solutions!

PILEATED WOODPECKER

THERE IS STILL TIME TO KEEP NEW species from becoming so rare they merit listing as Endangered in Maine. There is still time to locate and conserve habitat that will allow us to enjoy the plants, animals, and recreation we value. If continued development of Maine is done thoughtfully, it will be located in appropriate areas, and valuable open space will continue to provide fish, wildlife, and plant habitat, farming and forestry opportunities, as well as outdoor recreation.

The most important first step to protecting habitat is knowledge. Where are the populations of rare wild garlic or northern blazing star? Where are the deer wintering areas? Where are the wood ducks and cottontails breeding and feeding? Where are the vernal pools so necessary for frogs and salamanders? Where is the highest value habitat for rare and declining species of migratory birds? What large blocks of quality habitat remain in each town and how could they be connected with wildlife and trail corridors to other large blocks in neighboring towns? What plants and animals depend on undeveloped shoreline habitat and is the community's shoreland zoning ordinance adequate and well enforced?

Beginning with Habitat will help you answer those questions.

The Maps

Introduction to the Maps

THIS SECTION IS DESIGNED TO BE USED IN CONJUNCTION WITH a series of maps showing the locations of valuable plant and animal habitats in your town. The maps may be found in the 3-ring binder accompanying this booklet or at your town hall. Each map includes a different layer of information. **There are three primary maps:** water resources/riparian habitats; high value plant and animal habitats; and undeveloped habitat blocks. In addition, the binder also includes maps of public and conservation lands; watershed boundaries; wetlands characterized by 6 different ecological values; and habitat likely to be important for 64 "Priority Trust Species" of the USFWS.

Some of the habitat maps are traditional paper maps and are made to stand alone. Others are transparent mylar overlays that should be placed on top of other mylar or paper maps to view multiple data layers at one time. The mylar maps are not included in the binder but are available at your municipal office. On each map and on the following pages, you will find background information about the mapped resources, notes on the data, and strategies for local action that you can refer to as you examine each habitat map. Take some time to review the materials, as each map is rich with information. The data present on these maps is also available digitally to your town for use in a computer GIS (Geographic Information System).

It is important to remember that the data on these maps are the best available but do not represent a comprehensive inventory of your town or all habitats deserving local attention. The agencies and organizations working on this project are continually gathering new information, but they also rely on local knowledge to help close information gaps and provide supplemental data. **The maps are most helpful when community residents bring their pencils and add their knowledge to them.**

A new subdivision or golf course may have eliminated potential habitat. An angler fishing along a local stream knows the importance of the waterway as a wildlife corridor. A landowner may know of an eagle's nest or a cluster of vernal pools not shown on the maps. Please do not hesitate to add to the database if you have knowledge of local habitats that are not on your town's maps.

PRIMARY MAP 1:

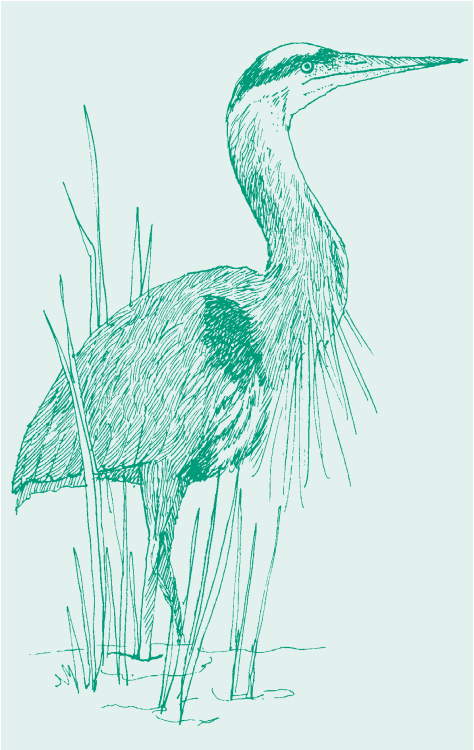
Water Resources and Riparian Habitats

WOOD FROG

Background Information:

Wetlands include such familiar terms as bogs, marshes, swamps, and salt marshes, but also include lesser known and appreciated forested wetlands and vernal pools. Wetlands are some of the most productive natural areas in the world, and provide habitat for many types of wildlife, including waterfowl and wading birds; frogs, turtles, and snakes; fish; and shellfish. Wetlands naturally control floods, filter pollutants, retain nutrients, and reduce erosion. They also provide a myriad of educational and recreational opportunities including boating, hunting, trapping, fishing, and photography. Most wetlands in Maine are given some level of oversight through the permitting process under state law, but small wetlands, including vernal pools, and forested wetlands receive very limited, if any protection. Cumulative loss of wetlands has led to significant stormwater runoff problems in some Maine communities and threatens to eradicate local populations of some wildlife species — especially those that move between several small wetlands to meet their habitat needs. In addition, extensive development adjacent to wetlands has degraded the functions and values of many wetlands. Conservation of wetlands and surrounding riparian habitat is essential to ensuring that the full complement of Maine's plants and animals persist on the landscape.

Riparian habitat is the transitional zone between open water or wetlands and dry or upland habitats. It includes the banks and shores of streams, rivers, ponds, and lakes, and the upland edge of wetlands. **If individual towns do a good job of implementing existing shoreland zoning regulations, up to 80% of Maine's terrestrial vertebrate animals that use riparian areas for a part of their life cycle will benefit.** Riparian habitat also benefits water quality by buffering and filtering runoff before it affects other water sources.



GREAT BLUE HERON

Development may destroy an area of riparian habitat, but its effects reach far beyond the new construction. Habitat fragmentation may divide the range an animal needs to survive. Blanding's and spotted turtles, for example, need both wetland and upland habitats. Development may prevent the turtles from reaching their required feeding, resting, and breeding locations. Quality of habitat may further be degraded with the advent of invasive plants along roads. Often populations of predatory animals such as raccoons and skunks increase with the addition of roads.

Maine's Mandatory Shoreland Zoning Act controls land uses and placement of structures within the shoreland zone and helps to minimize the impact of development in riparian areas. Areas falling under the formal protection of this act are determined at the municipal level and enforced by municipal officials. Unfortunately, not all towns' provisions have a comprehensive view of animal and plant requirements in the zone and many towns have not adequately enforced the Shoreland Zoning Act. The act does not usually prevent development, but it does place conditions on development to reduce some of its harmful consequences.

Data Components:

- **NWI wetlands greater than 10 acres** refers to National Wetlands Inventory maps produced by the U.S. Fish & Wildlife Service using high altitude aerial photographs from the mid 1980's. This information may not accurately reflect the actual conditions on the ground in all situations due to variations in local conditions, inaccuracies in the original photo interpretation, or changes in land use since the photos were taken. They are particularly likely to underestimate areas of forested wetlands. The NWI wetland data are best supported by site-specific investigations.

- **Riparian habitat** refers to the areas adjacent to ponds, lakes, streams, rivers, and wetlands. Stream riparian habitat is shown on the mylar overlay with a 75 foot purple buffer on each side of the stream. Riparian habitat around Great Ponds (ponds 10 acres or larger), rivers, and wetlands at least 10 acres in size is shown with a 250 foot wide purple buffer.

Strategies For Local Action:

❑ Work with local planners and state agencies to design wildlife corridors that allow species to move freely between riparian habitats and other necessary habitats. Consider creating trail corridors that serve both wildlife and recreational needs.

❑ Review and, if necessary, strengthen your town's definition and enforcement of Maine's Mandatory Shoreland Zoning Act. Consider creating additional local protections, especially along first order streams. Literature cited in the section entitled *Selected References and Bibliography* gives information about the importance of buffers to wildlife. Consider adopting shoreland and buffer guidelines as suggested in this literature.

MINK

❑ Conduct an information and outreach effort to educate landowners about the value of shoreline and wetland habitats; alert landowners to their responsibilities under the Shoreland Zoning Act.

❑ Because the Shoreland Zoning Act allows most development to proceed, create a local planning process to evaluate cumulative shoreline development as it relates to habitat loss. Design a local conservation strategy that offers an alternative to single lot development of shoreline areas. Meet with town recreation officials, local land trusts, and conservation organizations and discuss combining the conservation of riparian habitat with recreational access to water resources.

❑ Explore opportunities to protect riparian habitat via conservation easement or fee ownership. Funds for acquisition can be raised through public appeal, appropriation of town funds, or application to private foundations or public funds. At least three state agencies administer acquisition funds; contact the Department of Conservation about the Land and Water Conservation Fund, the Department of Inland Fisheries and Wildlife about the Maine Outdoor Heritage Fund, and the State Planning Office about the Land For Maine's Future Program. Contact the Maine Coast Heritage Trust and The Nature Conservancy about private land trust protection efforts. The Sportsman's Alliance of Maine (622-5503) has a trust to own and manage high value game habitat. For more information on federal grants for land protection contact the USFWS Gulf of Maine Coastal Program. Contact your local land trust for additional fund raising support.

PRIMARY MAP 2:

High Value Plant and Animal Habitats

PIPING PLOVER

Background Information:

Many of our wildlife laws, and most of the wildlife research and science conducted by state and federal agencies, are a direct response to human threats that jeopardize our outdoor heritage. Deer wintering areas need to be protected because over-harvesting of forest resources in these areas can destroy protective winter habitat. Fishing, trapping, and hunting regulations are designed to ensure that populations are not over-harvested. Researching and mapping of habitat for endangered and threatened species provides us with the information needed to secure a future for rare plants and animals. Mapping natural plant communities may allow us to direct growth and development away from our rare habitat types such as pine barrens and salt marshes.

The Maine Department of Inland Fisheries and Wildlife's (MDIFW) legal charge is "to preserve, protect and enhance the inland fisheries and wildlife resources of the State." MDIFW supervises an outdoor legacy on 17.9 million forested acres, 32,000 miles of rivers and streams, 6,000 lakes and ponds, and approximately 2,000 coastal islands.

The Maine Natural Areas Program's (MNAP) mission is to ensure the maintenance of Maine's natural heritage for the benefit of present and future generations. MNAP facilitates informed decision-making in development planning, conservation, and natural resources management through the collection, interpretation, and dissemination of information on rare and exemplary natural communities and rare, threatened, and endangered plant species. The MNAP is a division of the Maine Department of Conservation.

The U.S. Fish and Wildlife Service (USFWS) oversees the conservation of Federal "trust species," which includes the protection of fish and wildlife that cross state or national borders (migratory species) and the protection of nationally listed endangered and threatened plant and animal species. The USFWS also establishes and manages national wildlife refuges, including six refuges in Maine.

MDIFW, MNAP and the USFWS each participate in various federal, state, and local partnerships to protect and restore habitat, and they are often asked to review permit applications where human activity may affect important habitat. Data on this map are from all three agencies and can be used to help conserve and direct development away from the most important and sensitive habitats.

Data Components:

PLEASE NOTE: *Please examine the legend of this map carefully. It contains data from 3 different agencies and requires careful study to understand and use properly. The data presented here represent the best available information. Comprehensive field surveys have not been conducted for all areas in Maine. The agencies providing these data are continually gathering new information and are available to provide technical assistance.*

Field Verified Natural Resources of Statewide Significance: MNAP Rare or Exemplary Natural Communities and Rare Plant Locations

- **MNAP Rare or Exemplary Natural Communities** are two broad classes of natural communities recognized as important for conservation: those that are rare and those that are common but in exemplary condition. A natural community is a system of interacting plants and their common environment, recurring across the landscape, where the effects of human intervention are minimal. There are currently 115 natural community types and 35 ecosystem types known in Maine. Examples of rare natural communities in Maine include pitch pine/scrub oak barrens, Atlantic white cedar bog, and Spartina tidal marsh. Examples of common community types include oak/pine forest, red maple swamp, and cattail marsh. Most common natural communities have been impacted by land use practices and it is unusual to find relatively large undisturbed examples of them. Rare and Exemplary Natural Communities represent the natural legacy of habitat types for our state. The long-term conservation of our natural heritage depends on protecting these areas.

BALD EAGLE

- **MNAP Rare Plant Locations** designate specific points where populations of rare, threatened, and endangered plants have been documented and, for some species, habitat for the respective plants. The habitat in which these plants occur is important for their survival. Rare Plant Locations may occur either outside of or in documented MNAP Rare and Exemplary Natural Communities. Rare plants are often components of documented natural communities and can be conserved in the context of these larger systems. Populations of rare plants outside of documented natural communities will require separate conservation actions.

Field Verified Natural Resources of Statewide Significance: MDIFW Mapped Habitats and Confirmed Species Locations

■ **Essential Wildlife Habitats** are a product of Maine's Endangered Species Act (MESA), which requires that both Endangered and Threatened (E&T) animals, and their necessary habitats, be protected. Essential Habitats are areas determined to be essential to the conservation of a species and they must be identified and mapped by MDIFW to be formally protected. Any project within an Essential Habitat that requires a state or municipal permit, or that is funded or conducted by the state or a municipality, requires MDIFW review. This action rarely stops development. In fact, in the past, most development has proceeded, but MDIFW biologists work to modify the project so E&T animals and their habitat are protected. Maine has 43 animals listed as Endangered or Threatened. At the moment, MDIFW has established Essential Habitat for only 4 of these: piping plovers, least terns, roseate terns, and bald eagles. Not all animals on Maine's endangered species list require Essential Habitat designation to ensure their survival.

ATLANTIC SALMON

■ **Significant Wildlife Habitats** include: habitat for Endangered and Threatened species; high and moderate value deer wintering areas and travel corridors; high and moderate value waterfowl and wading bird habitats; shorebird nesting, feeding, and staging areas; seabird nesting islands; significant vernal pools (not mapped in this project); and nursery areas for Atlantic salmon (not mapped in this project). These habitats are mapped as a product of the Natural Resources Protection Act (NRPA), a law passed in 1988 to prevent degradation of significant state resources. This law provides for the habitat identification and mapping for animals that have very specific habitat requirements. To date, seabird nesting islands have received formal designation as Significant Wildlife Habitat. Other candidate Significant Wildlife Habitats have yet to receive full legal designation, but various state agencies reviewing development applications refer to these mapped data for guidance on permitting.

■ **Other Rare Wildlife Data** contains Endangered and Threatened species habitats, other rare animal habitats, and the locations of rare animals themselves. These rare animals include "species of special concern" that may be very rare or vulnerable, for which biologists are gathering more information.

High Value Habitat for USFWS Priority Trust Species (>5 Acres)

The USFWS Gulf of Maine Coastal Program has mapped high value habitat that is important for 64 species of fish and wildlife occurring in the Gulf of Maine watershed (all of Maine, and parts of New Hampshire and Massachusetts that empty into the Gulf of Maine). The important habitat was determined through a GIS analysis that incorporated available field-verified fish and wildlife locations and habitat modeling. The 64 species included in the analysis were chosen because they regularly inhabit the Gulf of Maine watershed and meet one or more of the following criteria:

- federally endangered, threatened and candidate species;
- migratory birds, anadromous and estuarine fish that are significantly declining nationwide; or
- migratory birds, anadromous and estuarine fish that have been identified as threatened or endangered by two or more of the three states in the Gulf of Maine watershed.

The important habitat for these 64 species combined is shown on this map in four basic habitat types (forested, grassland, wetland and salt water environments). To reduce the complexity of the map, only the best quality (top 25 percent) of each habitat type is shown and areas less than 5 acres are not shown. For more information, and for a map showing all important habitat identified and mapped from this analysis, see Map 8.

Strategies For Local Action:

❑ In Comprehensive Plans, recognize essential wildlife habitat and areas around rare and exemplary natural communities, and designate them as part of larger rural areas in which only a small part of the town's future development will be directed.

❑ Update the town's comprehensive plan so it properly plans for growth, fish, wildlife, and plant habitat conservation, and outdoor recreation opportunities. Remember that providing opportunities for well located housing and other growth needs contributes to protecting and enhancing the natural landscape.

❑ Following adoption of the updated comprehensive plan, form an implementation committee to make any necessary changes to the land use ordinances and subdivision regulations to incorporate standards for the protection of identified fish, wildlife and plant habitats.

❑ Local ordinances should encourage landowners or applicants to contact MNAP and MDIFW prior to submittal of development applications to determine potential habitat impacts and steer development away from the most sensitive areas.

❑ During the permitting process for applications, when there are questions about rare plants or valuable natural communities, request a "botanical review" from biologists at MNAP.

❑ During the permitting process for applications, when there are questions about impacts on wildlife habitat or rare and endangered wildlife species, request a review of the proposed development plan by MDIFW.

❑ Develop a database of local property owners who host Significant or Essential Habitats. Create local support systems that supply these landowners with information on habitat conservation. Create local reward and incentive programs for these landowners.

❑ Invite local legislators to tour high-value habitat areas of your town with the respective landowners and talk to them about legislation and policies that would make it easier to conserve the community's wildlife resources and way of life.

❑ Fact sheets have been developed for many of the rare animals, plants, and natural communities in your town. Refer to these fact sheets to become familiar with your town's high value habitats. The fact sheets are included in the Beginning with Habitat binder provided to the town, available at your town office.

PRIMARY MAP 3:

Undeveloped Habitat Blocks

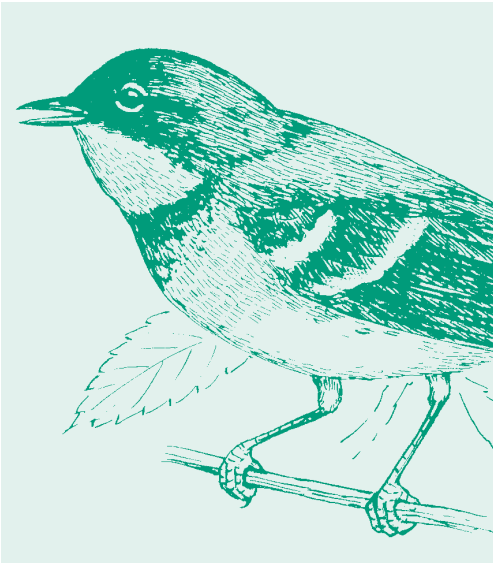
BOBCAT

Background Information:

"Large blocks" are relatively unbroken areas of habitat that include forest, grassland/agricultural land, and wetlands. "Unbroken" means that the habitat is crossed by few roads, and has relatively little development and human habitation. **If we want to maintain habitat for animals that have large home ranges, such as bear, bobcat, fisher, and moose, and other animals that are sensitive to human disturbance, such as upland sandpipers and wood thrushes, we need to conserve larger blocks of forest or grassland, or wetland habitat.** Blocks between 1 and 19 acres are home to species typical of urban and suburban landscapes (e.g., raccoons, skunks, and squirrels). Blocks of 50 acres of grassland or 250 acres of forest begin to provide habitat for birds that are uncommon in smaller grasslands and forests. These birds may include grassland species such as the upland sandpiper and grasshopper sparrow and forest species such as the veery and scarlet tanager. Moose, bald eagles, goshawks and similar species usually require 500 to 2,500 acres, while blocks

of greater than 2,500 acres may hold the full complement of species expected to occur in Maine. Refer to *A Response to Sprawl: Designing Communities to Protect Wildlife Habitat and Accommodate Development and Conserving Wildlife in Maine's Developing Landscape* in the binder for more detail on species specific large block requirements.

In some parts of Maine, one landowner may own an entire large habitat block but more typically, several or many landowners' properties combine to create a single large undeveloped block. Because development quickly fragments these multi-owner blocks of habitat, many towns are in danger of losing their last opportunities to conserve large blocks of habitat.



NORTHERN PARULA WARBLER

Data Components:

- **Land Use/Land Cover** categories are divided into agricultural lands where human intervention creates open landscapes, forest lands (which may be in various stages of succession), and wetlands. Wetlands are defined by the presence of certain plant species, soil types, or the length of the year they are covered with water. Land use/land cover data used in this map are from 1991 and 1993; road data are from the 1970s (United States Geological Survey) and 2001 (Maine Department of Transportation). This data layer will be updated annually based on the best available roads data from US Geological Survey and Maine Department of Transportation.

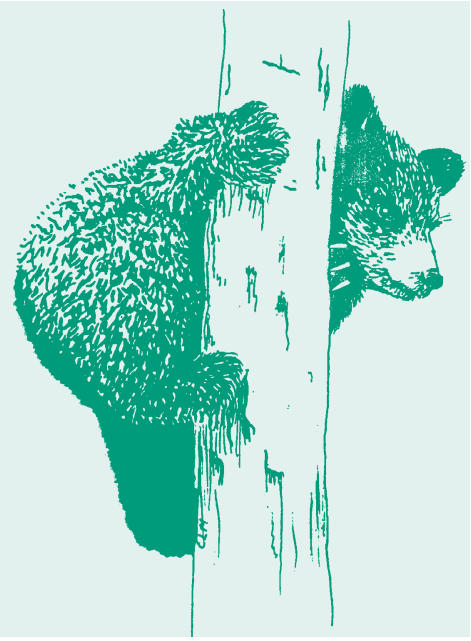
Strategies for Local Action:

❑ Set some goals: each town should strive to maintain at least several 250-500 acre blocks of undeveloped land and, where they still exist, at least some 500-1000 and 1000+ blocks of habitat. In addition, towns should work together with neighboring towns to conserve 5000 - 10,000 acre blocks of habitat in their region. Only in such blocks of land will many species find the home ranges they need to breed, travel, and protect themselves.

❑ Update your town's comprehensive plan to include policies on protecting undeveloped habitat blocks. After the update is completed, make sure an implementation committee is formed to make any necessary zoning ordinance changes. Comprehensive plan policies and potential ordinance

changes should focus on opportunities to protect existing large blocks and corridors that may connect them as part of overall growth accomodation.

❑ Inventory local parcels of land that could, in combination with other private or public lands, be considered important undeveloped blocks of habitat on a local scale. Acknowledge these lands in the town's comprehensive plan. Where they are distant from local services like sewers and fire stations, include these significant blocks of habitat within designated rural areas, away from which most future development is to be directed.



BLACK BEAR CUB

❑ Conduct outreach to landowners who might benefit from a "current use" tax status. Suggest they examine estate and tax planning with a local land trust in order to conserve large parcels of land they own.

❑ Meet cooperatively with neighboring towns, land trusts, and conservation organizations to explore the conservation of large blocks of habitat across political boundaries.

❑ Review your standards for the construction of private roads to create building lots. Do these roads extend into large undeveloped blocks of habitat? What are the impacts of these roads and the companion buildings on wildlife habitat? Consider prohibiting or restricting the length of these private roads so new building lots do not unnecessarily fragment remaining large blocks of habitat.

❑ Explore opportunities to protect large undeveloped habitat blocks via conservation easement or fee ownership. Funds for acquisition can be raised through public appeal, appropriation of town funds, or application to private foundations or public funds. At least three state agencies administer acquisition funds; contact the Department of Conservation about the Land and Water Conservation Fund, the Department of Inland Fisheries and Wildlife about the Maine Outdoor Heritage Fund, and the State Planning Office about the Land For Maine's Future Program. Contact the Maine Coast Heritage Trust and The Nature Conservancy about private land trust protection efforts. The Sportsman's Alliance of Maine (622-5503) has a trust to own and manage high value game habitat. For more information on federal grants for land protection contact the USFWS Gulf of Maine Coastal Program. Contact your local land trust for additional fund raising support.

SUPPLEMENTARY MAP 4:

Focus Areas

Background Information:

After reviewing Primary Maps 2 (High Value Plant and Animal Habitats) and 3 (Undeveloped Habitat Blocks), biologists from the Maine Natural Areas Program (Department of Conservation) and the Maine Department of Inland Fisheries and Wildlife were able to identify landscape scale areas meriting special conservation attention. These focus areas are built around the documented locations of rare plants, animals, and natural communities, high quality common natural communities, significant wildlife habitats, and their intersection with large blocks of undeveloped habitat.

Focus areas are designed to bring attention to those areas with concentrations of known rare and significant plant and animal habitats. Many focus areas cross town boundaries and will require the cooperation of adjacent towns and/or land trusts to fully conserve them. However, not all communities will have focus areas within their town boundaries.

Selection Criteria for Candidate Land Trust Focus Areas

One or more of the following must be present before an area would be considered a candidate focus area. In most cases, two or more are present:

CANDIDATE FOCUS AREA

- Globally Rare Plant or Animal
- 3 or More Healthy Populations of a Rare Plant Species
- Any Healthy Population of a Rare Animal Species
- Rare Natural Community
- Excellent Example of Common Natural Community
- Good Example of a Common Natural Community and 1 or more High Value Wildlife Habitat
- Large Undeveloped Block and at least one of the following: Good Example of a Common Natural Community or High Value Wildlife Habitat or 2 or more Healthy Populations of a Rare Plant Species

Data Components:

The data used to select the focus areas include MNAP Rare or Exemplary Natural Communities, MNAP Rare Plant Locations, Essential Wildlife Habitats, Significant Wildlife Habitats, Other Rare Wildlife Data, and Large Undeveloped Blocks. The data used to identify the focus areas are the same data that are shown on the Beginning with Habitat Primary Maps 2 and 3.

Focus area boundaries are based on sub-watersheds and major fragmenting features such as roads. The focus area maps are intended to show what portion of the landscape needs to be conserved for the long-term protection of the associated significant natural features. The focus area boundary is drawn to include that portion of the landscape on which conservation should be considered wherever practicable. Note however, that some focus areas include homes, developments, and even villages. These would likely be excluded from most conservation actions.

A description of each focus area in your community, if any, can be found in the Beginning with Habitat notebook at your town hall, and includes a list of all the significant natural features along with information about their natural history, conservation significance, and suggestions for management. Listed features include state status (e.g. endangered, threatened, or species of concern), along with state and global rarity ranks. A range of tools, including landowner and public education, voluntary stewardship, targeted and/or improved land management, easements, and acquisitions will probably be needed to conserve these areas.

Strategies For Local Action:

❑ Towns and land trusts are encouraged to incorporate the focus areas into their long term plans for conservation. Towns and land trusts can work together on comprehensive and open space plans, and capitalize on opportunities where the goals of both the towns and the land trusts overlap.

❑ Towns and land trusts can identify property owners whose lands host significant natural features and investigate conservation options ranging from voluntary conservation to fee purchase.

❑ Towns and land trusts can become familiar with the rare plants, animals and habitats in their communities and learn better how to manage them for long term preservation. Especially on lands they may own and have stewardship responsibilities for.

❑ Towns and land trusts can use the information sheets and maps to educate landowners and the general public about significant natural areas and create support for local conservation initiatives.

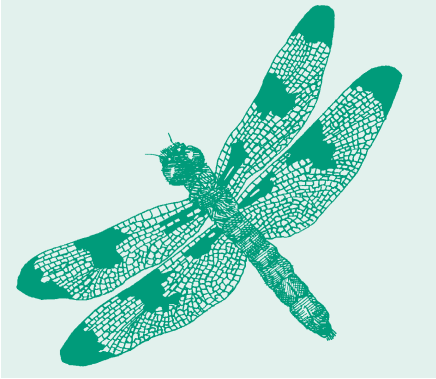
❑ Towns and land trusts in adjoining jurisdictions can cooperate with their neighbors on large focus areas and projects that extend into multiple jurisdictions.

❑ Towns and land trusts can use the data to supplement grant applications they are putting forward.

❑ Towns and land trusts can work with relevant state agencies to garner support for projects.

SUPPLEMENTARY MAP 5:

Public and Conservation Lands



DRAGONFLY

Background Information:

Conservation lands in Maine are the result of a mosaic of federal, state and private efforts. Only about 5% of Maine's land is publicly conserved. Other parcels are protected by a wide variety of private methods and partnerships including ownership by non-profit groups, easement agreements with private landowners, and current use taxation and incentive programs designed to help landowners retain open space. Most of Maine's fish, wildlife, and plant habitat reside on lands that are privately owned. While habitat for Endangered and Threatened species receives careful consideration, the future of most of Maine's plants and animals is in the hands of individual landowners and land-owning corporations. (For more detailed information on Maine's private and public conservation methods see *What Conservation Looks Like In Maine* available in the 3-ring binder at your town hall.)

In order to build onto and complement existing public lands, it is important to first know what is already protected. The Public and Conservation Lands map for your town includes only those parcels for which we were able to gather data. A complete inventory of these lands must occur at the local level. There is currently no single, comprehensive state-level database or means to maintain these data.

Data Components:

- **Town lands** may include parks, athletic fields, and town forests. Many towns also have management plans for their larger, forested parcels. Not all forested town lands should, however, be considered conservation lands; for instance, there may be no protective measures to preclude a town forest from becoming the site of the next town hall or school.

- **Parcels in Tree Growth Programs** are privately owned by people who have made a commitment to maintain their forestlands according to approved harvesting and management plans. Owners are rewarded with a current use (or lower) tax rate. However, owners may opt to remove their lands from the tree growth program, so these lands typically are not permanently protected.

- **Parcels in Farmland and Open Space Incentive Programs** are privately owned by people who have made a commitment to maintain their farmlands or open space according to the provisions of this property tax incentive program. Owners are rewarded with a current use (or lower) tax rate. Owners may, however, opt to remove their lands from this program at any time, so these lands are not usually permanently protected.

- **Private conservation lands** include land trust holdings and properties owned and managed by private (usually non-profit) organizations (e.g, The Nature Conservancy, Maine Audubon Society, Maine Coast Heritage Trust, Wells National Estuarine Research Reserve and local land trusts). Often, these properties are managed for specific ecological goals and many properties have management plans. Typically, these properties are considered permanently protected.

MOOSE

- **Easements** are voluntary legal agreements that allow landowners to permanently restrict the amount and type of future development and other uses on all or part of their property as they continue to own and use it. Landowners may sell easements or they may donate them. Once in place, easement requirements pass from one owner to the next. It is incumbent on the organization that has accepted the easement to ensure that the owner complies with the easement requirements.

- **State conservation lands** include Wildlife Management Areas and other properties managed by the Department of Inland Fisheries and Wildlife, state parks, and parcels managed by the Bureau of Parks and Lands in the Department of Conservation. These properties are also guided by management plans; most plans are created with a comprehensive public comment process.

- **Federal conservation lands** are held and managed by federal agencies and include national parks, national forests, and national wildlife refuges. The majority of these properties have management plans that are based on a comprehensive public comment process and cooperative efforts between local users and stakeholders. Maine federal lands are managed from local and regional offices.

Strategies For Local Action:

❑ Conduct outreach to town landowners that might benefit from a "current use" tax status if they place lands either in tree growth or farm incentive programs. Create a local recognition or reward system for landowners who maintain open space through these programs.

❑ Request management plans for various conservation properties. After reviewing the plans, evaluate the status of habitat protection and recreational opportunities. Evaluate opportunities to create greenways and corridors between parcels or to create large blocks of protected, high value habitat by adding adjacent lands.

❑ Talk with owners/managers of conservation properties in your town to learn of their current or future management plans for the property and how they might contribute to or complement other efforts to conserve habitat in your town.

❑ Get involved with a local land trust. Gather information on valuable habitats located on trust lands. Explore opportunities for habitat protection, wildlife corridors, and trail systems that connect trust lands to other parcels, both private and public. Inform town residents of the possible tax benefits from the creation of easements. For more information contact Maine Coast Heritage Trust.

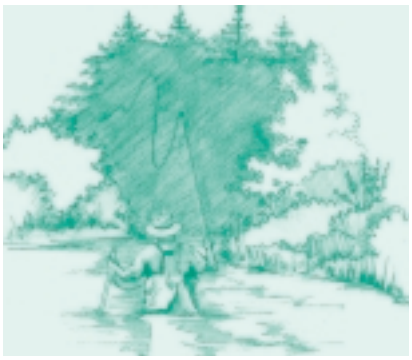
❑ Meet cooperatively with neighboring town planning groups to discuss consistent regulations for shared waterways and the creation of large habitat blocks and open space that could be created by working across town boundaries. For more information contact your regional planning commission.

❑ Consider protecting town-owned property, particularly forest land, with a conservation easement. For more information contact your local land trust or Maine Coast Heritage Trust.

❑ Explore opportunities to protect large undeveloped habitat blocks via conservation easement or fee ownership. Funds for acquisition can be raised through public appeal, appropriation of town funds, or application to private foundations or public funds. At least three state agencies administer acquisition funds; contact the Department of Conservation about the Land and Water Conservation Fund, the Department of Inland Fisheries and Wildlife about the Maine Outdoor Heritage Fund, and the State Planning Office about the Land For Maine's Future Program. Contact the Maine Coast Heritage Trust and The Nature Conservancy about private land trust protection efforts. The Sportsman's Alliance of Maine (622-5503) has a trust to own and manage high value game habitat. For more information on federal grants for land protection contact the USFWS Gulf of Maine Coastal Program. Contact your local land trust for additional fund raising support.

SUPPLEMENTARY MAP 6:

Watersheds



Background Information:

A watershed includes all the land area that drains to a particular lake, stream, river, estuary, or the ocean. Major river watersheds, such as those of the Kennebec and Penobscot Rivers, reach from the high mountains, cross through the foothills and coastal plain, and finish at the coastline.

Large watersheds in southern Maine include the Saco River and Casco Bay watersheds. Numerous watersheds that flow to a smaller lake or stream, or directly to the ocean, are "nested" within these relatively large watersheds. Casco Bay watershed, for example, includes the Sebago Lake, Scarborough River, Fore River, Presumpscot River watersheds, and the Casco Bay Coastal Drainage. Within these watersheds are still smaller watersheds, e.g., the Long Lake watershed nested within the Sebago Lake watershed.

Water does not pay attention to political boundaries; a watershed often spans town, county, state, and even national boundaries. A number of challenges facing Maine's communities, particularly protection of water quality, must be addressed throughout the watershed. **Actions along one part of a river or lake can affect the water quality of the entire body of water, even many miles downstream.**

Data Components:

A nationally uniform system for delineating watersheds was originally developed in the mid-1970s by the United States Geological Survey and is now under the jurisdiction of the Natural Resource Conservation Service (NRCS, formerly Soil Conservation Service). In the NRCS system, the generic term for a watershed or drainage area is "hydrologic unit." The formal terms subbasin, watershed, and subwatershed refer to specific sizes of hydrologic units in the NRCS system:

- NRCS Subbasins, so-called 8 digit Hydrologic Units, are typically at least 450,000 acres in size. Examples include Saco River, Casco Bay.
- NRCS Watersheds, so-called 11 digit Hydrologic Units, are typically between 40,000 and 250,000 acres in size. Examples include Presumscot River, Mousam River.
- NRCS Subwatersheds, so-called 14 digit Hydrologic Units, are typically between 10,000 and 40,000 acres in size.

Please see the following website for more information on mapping of Hydrologic Units: http://www.nhq.nrcs.usda.gov/hu/ni170304.html

Strategies For Local Action:

❑ Meet cooperatively with neighboring towns, land trusts, and conservation organizations with mutual watersheds to explore the protection of water quality and develop watershed protection plans across political boundaries.

SUPPLEMENTARY MAP 7:

State Planning Office Wetlands Characterization

Background information:

Wetlands play a variety of important roles in the landscape in which they are found. Healthy wetland systems offer incalculable benefits to us including water quality buffering, water discharge and recharge, shoreline stabilization, nutrient and sediment retention, floodflow alteration and control, habitat for a wide variety of plant and animal species, and recreational opportunities. Preserving and protecting wetlands in the landscape makes good economic sense as well as good environmental sense, as replacing wetland benefits after they have been lost is an expensive and uncertain undertaking. Wetland systems and their associated uplands are the anchors that give our Maine landscape many of the qualities that make it so unique.

Data Components:

The Maine State Planning Office, in conjunction with other state and federal agencies, developed a method to characterize wetlands within a watershed based on a subset of six wetland functions and values. Using a geographic information system (GIS) based on the National Wetlands Inventory (NWI) data, each wetland was characterized for its ability to provide the chosen functions and values at a significant level. The functions and values assessed by the characterization include a hydrologic function (floodflow alteration), a biogeochemical function

(sediment retention), a biological function (plant and animal habitat, finfish habitat and shellfish habitat) and a cultural value (education and research). It is important to remember that this characterization is based upon a subset of the many functions and values that wetlands provide.

The results of the characterization process provide information that enriches our understanding of the roles that wetlands play in the landscape and how they interconnect with other resources. This information is useful in a planning context but may not be appropriate for site-specific analysis. The characterization is made up of two parts:

- A map that identifies each wetland with a unique number and
- A table that correlates that unique identification number with the functions predicted to be found at a significant level.

A wetland that was found to provide multiple functions by the characterization may contribute more ecologically than a wetland characterized as providing fewer of the target functions. However, when incorporating this analysis into the planning process, it is important to look beyond the total number of functions identified and consider which individual functions are predicted by the characterization. For example, a wetland that is identified by the characterization as providing only the function of floodflow control may in fact be critical in the landscape context for exactly that function.

Strategies for local actions:

❑ In the context of the *"Beginning with Habitat"* model, use the characterization to inform your decisions and choices when assessing the adequacy of shoreland zoning and large unfragmented blocks in your town. Using local knowledge, identify those wetlands that are highly valued by citizens for their recreational and commercial values. Bring this information to your town planning process and incorporate these wetlands and their values into decisions made about how your town will grow and develop.

❑ Starting with the characterization, add local knowledge of wetlands and affiliated uplands to produce a more detailed picture of the role that these systems play in maintaining the environmental integrity of your town. Remember that wetlands provide natural floodflow control and sediment retention, both vital functions in maintaining water quality. They are also nursery areas for fish and shellfish and support commercial fisheries.

❑ Using local knowledge and interested citizens, consider adding information that may be missing from the characterization, due to the conservative nature of the base maps used. For example, local knowledge about the true extent of a wetland may indicate connections to nearby waterways not identified in the NWI base maps. Also, vernal pools, tiny ponds which are often

present for only part of the year, are very likely to be missed by the characterization, and local information about these pools can help inform the process of identifying important contributors to amphibian habitat. Contact Maine Audubon for citizen guides to identifying and characterizing vernal pool habitats and their associated uplands.

❑ In the land use planning process, compare your designated growth zones with the characterization and local knowledge to determine if you are inadvertently promoting growth in an area at the expense of a highly functioning wetland or wetland complex. Use this comparison to consider reshaping growth zone locations.

SPOTTED SALAMANDER

❑ Develop a town-based wetland compensation fund that requires those applying for permits and altering wetlands to provide compensation for their impacts beyond that required by State and Federal regulations. Focus this fund on town-identified goals and priorities for wetland protection, restoration, and stewardship.

❑ Review the kind of development allowed in designated rural areas. If it is predominately 1-to-5-acre lots, cumulative infringement on wetlands and related habitat is likely. Consider very low densities in these areas (1 or fewer units per 10 acres) in combination with open space zoning to maintain large blocks of unfragmented land.

❑ In coastal areas, use Maine Audubon's *"Maine Citizen's Guide to Evaluating, Restoring, and Managing Tidal Marshes"* to assess the condition of your coastal wetland resource and to identify restoration opportunities.

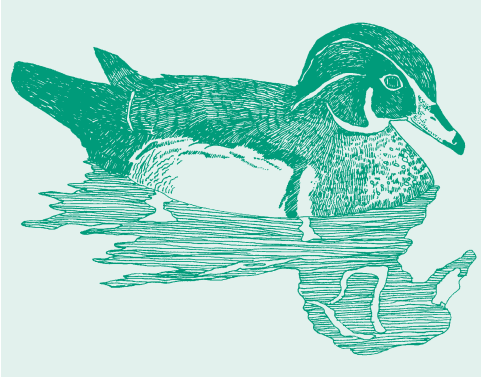
❑ Work with your local school system to develop a wetlands-based curriculum to promote awareness and understanding of the crucial role wetlands play across our landscape.

❑ Create an "adopt-a wetland program" within your town to develop stewardship of these important resources.

❑ Ask your local government to develop a citizen wetland award to recognize those individuals who voluntarily protect their privately-owned wetland resources, and help to elevate the appreciation of these resources within your community.

SUPPLEMENTARY MAP 8:

USFWS Gulf of Maine Habitat Map



WOOD DUCK

Background Information:

The Gulf of Maine watershed, situated in the northeast corner of the United States and the southeast corner of Canada, includes more than 43,000 square miles of land in Maine, New Hampshire and Massachusetts. The watershed includes the biologically productive Gulf of Maine as well as coastal habitats (salt marshes, mudflats, sandy beaches, intertidal zone, and islands) and inland streams, rivers, lakes, ponds, bogs, deciduous and coniferous woodlands, grasslands and alpine tundra. The Gulf of Maine watershed provides productive nurseries for many marine fish, riverine pathways for historically abundant populations of anadromous fish, important habitat for breeding, migratory and wintering waterbirds and neotropical migrants, and vital habitat for nationally threatened and endangered species. Many who live in the Gulf of Maine watershed appreciate its biological wealth. However, habitat loss and degradation from sprawling development, wetland and associated upland loss, overharvesting, oil spills, pollution, and other cumulative effects of development threaten the integrity of the Gulf of Maine watershed.

Data Components:

In order to protect fish and wildlife habitat for endangered, threatened or declining species in the region, the U.S. Fish and Wildlife Service's Gulf of Maine Coastal Program completed a project to identify, map and rank important fish and wildlife habitat for priority species throughout the Gulf of Maine watershed. USFWS biologists selected 64 species that regularly inhabit the Gulf of Maine watershed that meet the following criteria:

- federally endangered, threatened and candidate species,
- migratory birds, anadromous and estuarine fish that are significantly declining nationwide,
- migratory birds, anadromous and estuarine fish that have been identified as threatened or endangered by two of the three states in the Gulf of Maine watershed.

Biologists have identified, ranked and mapped habitat for all species — from actual sightings, or by developing habitat suitability models reflecting the environmental requirements for each species.

Once habitat maps were completed for each species, biologists combined all the maps to create composite maps that included all 64 species. This *USFWS Habitat Map* displays important habitat in each of the four basic habitat types: forested habitat, grassland habitat, freshwater wetlands and saltwater wetlands. The data within each habitat type is displayed in a three level gradient (the top 25%, the next 25%, and then the bottom 50%). The top 25% in each habitat type is considered the most important habitat and is also portrayed on the *High Value Plant & Animal Habitats Map*. All of these data, along with the corresponding environmental themes, are available in GIS format from the USFWS Gulf of Maine Coastal Program.

Priority Trust Species List

BIRDS
American bittern
American black duck
American woodcock
Arctic tern
Bald eagle
Bicknell's thrush
Black scoter
Black tern
Black-bellied plover
Blue-winged warbler
Canada warbler
Chestnut-sided warbler
Common loon
Common snipe
Common tern
Eastern meadowlark
Field sparrow
Grasshopper sparrow
Killdeer
Least sandpiper
Least tern
Northern flicker
Northern goshawk
Northern harrier
Olive-sided flycatcher
Osprey
Peregrine falcon
Pied-billed grebe
Piping plover
Purple sandpiper
Red knot
Red-shouldered hawk
Roseate tern
Saltmarsh sharp-tailed sparrow
Sanderling
Scaup (greater and lesser)
Sedge wren
Semipalmated sandpiper
Short-billed dowitcher
Short-eared owl
Surf scoter
Upland sandpiper
Veery
Whimbrel
White-winged scoter
Wood duck
Wood thrush

FISHERIES
Alewife
American eel
American shad
Atlantic salmon
Atlantic sturgeon
Blueback herring
Bluefish
Horseshoe crab
Shortnose sturgeon
Winter flounder

PLANTS
Eastern prairie fringed orchid
Furbish's lousewort
Robbins' cinquefoil
Small whorled pogonia

MAMMAL
Canada lynx

REPTILE
Plymouth redbelly turtle

Strategies for Local Action:

❑ Incorporate this habitat information into your local planning strategies, including Comprehensive Plans and Open Space Plans. Try to minimize or eliminate growth in the important habitat areas.

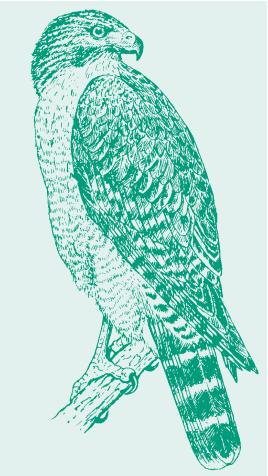
❑ Work with developers to minimize impact on important habitat by adjusting house placement and building envelopes appropriately. Make sure your town planner, planning board and conservation commission are aware of these important habitats and plan development appropriately.

❑ Use this data to catalyze, guide and support local land protection efforts. Try to protect areas with high value habitat and incorporate existing protected lands into the your habitat protection projects. Contact the USFWS for more information on federal funding sources for land protection.

Using The Maps

There are many ways your town can use the wildlife habitat data on these maps. You can use it for land use planning; for outreach and education; in local regulations; to inform and direct land protection initiatives; and to develop joint conservation strategies with neighboring towns.

Remember that to ensure a rich complement of plant and animal species in your town you need to find ways to protect and interweave wetland and riparian areas, high value habitats, and large habitat blocks. For starters, MDIFW encourages you to designate and enforce Shoreland Zoning to protect riparian habitats around waterbodies and watercourses in your community. Up to 80% of Maine's terrestrial vertebrate wildlife species use riparian areas sometime during their life cycle. Next focus your attention on conserving existing rural and undeveloped land. Begin with large blocks of agricultural or forested habitat that include high value plant and animal habitat. These areas usually have higher diversity than smaller areas and are important to certain wildlife species requiring larger areas of unfragmented habitat. If you are successful in conserving lands in all 3 habitat groups, you will be providing habitat for up to 80-95% of the native wildlife species in your town.



RED-SHOULDERED HAWK

Please note that at the top of each map, in bright red ink, are the words "These maps are for planning purposes only." This means that the data lack the rigorous field delineation and analysis necessary for site specific zoning—MDIFW cautions you against adopting land-use ordinances that target specific sites depicted on Map 2: High Value Plant and Animal Habitat. In addition, municipalities should consult with the Maine Natural Areas Program and/or the Department of Inland Fisheries and Wildlife before making permit decisions based upon Map 2: High Value Plant and Animal Habitat. Many of these animal sites are candidates for designation as Significant Wildlife Habitat under the Natural Resource Protection Act.

Where Essential Habitat has been designated, any proposed project that is wholly or partly within an Essential Habitat and is permitted, licensed, funded, or carried out by a state agency or municipal government requires approval from the Commissioner of Inland Fisheries & Wildlife for the proposed actions within the Essential Habitat. Rare and endangered plants are not regulated under state law, since plants belong to the landowner on whose property they grow. Wildlife, on the other hand, is held in the public trust for everyone to enjoy.

Following is a list of local strategies that should help you conserve open space in your community for plants, wildlife, and people. These strategies have been collected from towns that have already begun this work, from town planners, and from the State Planning Office. Good luck and please call any of the partnering organizations for additional help and guidance if you get stuck. We realize that achieving our vision of an interconnected web of riparian habitats, high value habitats and large habitat blocks will take the involvement of interested citizens, land trust members, town planners, planning boards, conservation commission members, landscape designers, homebuilders, developers, and others.

Using the Maps to Conserve Habitat

1 *Water Resources and Riparian Habitat*

Conserve the wetlands and land around lakes, ponds, rivers, streams and the coast since up to 80% of Maine's terrestrial vertebrate animals use these areas for a part of their life cycle. Consider this the "backbone" of the plan.

2 *High Value Plant and Animal Habitat*

Conserve and direct development away from the most important and sensitive habitats. Data on this map includes locations of exemplary natural communities, rare plants, habitat for threatened and endangered species, species of special concern, Significant Wildlife Habitat, and habitat for federal trust species.

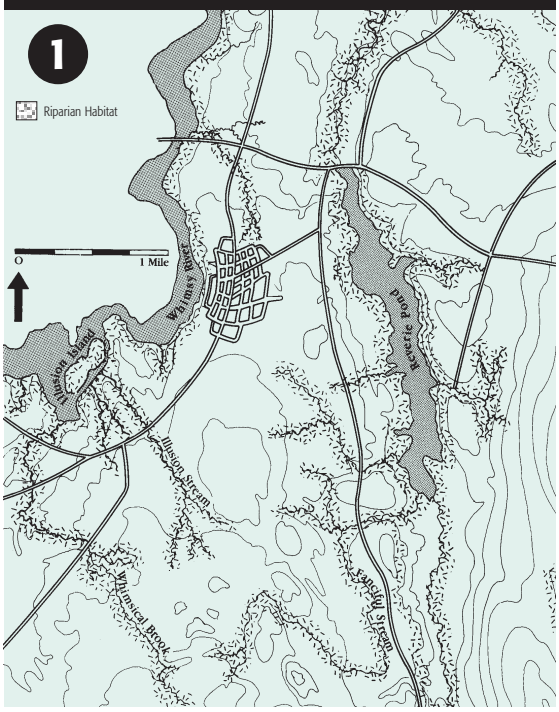
3 *Undeveloped Habitat Blocks*

Strive to maintain at least several 250-500 acre blocks of undeveloped land and, where they still exist, at least some 500-1000 and 1000+ blocks of habitat. Towns should work together with neighboring towns to conserve 5000 – 10,000 acre blocks of habitat in their region. Only in such blocks of land will many species find the home ranges they need to breed, travel, and protect themselves.

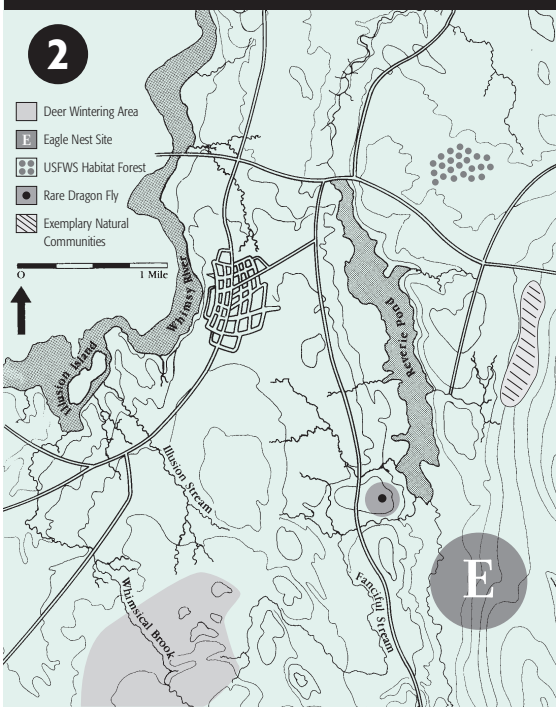
Building a Landscape **(Using Maps 1–3)**

To ensure a rich complement of plant and animal species in your town you need to find ways to protect and interweave wetland and riparian areas, high value plant and animal habitats, and large habitat blocks. There are many ways your town can use the plant and wildlife habitat data on these maps. You can use it for land use planning; for outreach and education; in local regulations; to inform and direct land protection initiatives; and to develop joint conservation strategies with neighboring towns.

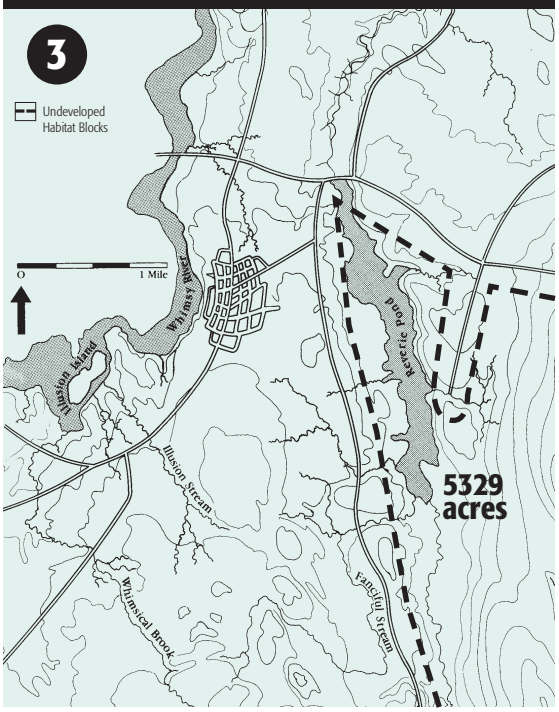
Water Resources and Riparian Habitat



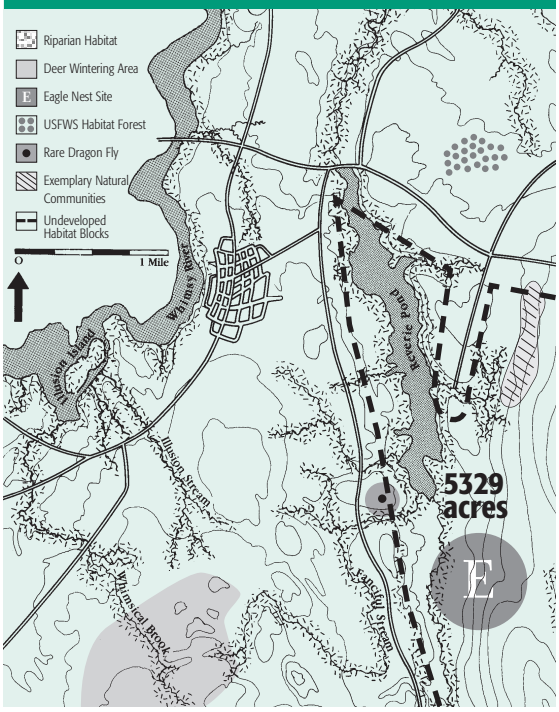
High Value Plant and Animal Habitat



Undeveloped Habitat Blocks



Building a Landscape (Using Maps 1–3)



Local Strategies

1. Local Conservation Planning

❑ Create and/or update your town's comprehensive plan so it properly plans for growth, conservation of fish, wildlife, and plant habitat, and recreation. This Beginning with Habitat notebook includes data, habitat protection strategies, and information on conservation organizations and local land trusts to be incorporated into the comprehensive plan. Work with state agencies, conservation organizations, and land trusts to use available data to create a landscape vision for your town.

❑ As you update your comprehensive plan look at existing and proposed growth areas. Many towns are now being forced to develop additional growth areas. Do these areas conflict with the identified resources? Are the growth areas extending into large undeveloped blocks of habitat? Do you have future road or utility plans for these undeveloped blocks? Many times town infrastructure policies contribute to the fragmentation, degradation and/or destruction of habitat.

❑ Inventory all public conservation lands in your town and review the management plans for these properties. Include publicly-owned lands that have conservation potential but are not yet designated as such. Work with local planners, land trusts, and state agencies to evaluate the status of habitat protections and recreational opportunities on these lands and to design corridors that allow species to move freely between habitats, e.g., between riparian and upland habitats.

❑ Form a town Conservation Commission if one doesn't already exist. The Conservation Commission can play an active role in managing town-owned open space and creating and implementing an Open Space Plan.

❑ Create an Open Space Plan for your town. Work with a local land trust to inventory local parcels of land that could, in combination with other private or public lands, be considered large blocks of habitat. Conduct a public meeting with residents to identify additional areas of natural resources or open space concern. Ask residents to identify those areas in town that are most important to them including additional habitat or rare features not currently mapped, geologic features, historical sites, scenic views, important landscapes, farms, and trail systems. Many times these resources overlap or are linked. Develop a list of conservation focus areas for both the land trust and town to concentrate their efforts.

❑ If your town has a Capital Improvement Plan, include a land bank account to be added to annually and spent according to a specific set of guidelines for the acquisition of habitat and open

space lands. The conservation commission could select lands for purchase with the expenditure dependent upon approval at town meeting.

❑ Consider creating trail corridors that serve wildlife and recreation needs.

❑ Create a local planning process to evaluate the accumulated amount of shoreline development as it relates to habitat loss. Design a local conservation strategy that offers an alternative to single lot development of shoreline areas. Meet with town recreation officials, local land trusts and conservation organizations and discuss combining the conservation of riparian habitat with recreational access to water resources.

❑ Evaluate opportunities to create greenways and corridors between parcels or add additional lands to create large blocks of protected, high value habitat.

❑ If a land trust does not already exist for your town, create one or ask a neighboring land trust to expand its service area.

2. *Outreach/Public Information*

❑ Conduct an information and outreach effort to inform landowners of the value of riparian habitat, high value plant and animal habitats, and large undeveloped habitat blocks.

❑ Develop a database of local property owners who host Significant or Essential Habitat. Create local support systems that supply these landowners with information on habitat retention and improvement. Create local reward and incentive programs for these landowners. Potential local (i.e., town-administered) programs include purchase of development rights, a transfer of development rights program, waiving lot size requirements in exchange for habitat protection, and an "open space" tax reduction program in addition the State-administered Current Use Program.

❑ Conduct outreach to landowners who might benefit from a "current use" tax status, such as the Open Space or Tree Growth Tax Programs. Suggest they examine estate and tax planning with the Maine Coast Heritage Trust or an attorney in order to conserve large parcels of land they own.

❑ Create a local recognition or reward system for landowners who maintain open space through current use programs.

❑ Invite local legislators to tour high value habitats in your town and explain the connection between the habitats and your community's way of life. Talk to them about legislation and policies that would make it easier to conserve the habitats and, therefore, the community's way of life.

❑ Provide a list of licensed foresters with a working knowledge of how to manage forests for both habitat and timber.

❑ Offer a workshop for forest landowners using *Biodiversity in the Forests of Maine: Guidelines for Management*, published by the Maine Forest Biodiversity Project, and *A Forester's Guide to Managing Wildlife Habitats in Maine*, published by UMaine Cooperative Extension and Maine Chapter of The Wildlife Society.

❑ Offer space in the town Annual Report for the local land trust to write a summary of past and planned activities.

❑ Conduct a joint mailing from the land trust and the town to landowners of important parcels offering conservation options and services.

❑ Invite the local land trust to display newsletters and brochures at the town hall, library, and public events.

❑ Make the *Beginning with Habitat* maps and documentation readily available to the public so they can view them easily and become familiar with the information.

3. Local Regulations

❑ After adoption of the comprehensive plan by your town, form an implementation committee to make any necessary revisions to local regulations. Towns can consider making protection of riparian areas and the integrity of large blocks of habitat part of the design principles encouraged or required in subdivision, site plan review, and other local regulations through the use of buffers, habitat curtains around development, and other means. For example, consider adopting very low density (1 unit per 10 to 25 acres) in the most rural parts of town where large blocks of habitat remain intact and stronger standards protections than state minimum guidelines in your town's shoreland zone. Where development of rural lands must occur, consider open space zoning and subdivision provisions in your town's land use ordinance to protect the habitat values of the area and maintain connections between habitats.

❑ Require a combination of very low densitities and cluster development on properties with high value habitat so development can be steered away from those habitats. Ensure that a local land trust or conservation organization is built into the process early on so they can help structure the organization of the open space.

❑ Require provisions in local ordinances for a botanical review by biologists at MNAP when a proposal potentially conflicts with a mapped resource.

❑ Require provisions in local ordinances for review of development applications by the appropriate regional office of MDIFW when a proposal potentially conflicts with a mapped resource.

❑ Consider developing and adopting an impact fee program with funds allocated at least in part to protecting open space.

❑ Promote zoning that allows for multiple use of farmland or woodlots, including activities such as educational or recreational services, food sales, hay and sleigh rides, etc.

❑ Within a subdivision ordinance, develop a provision for a fee-in-lieu of land dedication for smaller subdivisions or a subdivision where a land set aside is not appropriate. Dedicate such funds to a land bank or open space fund.

❑ Consider how to fulfill the state subdivision criterion which states that "the proposed subdivision will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by MDIFW or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline."

4. Land Protection Measures

❑ Coordinate land trust priorities for land protection with town priorities.

❑ If a property with high value habitat is on the market, and especially where the town has not adequately protected it (allowing reasonable use through very low density and open space zoning), the selectboard, planning board, conservation commission, and local conservation groups can work together to consider and potentially pursue acquisition of the property.

❑ Encourage landowners with high value habitat on their property to enroll in either the Farmland and Open Space or Tree Growth Tax Programs.

❑ Purchase development rights on large undeveloped blocks to manage the land as fish, plant and wildlife habitat.

❑ Purchase conservation easements that stipulate no development and allow public access for recreation, if compatible with the land.

❑ Purchase right-of-first-refusal on property that includes important habitat; if acquired, consider a limited development scheme, either for town use or for use in a limited residential development to help cover the cost of acquisition.

❑ Explore opportunities to protect habitat via conservation easement or fee ownership. Funds for acquisition can be raised through public appeal, appropriation of town funds, or application to private foundations or public funds. At least three state agencies administer acquisition funds; contact the Department of Conservation about the Land and Water Conservation Fund, the Department of Inland Fisheries and Wildlife about the Maine Outdoor Heritage Fund, and the State Planning Office about the Land For Maine's Future Program. Contact the Maine Coast Heritage Trust and The Nature Conservancy about private land trust protection efforts. The Sportsman's Alliance of Maine (622-5503) has a trust to own and manage high value game habitat. For more information on federal grants for land protection contact the USFWS Gulf of Maine Coastal Program. Contact your local land trust for additional fund raising support.

5. Regional Coordination

❑ Review maps of high value habitat and/or open space plans with local officials from neighboring towns, land trusts, and other conservation organizations.

❑ Meet cooperatively with neighboring towns, land trusts, conservation organizations, and your regional planning commission to discuss the conservation of large blocks of habitat across political boundaries.

❑ Meet cooperatively with neighboring town planning groups to discuss consistent regulations for shared habitats and waterways.

❑ Meet cooperatively with neighboring towns, land trusts, and conservation organizations with mutual watersheds to explore the protection of water quality and develop watershed protection plans across political boundaries.

Selected References and Bibliography

Please note: Many good publications exist to augment information presented in this booklet on sprawl, habitat protection and conservation of open space. We urge you to refer to the following publications as needed.

A Habitat-based Approach for Identifying Open-Space Conservation Needs in Southern Maine Towns. W. Krohn and J. Hepinstall. University of Maine, Orono. 2000. 36 pp plus appendices.

**A Response to Sprawl: Designing Communities to Protect Wildlife Habitat and Accommodate Development*. Maine Environmental Priorities Project. July 1997. 23 pp.

A Review of the Scientific Literature on Riparian Buffer Width, Extent, and Vegetation. Seth Wenger for the Office of Public Service & Outreach, Institute of Ecology, University of Georgia. Revised version March 5, 1999. Website: http://outreach.ecology.uga.edu/tools/buffers/lit_review.pdf. 59 pp.

A Study of the Impact of Game and Non-game Species on Maine's Economy. Staff Paper No. 423, Department of Agricultural and Resource Economics, University of Maine, Orono.

**Conserving Wildlife in Maine's Developing Landscape*. Maine Audubon Society, Spring 2000. 8 pp.

Conservation Options: A Guide for Maine Landowners. Maine Coast Heritage Trust. 30 pp.

The Economic Arguments for Conservation. Maine Audubon Society. 4 pp.

Gulf of Maine Watershed Habitat Analysis. Arnold Banner. U.S. Fish & Wildlife Service, Gulf of Maine Coastal Program. 2001. Website: r5gomp.fws.gov/gom/habitatstudy/Gulf_of_Maine_Watershed_Habitat_Analysis.htm.

Integrating Wildlife Habitat into Local Planning: A Handbook for Maine Communities. Sharri Venno. May 1991. 54 pp.

Literature Synthesis of the Effects of Forest Management Activities on Riparian and In-stream Biota of New England. C.S. Loftin, M.S. Bank, J.M. Hagen and D. Seigel. University of Maine Cooperative Forestry Research Unit Report 01-01, Maine Agricultural and Forest Experiment Station Misc. Report 425. 78 pp.

Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances. Seth J. Wenger and Laurie Fowler. Carl Vinson Institute of Government, University of Georgia. 2000. Website: www.cviog.uga.edu/pprs/streams.pdf. 68 pp.

Riparian Buffers for the Connecticut River Valley (ten fact sheets). Connecticut River Joint Commissions of NH & VT. September 2000. Website: www.crjc.org/riparianbuffers.htm.

**The Cost of Sprawl*. Maine State Planning Office, May 1997. 20 pp.

Threatened and Endangered Species in Forests of Maine: A Guide to Assist with Forestry Activities. Maine Natural Areas Program and Champion International Corporation. 175 pp.

Valuing the Nature of Maine: A Bibliography Prepared by Maine Audubon Society, May 1996. 18 pp.

Watching out for Maine's Wildlife. Maine Audubon Society.

**What Conservation Looks Like in Maine: Tools to Build a Future for Our Woods, Waters, and Wildlife*. Maine Audubon Society. 4 pp.

***A copy is included in the Beginning with Habitat binder at your town office.**

Resources: Agencies/ Organizations

Following is a list of organizations and agencies that can provide additional help to you and your town with data interpretation and use and habitat conservation. Each organization or agency has different expertise to offer as it relates to conservation of open space.

Organization/Agency	Primary Expertise
Maine Dept. of Inland Fisheries & Wildlife 284 State Street 41 State House Station Augusta, Maine 04333-0041 207-287-5252 *email:* mark.stadler@state.me.us *web site:* mefishwildlife.com *contact:* Mark Stadler	➢ Wildlife inventory and data management ➢ Regulatory oversight of Significant Wildlife Habitat & Essential Habitat ➢ Regional field knowledge ➢ Information on natural history and conservation of animals
Maine Department of Conservation Maine Natural Areas Program 93 State House Station Augusta, Maine 04333-0093 207-287-8046 *email:* maine.nap@maine.gov *web site:* www.state.me.us/doc/nrimc/mnap *contact:* Emily Pinkham	➢ Natural community and rare plant inventory and data management ➢ Technical assistance to landowners, towns, and land trusts ➢ Conservation planning and environmental review ➢ Invasive plant species identification and control

Organization/Agency	Primary Expertise
Maine State Planning Office 184 State Street 38 State House Station Augusta, Maine 04333-0038 207-287-3261; 1-800-662-4545 *email:* elizabeth.hertz@state.me.us *web site:* www.state.me.us/spo *contact:* Elizabeth Hertz	➢ Comprehensive planning ➢ Smart growth policy development and workshops ➢ Networking with local and regional planners ➢ Land use planning ➢ Wetlands conservation plan
Maine Audubon Society 20 Gilsland Farm Road Falmouth, Maine 04105 207-781-2330 *email:* info@maineaudubon.org *web site:* www.maineaudubon.org *contact:* Barbara Charry	➢ Outreach and education about impacts of sprawl on wildlife ➢ Landowner incentives ➢ Conservation planning
U.S. Fish & Wildlife Service Gulf of Maine Coastal Program 4R Fundy Road Falmouth, Maine 04105 207-781-8364 *email:* fw5es_gomp@fws.gov *web site:* gulfofmaine.fws.gov *contact:* Bob Houston	➢ Oversight of federal trust species ➢ Habitat modeling ➢ Funding for land protection
Regional Planning Commissions Contact Maine State Planning Office for the name and address of your town's regional council: **Maine State Planning Office** (address and phone above) *web site:* http://www.state.me.us/spo/cpip/regional/region.htm	➢ Comprehensive planning ➢ Drafting local ordinances ➢ Regional planning ➢ Databank ➢ GIS capabilities

Organization/Agency	Primary Expertise
Wells National Estuarine Research Reserve 342 Laudholm Farm Road Wells, Maine 04090 207-646-1555 *email:* tsmith@wellsnerrcec.lib.me.us *web site:* www.wellsreserve.org *contact:* Tin Smith	➢ Watershed protection in southern Maine ➢ Technical and communications support for land trusts and Conservation Commissions in southern Maine ➢ Local conservation lands mapping
The Nature Conservancy Fort Andross, Suite 401 14 Maine Street Brunswick, Maine 04011 207-729-5181 *email:* bvickery@tnc.org *web site:* www.nature.org *contact:* Barbara Vickery	➢ Conservation planning ➢ Land protection
Maine Coast Heritage Trust Bowdoin Mill 1 Main Street Topsham, Maine 04086 207-729-7366 *email:* info@mcht.org *web site:* www.mcht.org	➢ Local land trust support ➢ Land protection advice
Maine Cooperative Fish and Wildlife Research Unit University of Maine 5755 Nutting Hall, Room 210 Orono, Maine 04473 207-581-2870 *email:*wkrohn@umenfa.maine.edu *website:*www.wle.umaine.edu/progs/unit/	➢ GAP Analysis ➢ Land Cover & Habitat Use ➢ Mapping and Analysis

Appendix

Land Trust Assistance Project

Maine Audubon Society, Maine Coast Heritage Trust,
Maine Department of Inland Fisheries and Wildlife,
Maine Natural Areas Program (Maine Department of Conservation)

Please note: The Beginning with Habitat booklet was developed principally to guide municipalities in their land use planning efforts. However, much of the information and ideas presented are equally valuable and useful to local land trusts. A parallel effort to bring data and conservation planning assistance to local land trusts actually began before outreach to towns began. Following is a brief overview of that effort. We urge land trusts and towns to work cooperatively whenever possible to achieve common conservation goals.

Goal:

The project goal is to conserve high value habitat in southern and coastal Maine by integrating important natural resource information into on-going land trust planning and protection efforts. Conserving the complete array of species through habitat conservation will also keep species of concern from becoming endangered or threatened. Thus, this project aims to minimize further additions to rare species lists and contribute to the conservation of all of Maine's native plants and animals.

Geographic Coverage:

With an initial grant from the Maine Outdoor Heritage Fund, this project was begun in 1999 with land trusts in mid-coast and central Maine. In 2001 the project moved to southern Maine (York and Cumberland Counties), and in 2003 land trusts in Downeast Maine will be visited. Land trusts are chosen for participation based on significance of ecological features and capacity of the land trust to implement conservation measures. As of December 2002, more than 30 land trusts had participated.

Background and Urgency:

Southern and coastal Maine support the highest level of species diversity in the state. These areas are also the most desirable for development, and increasing land use pressures are creating a checkerboard of non-contiguous habitat for wildlife. In 1996 the Maine Environmental Priorities Project (MEPP) concluded that "patterns of development throughout southern and coastal Maine and in riparian zones statewide seriously threaten some species and some rare and critical habitats as well as the overall productivity of Maine's terrestrial ecosystems." Moreover, an alarming proportion of this development is occurring along scenic and ecologically-sensitive habitats such as wetlands and waterbodies. Although land trusts are dedicated to preserving habitat, they rarely have the ecological information with which to make sound conservation planning decisions.

Methodology and Data:

During the past three years, the Maine Natural Areas Program and the Maine Department of Inland Fisheries and Wildlife have conducted surveys of high value habitats supporting rare species and outstanding natural communities in the southern and midcoast regions. A protocol was subsequently developed to use this information to identify ecologically significant **focus areas** considered of statewide significance by the two state agencies. Because of the statewide significance not all towns have a focus area.

Products:

- **Maps** show important natural resources in a three-tiered approach: (1) special habitats such as rare species locations and wading bird habitats, (2) wetlands and riparian areas, and (3) large unfragmented habitat blocks. Digital data are also made available upon request.
- **Presentations** by partner organizations describe the effects of development on wildlife, inform the land trust about ecological features, and provide guidance on how to use the information.
- **Written materials** describe the ecological features present and outline conservation considerations.
- **Other supporting documents** include the State Planning Office's *The Cost of Sprawl*, the Maine Environmental Priorities Project's *Designing Communities to Protect Wildlife Habitat and Accommodate Development*, the Maine Coast Heritage Trust's *Open Land, Development, Land Conservation and Property Taxes in Maine's Organized Municipalities*, and Maine Audubon's *Conserving Wildlife in Maine's Developing Landscape*, *Valuing the Nature of Maine*, *What Conservation Looks Like in Maine*, and an annotated bibliography of the impacts of development on wildlife.
- **Follow-up Support:** GIS (Geographic Information System) technical support is provided to land trusts by Maine Audubon on an as needed basis in the form of fundraising or conservation planning maps. Land protection assistance is available from the MCHT.