

MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

Roland D. Martin, Commissioner

Wildlife Division
Research & Management Report
2009

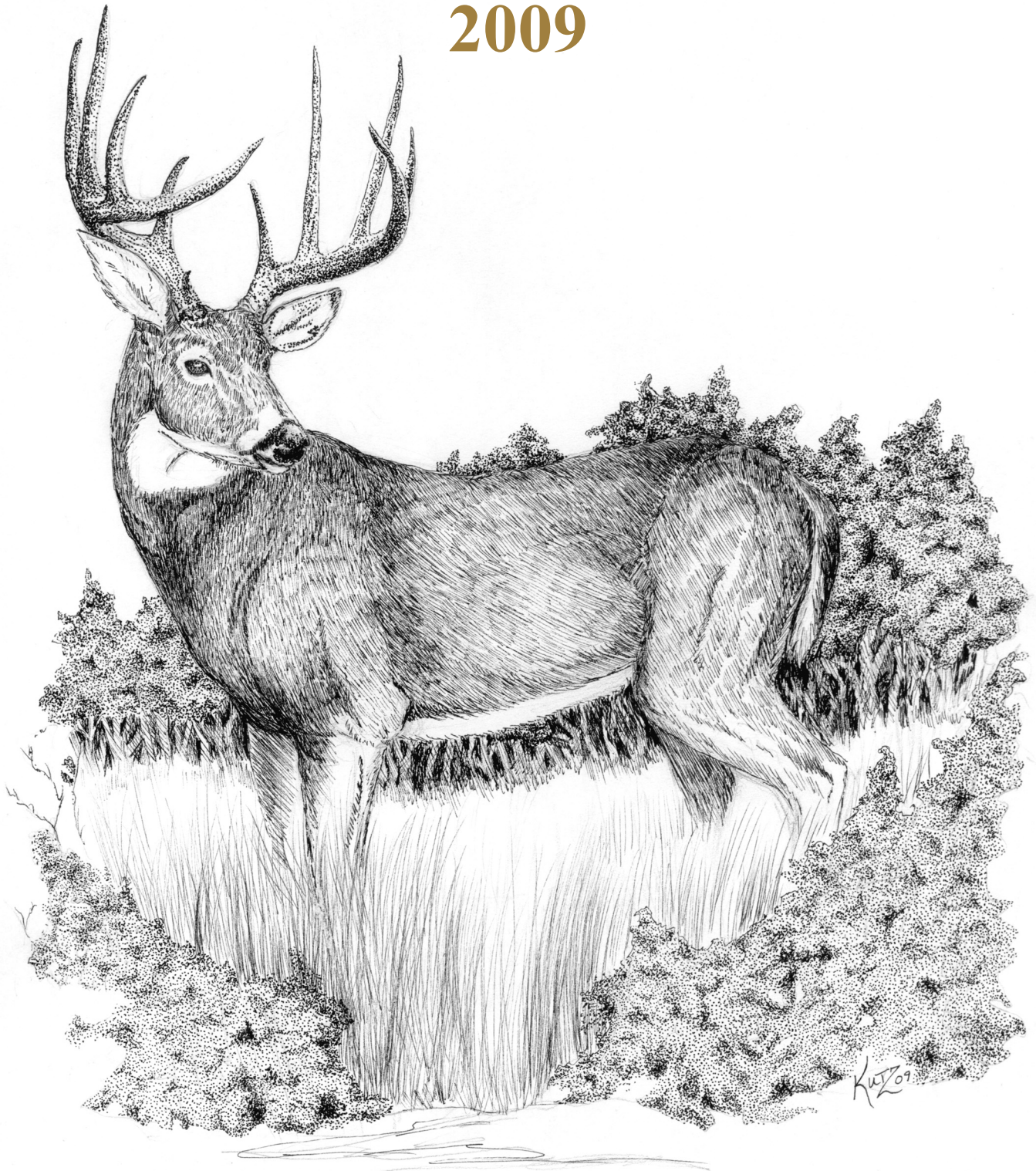


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DO YOU SUPPORT MAINE'S SPECIAL PLACES AND ITS WILDLIFE?



When you put a Maine Loon License Plate on your vehicle, you're showing your support for Maine's special places and its wildlife. Created by the Maine State Legislature in 1993, the loon plate directly benefits the Maine Department of Inland Fisheries and Wildlife (MDIFW) and funds the management of endangered and nongame wildlife; the purchase of a loon license plate also funds important projects and programs of the Bureau of Parks & Lands, under the Maine Department of Conservation.

Loon plate funds play a crucial role in the success of MDIFW's wildlife conservation programs for endangered, threatened, rare, and nongame wildlife -- and the Department has achieved significant accomplishments: recovery and "delisting" of the bald eagle, management for least terns and piping plovers, research on Canada lynx, statewide surveys of rare birds, mammals, amphibians, reptiles, and invertebrates, and publication of books and posters about Maine's wildlife, to name a few. Loon plate funds play an important role in obtaining matching federal funds through the Endangered Species Act, the State Wildlife Grant Program, and the Landowner Incentive Program.

If you already own a loon plate – thank you! If you don't, please ask for one the next time you register your vehicle at your town hall or motor vehicle office. For every \$20 spent on a new loon plate \$8.40 goes to BP&L; \$5.60 goes to MDIFW; and \$6 to the Bureau of Motor Vehicles. Loon plate renewals are \$15.00.

Throughout the pages of the 2009 Research & Management Report, you will read what the Department accomplished this past year to conserve Maine's wildlife. Much of the work to conserve endangered, threatened, rare, and nongame is made possible by loon plate funds. [Follow the URLs below to track down more loon plate accomplishments.]

www.myloonplate.com

www.maine.gov/ifw/wildlife/species/endangered_species/nongame_fund.htm#loonplate

I believe we can all be proud of Maine's state-of-the-art, scientific wildlife management programs, which are formulated with public participation.

In closing, I thank you for your interest, support, and participation in the conservation of Maine's wildlife. The Wildlife Division looks forward to working with you to meet the challenges of the coming years. Here's to informative, and I trust, enjoyable reading!



--G. Mark Stadler
Director, Wildlife Division

To request this attractive Loon Conservation Plate Bumper Sticker, please email your name, mailing address, and the number of stickers you would like to receive to karen.estabrook@maine.gov. Stickers also are available at MDIFW headquarters and regional offices.

These studies are financed in part through Federal Aid in Wildlife Restoration Funds under Projects 81D, 82R, and 83C, and through the Endangered Species Conservation Act.

The Department of Inland Fisheries and Wildlife receives Federal funds from the U.S. Department of the Interior. Accordingly, all Department programs and activities must be operated free from discrimination in regard to race, color, national origin, age or handicap. Any person who believes that he or she has been discriminated against should write to The Office of Equal Opportunity, U.S. Department of the Interior, Washington, D.C.



FUNDING MAINE'S WILDLIFE PROGRAMS

Funding for wildlife management comes from many different sources. Most of our work with game animals and furbearers, many of the salaries, and most of the administrative costs of the Wildlife Division, are funded by hunting license revenues, which are matched by federal Pittman-Robertson Funds (based on an 11% excise tax on sporting arms, ammunition, and archery equipment, and a 10% excise tax on handguns).

Funding for other species comes from a variety of sources. In addition to State Wildlife Grants, a recent Federal program based on Maine's Wildlife Action Plan http://www.maine.gov/ifw/wildlife/groups_programs/comprehensive_strategy/index.htm, a large portion of the funds also comes from the sale of hunting licenses and permits. Other sources of money include "Section 6" funds from the US Fish and Wildlife Service for the recovery of threatened and endangered species, the Oil Spill Conveyance Fund, contributions to the **Nongame and Endangered Wildlife Fund** ("Chickadee Check-off"), and purchases of **Conservation License (Loon) Plates**. Some of these funds are used as match to obtain federal funds.

Some people are unaware of the contribution hunters and trappers make toward the conservation of rare, threatened, and endangered wildlife. Also, you may be surprised to know that many of the financial supporters of the endangered species program are also sportsmen who are committed to the conservation of all Maine's wildlife. **Wildlife belongs to all of the people of the state**, and sportsmen's dollars can't be expected to do it all.

Stable funding to address wildlife programs is desperately needed. Contributions to the Chickadee Check-off, Conservation Registration plates (Loon Plates), and the Maine Outdoor Heritage Fund provide the core "State" funding for Maine's nongame and endangered species programs; however, the many conservation needs exceed the funds contributed...and contributions are declining (Table 1). All money donated, whether through the Chickadee Check-off, Conservation License (Loon) Plates, grants, or direct gifts, are deposited into the Maine Endangered and Nongame Wildlife Fund - a special, interest-bearing account from which money can only be spent for the conservation of Maine's nongame wildlife, includes rare, threatened or endangered species.

Given our limited financial resources, Maine can be proud of the accomplishments made for nongame and endangered wildlife in the last 20 years. We thank those of you who buy a Loon Plate, participate in the Chickadee Check-off, or purchase a Maine Outdoor Heritage Fund lottery ticket. Your voluntary support and generosity deserves a special "thank you." **We are all working hard to keep Maine a special place.** Take pride in your accomplishments - and please, as you fill out your tax return next year or register your car, join with us again in conserving Maine's wildlife diversity!

Table 1. A history of income derived from the "Chickadee Check-off," Loon Plate, and Maine Outdoor Heritage Fund to benefit nongame and endangered wildlife programs.

Year	Chickadee Check-off				Loon License Plate		Maine Outdoor Heritage Fund	
	Total Given	Number of Givers	Average Donation	Percent of Taxpayers Giving	Income to MDIFW	Number of Registrations	Income to MDIFW	Number of Projects Funded
1984	\$115,794	25,322	\$4.57	5.3%				
1985	\$129,122	29,200	\$4.42	6.0%				
1986	\$112,319	26,904	\$4.17	5.4%				
1987	\$114,353	26,554	\$4.31	5.2%				
1988	\$103,682	24,972	\$4.15	4.8%				
1989	\$93,803	20,322	\$4.62	3.6%				
1990	\$88,078	18,332	\$4.80	3.2%				
1991	\$92,632	19,247	\$4.81	3.4%				
1992	\$95,533	18,423	\$5.18	3.2%				
1993	\$82,842	15,943	\$5.20	2.8%				
1994	\$84,676	10,863	\$7.79	2.0%	\$335,042	59,829		
1995	\$81,775	10,014	\$8.17	1.8%	\$457,307	81,662		
1996	\$90,939	11,024	\$8.25	2.0%	\$535,679	95,657	\$112,232	3
1997	\$77,511	8,686	\$8.92	1.5%	\$588,364	105,065	\$133,971	5
1998	\$48,189	4,065	\$11.85	0.7%	\$617,484	110,265	\$184,109	7
1999	\$47,908	3,775	\$12.69	0.7%	\$569,610	101,716	\$121,436	5
2000	\$44,496	3,297	\$13.50	0.6%	\$499,486	89,194	\$323,884	11
2001	\$49,348	3,713	\$13.29	0.6%	\$458,057	81,796	\$148,408	5
2002	\$50,412	3,661	\$13.77	0.6%	\$446,342	79,704	\$172,191	8
2003	\$55,348	3,792	\$14.60	0.6%	\$425,147	75,919	\$184,129	5
2004	\$43,158	3,234	\$13.35	0.6%	\$402,695	69,615	\$234,126	10
2005	\$36,769	2,931	\$12.54	0.5%	\$381,948	67,814	\$154,656	7
2006	\$36,865	2,924	\$12.60	0.5%	\$367,791	65,677	\$116,121	6
2007	\$37,209	2,852	\$13.04	0.5%	\$355,180	63,425	\$141,526	6
2008	\$34,929	2,757	\$12.67	0.4%	\$333,536	59,560	\$141,059	7

Our most pressing need is a stable and adequate source of funding for all of our programs. The Association of Fish & Wildlife Agencies evaluating the Department and the Wildlife Division recognized this need in a report. In 2001, the Citizens' Advisory Committee identified several possible sources of funding – here are a few of those ideas to consider:

- That the Constitution of Maine be amended to require that at least 1/8 of one percent of the State Sales Tax be dedicated to fish and wildlife conservation programs to be distributed to the various state agencies that administer those programs.
- That the share of state gas tax revenues distributed to state agencies for operation of boating, ATV and snowmobile and related programs should be at least equal to the portion of the gas tax revenues generated by watercraft and recreational vehicle gas sales.
- That every 4 years hunting and fishing license fees should be reviewed by the Legislature and adjusted as appropriate to reflect the cost of providing hunting and fishing-related services.
- That the Maine Income Tax return be revised to restore the Chickadee Check-off to the main part of the tax form.

What do you think about these ideas? Your support to establish a stable funding source to continue the work of the Wildlife Division is appreciated.

–Richard L. Dressler
Supervisor, Wildlife Resource Assessment Section

There's something wild lurking on your tax return!



Give a gift to
wildlife this year -
put a check with
the chickadee!



*Next time you are in your local super market
or convenience store, please buy an*

OUTDOOR HERITAGE FUND LOTTERY TICKET!!



WILDLIFE HABITAT PROTECTION AND CONSERVATION

HABITAT CONSERVATION AND SPECIAL PROJECTS

Landowner Incentive Program

Private landowners are integral to the conservation of our wildlife heritage and natural resources and are often committed in principle to stewardship of endangered or threatened species, but the lack of financial and technical incentives has limited the scale of long-term conservation.

The Landowner Incentive Program (LIP) is a competitive grant program to support collaborative efforts to partner with private landowners to cultivate and fund conservation opportunities for critical habitats in the state. Since its inception in 2004, Maine has received more than \$3 million for long-term habitat protection of rare and endangered species. Unfortunately, the program was short-lived (last year Congress eliminated the LIP program from the FY 2008 budget); yet Maine continues to use its remaining LIP funds to bolster efforts to recover at-risk species occurring on private lands.

Habitat Protection in Species-at-Risk Focus Areas

Southern and coastal Maine has the highest level of plant and wildlife species diversity in the state including the highest numbers of populations of rare plant and animal species. Unfortunately, this area is one of the most desirable for development, and increasing development is leading to habitat fragmentation and loss. Within this area the State of Maine has been working to identify at risk plant and animal populations and the habitats they need to remain viable. The result of this effort is a mapped suite of species-at-risk focus areas. These areas include assemblages of the best examples of rare species populations and high quality natural habitats in Maine. LIP funds are being used to acquire conservation easements to preserve viable populations of rare plant and animal populations within species-at-risk focus areas.

Significant time was spent this past year on 4 previously funded easement projects, three of which (Sheble Farm, Delano tract, and Weary property) closed during this period.

Unity Wetlands – Sheble Farm, Town of Unity, Waldo County

This project protects 45.5 acres under conservation easement on a strategically located parcel in Unity, Waldo County. The Sheble property is on the edge of a 10,194 block of undeveloped land that includes Fowler Bog, a 700-acre acidic fen considered an exemplary natural community by the Maine Natural Areas Program. Across from the Sheble Farm is Kanokolus Bog, a 300-acre raised level bog, a type that is rare in south-central Maine.

Greater Brave Boat Harbor and Gerrish Island - Delano Tract, Town of Kittery, York County

Located on the southernmost tip of Maine, this 378-acre property borders the Atlantic Ocean and protects the following species and habitats: spotted turtles (State Threatened), scarlet oak and spotted wintergreen both listed as endangered, and spicebush listed as a species of concern.

Lower Sheepscot River – Weary Tract, Town of Newcastle, Lincoln County

This project conserves 210 acres of forest land and approximately 6,856 feet of shoreline on the Sheepscot River in Newcastle, which provides important habitat for spongy arrow-head, mudwort, horned pondweed, and pygmyweed all listed as Species of Concern in Maine. Two Bald Eagle nests are located downstream on the river, and eagles are commonly seen in the area. Additionally, the Sheepscot River is one of only eight rivers in Maine with remnant populations of genetically distinct wild Atlantic salmon. Permanent protection from development and the requirement of a conservation management plan will ensure the protection of this diverse area.

Upper Saco River – Russell Tract, Town of Fryeburg, Oxford County

The Pleasant Pond Floodplain Forest Conservation Easement will prevent development of a 558-acre area of privately-owned forest floodplain habitat while keeping the land in responsible forest management and allow recreational uses. The floodplain portion of the property contains 90% of the state's best sites for the globally rare Long's bulrush. These open fens are surrounded by a broad buffer of protective silver maple floodplain forest, itself a rare natural community in the state. Additionally, four species of rare dragonflies are associated with the floodplain ecosystem on nearby sites, and rapids clubtail has been recorded on the site.

Landowner interest and need for conservation funding for at-risk species remains strong, as evidenced by the number of unfunded requests. The 2008 round of funding saw requests for funding exceeding \$2.1 million and leveraging an additional \$4.7 million. The LIP Steering Committee allocated \$817,990 to 8 additional focus area projects that will conserve 2,571 acres of habitat for at-risk plants and animals.

Bald Eagle Habitat Conservation

Funds were awarded to help cover the transaction costs of a conservation easement on a property supporting bald eagle habitat. The project is expected to close in 2011.

St. George River and Associated Ponds - School House Farm, Warren, Knox County

Located on the western shore of the St. George River in Warren and with road frontage on Route 1, this 55-acre project sits on a stretch of the St. George River that is a productive estuary, bordered by 300 acres of tidal salt marshes and mud and sand flats. The river valley here is broad and the shoreline is remarkably undeveloped, despite its proximity to state highway Route 1.

This property has significant resource values including bald eagle activity, waterfowl and wading bird habitat, and farmland soils of statewide importance. These values are shared directly with the property to the north that is now under conservation easement with the Georges River Land Trust. Together, under easement, these two properties, comprising 123 acres will effectively demonstrate private conservation and stewardship of significant wildlife and habitat values, while continuing agricultural and related residential use.

Conserving Priority Shorebird Nesting, Feeding, and Roosting Areas

Funds were awarded to purchase a conservation easement protecting priority shorebird areas. This project is expected to close in 2009.

Pleasant Bay Focus Area - Long Creek Point, Addison, Washington County

This project is designed to permanently protect Long Creek Point, a 60.6 acre parcel in Long Cove on the east side of Pleasant Bay that includes 11.8 acres of forested upland, 49.5 acres of associated estuarine intertidal salt marsh and mudflats, and 1,954 feet of fringing salt marsh and coastal mudflats that are identified by MDIFW as High Value Feeding and Roosting Shorebird Habitat and High Value Tidal Waterfowl and Wading Bird Habitat. Additionally, the expansive intertidal wetlands that dominate Long Cove have been identified as one of the Top Twenty Shorebird Areas in the state.

MDIFW shorebird surveys have documented 11 species of shorebirds in the Western Bay – Machias Shorebird Management Unit. Long Cove supports 18% of the Willets feeding in the unit and averages over 240 peeps feeding in the area. The roost also supports 22.9% of the Semipalmated Plovers in the Western Bay - Machias Shorebird Unit.

For more information on Maine's Landowner Incentive Program go to <http://www.mainenaturalareas.org/docs/lip/>.

--Sandy Ritchie
Habitat Conservation and Special Projects Wildlife Biologist



Beginning with Habitat Adapting to Climate Change

For seven years now, the Beginning with Habitat (BwH) program has provided plant and animal habitat information to land trusts and towns to assist with local conservation planning decisions. Since the completion of Maine's State Wildlife Action Plan (SWAP) in 2005, BwH has served as a primary means of SWAP outreach to local decision makers. Data has been presented with ideas for tools that would result in local plans necessary to conserve a functional network of lands to support Maine's rich biodiversity and recreational opportunities 50 years from now and beyond. But what about the wild card that is climate change? Does the BwH model address habitat needs under a scenario of increasing temperatures, shifting precipitation patterns, and rising high tide lines?

The changing climate is predicted to bring significant changes to our physical environment over the next century even if we all commit to significantly cutting green house gas emissions over the next few years. Green house gas contributions since the industrial revolution have already resulted in changes to USDA Plant Hardiness Zones, arrival dates of migrating birds, spring weather patterns, and higher high tide lines. One future effect of climate change that most everyone can agree on is that such changes will persist for many decades. Planning proactively now to ensure greater habitat resilience in the future has never been more important.

The BwH coalition has been working diligently on a number of fronts to improve the utility of the BwH program in addressing local climate change adaptation planning. These efforts are being lead by the BwH Steering Committee's involvement with a climate change adaptation amendment to Maine's State Wildlife Action Plan that will more clearly identify priorities for local consideration when developing habitat climate change adaptation plans at the municipal or land trust level. This process is addressing the following issues concurrently in order to develop robust guidance for conservation partners throughout the state.

Step 1: Identify What is at Risk

MDIFW species specialists are currently working with the Maine Natural Areas Program, USFWS Gulf of Maine Project, The Maine Nature Conservancy, and Manomet Center for Conservation Science in developing a species vulnerability assessment that will identify SWAP Species of Greatest Conservation Need, state listed rare plants, and SWAP habitat types most vulnerable to expected changes in temperature, precipitation, sea level rise, and non-native species presence brought about as a result of climate change. Once complete, this assessment will inform SWAP priorities including focus area designations and BwH outreach efforts at the local level.

Step 2: Map Terrestrial Habitat Connectivity

We do not know what exactly Maine forests or other natural communities will look like in the future as species shift their ranges in response to changing temperatures and precipitation patterns. One thing we can control is how permeable our built landscape will be. By planning for undeveloped "green belts", or habitat corridors that connect core habitat blocks, we can better support gradual species range shifts through and around developed areas. BwH Steering Committee partners: The Nature Conservancy and Maine Audubon have taken the lead in modeling habitat connections at the statewide, regional and local levels. With species-specific input from MDIFW biologists, the results of this effort will be instrumental in planning now for a landscape that will be functional long into the future.

Step 3: Maintain Aquatic Habitat Connectivity

It is more critical now than ever that we take a close look at how infrastructure is sized to handle storm flows. How are culverts and similar road crossing structures sized and installed? Do they adequately protect Maine's economically important fisheries? Forecasts for climate change altered precipitation patterns are expected to include lower stream flows in summer months and increased storm flows in winter and spring. The fragmentation of stream and other wetland connectivity as a result of road crossing structures that limit species upstream passage is a major contributing factor to the declining status of many of Maine's aquatic Species of Greatest Conservation Need. Utilizing proper designs to handle future events will not only provide habitat benefits, but will offset future replacement costs. While MDIFW fisheries staff continues to identify priority aquatic habitats and potential for stream connectivity restoration, BwH partners at the Maine Department of Transportation are working on a "how to guide" for local road commissioners to better size and install water crossing structures.

Step 4: Protect Undeveloped Low-lying Coastal Areas

Saltmarshes, dunes, tidal flats, and other coastal floodplain habitat types will need space to migrate inland as sea level rises. These habitats support many of Maine's Species of Greatest Conservation Need, and also provide coastal towns with protection from storm surge and related flooding. Strategic planning to protect remaining, undeveloped low elevation uplands adjacent to coastal wetlands is likely our best bet for allowing these habitat types to migrate inland with the shifting high tide line. Currently, the Maine Natural Areas Program is working to identify opportunities for conservation of lands that could potentially support future coastal marshes. This information will be used by BwH to assist coastal communities in future open space prioritization efforts.

Step 5: Retain Examples of Habitat Diversity

As a result of incremental changes in land use, rare natural community types and habitat conditions for already rare plant and animal species have become increasingly sparse on the landscape. The potential for these species and communities to respond to the changing climate is gradually lost. Many uncertainties remain in our ability to predict how species will adapt to climate change, but making choices now that at least provide for today's diversity on the landscape will better the chances for rare, threatened and endangered plant and animal species to adapt to increasing challenges in the future.

--Steve Walker

Beginning with Habitat Program Coordinator

WILDLIFE HABITAT GROUP

The Wildlife Habitat Group creates, maintains, and distributes spatial (mapped) information about wildlife and their habitats. This data is used by MDIFW staff and by other agencies and organizations for conducting environmental reviews, research, and landscape planning. Although our Group is located within the Wildlife Resource Assessment Section, we work with staff throughout the agency. The Habitat Group consists of:

Donald Katnik, Habitat Group Leader, GIS Specialist, and Wildlife Biologist - Supervises Group activities and coordinates habitat-related projects with other Division and Department staff and other State and Federal agencies.

MaryEllen Wickett, Wildlife Biologist and Programmer/Analyst - Develops computer applications to facilitate access to habitat data by IF&W staff and other users. Provides technical support and habitat data analyses for landscape planning efforts and development of species habitat models.

Amy Meehan, Wildlife Biologist and GIS Specialist - Collects wildlife habitat data from Regional Wildlife Biologists and others. Creates and maintains computer databases. Conducts field inventories of wildlife habitat and provides GIS support for a variety of projects.

Jordan Bailey, Oil Spill Biologist - Coordinates oil spill response planning efforts for the Division, including sensitive area identification and wildlife rehabilitation plan design and implementation.

Tara King, Wildlife Biologist and GIS Specialist - Develops, maintains, and analyzes databases of wildlife observations and habitat. Provides assistance to other Division biologists to assess species habitats on a statewide basis.

Jason Czapiga, Cartographer - Supports *Beginning with Habitat* program by generating maps, creating and maintaining GIS data, and assembling packages of habitat information.

WILDLIFE HABITAT PROGRAMS

Wetland Revisions for NRPA and Shoreland Zoning

The Habitat Group completed an update of wetland data used for shoreland zoning and natural resource protection by the Maine Department of Environmental Protection for all organized towns in Maine. MDIFW maintains a GIS database of "Inland Waterfowl and Wading Bird Habitats" (IWWH), which are protected under Maine's Natural Resources Protection Act (www.maine.gov/dep/blwq/docstand/nrpapage.htm). Wetlands were mapped from high-resolution aerial imagery from both spring and fall seasons, then rated by wetland type, habitat diversity, acreage, habitat interspersion, and percent of open water. IWWHs with at least 10 acres of vegetated, non-forested wetlands qualified for resource protection under Shoreland Zoning (www.maine.gov/dep/blwq/docstand/szpage.htm). The mapped boundaries and ratings of IWWHs regulated under NRPA can be modified based on a field visit by an MDIFW biologist. Shoreland zoning boundaries, however—which must be incorporated into each town's zoning plan, cannot be changed once the maps have been made.

Development Mapping Update

The Beginning with Habitat program (<http://www.beginningwithhabitat.org>) received a \$250,000 grant from EPA in May 2007 to map development in organized towns. The project is creating a "before" picture (2004) and a "current" picture (2007). Habitat Group is working with a contractor (The Sanborn Mapping Co.) to create the development data (roads, buildings, and parking lots) from color aerial imagery. Data creation will continue through 2009. In spring 2010, the new data will be incorporated into the Beginning with Habitat map products.

Endangered, Threatened, and Special Concern Species

Each year MDIFW species specialists collect observations of Endangered, Threatened, or Special Concern (ETSC) species. These locations previously were mapped just as points (the actual spot where the species was observed or the approximate center of the habitat patch). These point locations were then provided to NatureServe's Natural Heritage Program. However, Species Assessment and Management Plans and legislative mandates such as reviewing environmental permit applications would benefit greatly from having the actual habitat boundaries mapped for each ETSC observation. This year the Habitat Group worked with MDIFW species specialists to build a database parallel to NatureServe's *Biotics*. The new ETSC database allows multiple polygons representing the primary habitat, secondary habitat, and environmental review area to be recorded for each observation. Habitat Group staff are working species-by-species to map these polygons for existing observations. The ETSC database was designed to be compatible with *Biotics* so data collected in the future can continue to support the Natural Heritage Program.

Protecting Wildlife From Oil Spills

Petroleum Products and Wildlife Response in Maine

Most residents of Maine do not realize the volume of petroleum products moving within the state on a daily basis. The Port of Portland alone has handled up to 8 million gallons of petroleum products in one year! In the event of an oil spill, MDIFW wants to be prepared to act quickly and efficiently to minimize the damage to wildlife. MDIFW's roles in spill response include recovering and rehabilitating oiled wildlife, preventing un-oiled wildlife from becoming oiled, assessing damage to natural resources, and working with the responsible party to either restore the damaged natural resources or to mitigate for the loss. In the event of a spill that damages natural resources, we work closely with the other state natural resource trustee agencies (Maine's Department of Environmental Protection, Department of Conservation, and Department of Marine Resources), as well as federal natural resource trustee agencies (U.S. Fish & Wildlife Service and National Oceanographic & Atmospheric Administration) to mitigate these damages.

Spill of National Significance 2010

During the week of March 22, 2010, a Spill of National Significance drill will be launched in southern Maine. This drill will simulate a catastrophic oil spill off the coast of Maine, similar in scope to Alaska's Exxon Valdez spill of 1989. This drill is a test of federal and state oil spill response capabilities and will cover the entire range of oil spill issues encountered during a real event from wildlife response to public relations, just to name a few. MDIFW has been participating in the design process for this drill and is looking forward to showcasing our wildlife response capabilities during this drill.

Oiled Wildlife Volunteer Network- VOLUNTEERS NEEDED!

In April 2009, our Oil Spill Program hosted two volunteer days to train those interested in learning about oiled wildlife response and rehabilitation. In the future, we hope to offer at least one training a year for new volunteers or current volunteers wanting a refresher. Volunteers are a critical component of an oil spill involving wildlife. People will be needed for tasks ranging from washing oiled wildlife to answering phones and doing laundry. MDIFW annually updates our volunteer list and notifies these active volunteers of upcoming trainings. If you are interested in being added to our mailing list, please contact our Oil Spill Wildlife Biologist at:

Jordan Bailey
Maine Department of Inland Fisheries and Wildlife
650 State Street
Bangor, ME 04401
Jordan.Bailey@maine.gov
207-941-4448

Note: MDIFW's Oil Spill program is funded by the Inland and Coastal Surface Oil Spill Clean Up Fund, which is a dedicated fund maintained by a per-barrel fee assessed on all petroleum products entering the state. This fund is administered by the Maine Department of Environmental Protection.

--Donald Katnik



WILDLIFE MANAGEMENT SECTION

The regional wildlife management staff of biologists is best described as the Wildlife Division's wildlife *generalists* or the "jack of all trades". The seventeen wildlife biologists who staff the Department's seven regional field offices constitute the majority of the Regional Wildlife Management Section (WMS). Their breadth of knowledge, activities, and job responsibilities range far and wide - often requiring the regional staff to juggle numerous public requests, inquiries, and wildlife management projects at the same time. In essence, the regional wildlife biologist represents the Department in a multitude of public participation arenas and serves as the "state's wildlife expert" within their assigned regional geographic area. They are responsible for implementing the Wildlife Division's management program within those regions.

After reading the WMS overview, you'll probably agree that wildlife management work covers a wide spectrum of possibilities. During a typical day's work, regional biologists might relocate a "lovesick" moose from a dairy farm before 10:00 am, review development proposals until noon, and work on wildlife management area plans for the remainder of the day (between coordinating nuisance beaver work and returning phone messages). Clearly, many of our activities could be lumped into the "response" category; that is, our services are requested and we respond. Of course, we also have a full schedule of planned work that needs to be accomplished during each season. So, having the proverbial 10 pounds of potatoes to fit into a 5-pound sack, we enthusiastically take advantage of opportunities to work more efficiently and proactively.

--John Pratte

Wildlife Management Section Supervisor

REGIONAL WILDLIFE MANAGEMENT

MANAGEMENT ACTIVITIES – AN OVERVIEW

Wildlife Management Areas

MDIFW has agreements or owns over 120,000 acres and over 300 coastal islands managed primarily for wildlife and are designated as Wildlife Management Areas (WMAs). These areas ensure publically accessible places for hunting, fishing, trapping and wildlife viewing opportunities along with protecting important habitats and sensitive wildlife species.

Over the past year, there has been significant activity in habitat management activities on the State's Wildlife Management Areas (WMA's). Working together, the Lands Management Program and Regional Wildlife Biologists maintain existing developments and structures on the wildlife management areas, such as roads, trails, bridges, buildings, signs, boundary lines, fences, and gates. The Division's dams, dikes, and levees also require periodic maintenance if they are to continue to provide high quality wetland habitats for a variety of wildlife.

Maintenance

Management of WMA's begins with maintaining and improving access points and boundary lines to minimize conflicts between users and abutting ownerships. Twenty-two miles of boundary lines on WMA's were maintained through signage, blazing, painting and clearing brush from the lines with another 24 miles identified for work during the current season. Access to the WMA's were maintained or improved, working with contractors and using in-house equipment to maintain approximately 48 miles of roads and trails. Additionally, 5 miles of roadway were constructed or re-built for increased public access and management opportunities.

Fields/Early Successional

Staff maintain fields on the WMAs to set back succession and maintain habitat diversity; plant grasses and clover for wildlife food and cover; release and prune wild apple trees. Generally, maintenance (mowing) of fields on WMA's is conducted on a biannual basis, and timed to occur after grassland bird nesting species have had a chance to fledge – usually mowing starts after mid-august. This past year, a total of 520 acres of fields were maintained via mowing by department staff and equipment through contracts developed with local providers and with volunteers. In addition to mowing, 13 acres of fields and openings were planted or otherwise improved through fertilizer and soil amendments to enhance and maintain productivity and attractiveness to wildlife. Nine acres of reverting fields are in the process of being reclaimed – efforts made in conjunction with the National Wild Turkey Federation and the Wildlife Habitat Incentive Program.

Open Water Wetlands

Another habitat type that is a key management consideration for MDIFW is open water wetlands. These systems are extremely productive from a wildlife standpoint, and makes up a substantial portion of the WMA's acreage. Water control structures are maintained by regional staff to maintain the ideal water level for maximum interspersion of open water, shrub, and emergent vegetation. In all, 8,300 acres are managed for this habitat provision on numerous flowages. Many of these areas are ideal waterfowl nesting sites and have many of the several hundred waterfowl nesting structures ("duck boxes") maintained by regional biologists each year.

Timber Harvesting

Timber harvesting operations for wildlife management objectives were accomplished on 550 acres. These activities focused on diversity enhancement cuttings through single tree and small group selections, as well as some more intensive early successional management to benefit species such as grouse, woodcock, hare, deer, bear and moose. Additional goals were to increase hard mast production as a food source and provide browse opportunities through regeneration and stump sprouts. This is most easily accomplished through the removal of poorly formed and less healthy individuals within the stand – the result is a healthier stand more capable of withstanding wind, disease and insect problems, as well as being able to provide better quality wildlife food and shelter for longer periods of time.

Acquisition

Acquisition opportunities were sought to enhance and protect the wildlife resources of the state where available and appropriate. Several grant and other funding sources were used to acquire over 850 acres throughout the state. A great example of this is the recently acquired Gervais property adjacent to our Scarborough Marsh WMA. The 46 acre parcel provides habitat for grassland bird nesting species, New England Cottontail, waterfowl, and numerous other species meeting the criteria of a high conservation priority under the State Wildlife Action Plan. The area is part of one of the original Focus Areas of Statewide Ecological Significance identified in Maine's Wildlife Action Plan. As with most acquisitions, this parcel was accomplished through a partnership of numerous organizations and grants awarded to MDIFW. Due to limited funding resources relative to the amount of quality habitat, the ability to work constructively towards conservation goals with other like minded organizations into the future will ensure the most successful attempts to complete the mandate of MDIFW to preserve, protect, and enhance the wildlife resources of the State of Maine.

Through the combination of these activities, the Wildlife Management Section has been managing the WMAs to maximize the resources available to wildlife found on the areas - whether that be grassland, forest, or wetland. This allows for the protection and enhancement of non-game wildlife species, the provision of sporting opportunities for game species, and the enhancement of many other recreational opportunities. If you haven't already, contact MDIFW or view the Department's web site to access information on where the WMAs are located and what you might find in visiting them.

--Ryan Robicheau
Lands Management Biologist

Wildlife Resource Assessments

WMS staff work with biologists of the Division's Wildlife Resource Assessment Section (WRAS) to conduct population surveys and inventories; they also assist WRAS biologists as they prepare wildlife species assessments and management systems. Other sections of this report describe these many activities.

Environmental Assessment

State and Federal environmental agencies, municipal governments, consultants, landowners, and businesses regularly ask regional biologists to assess the effect of development and changes in land use on wildlife or wildlife habitat. Over an average year, WMS biologists provide 1,900 such assessments as they worked with these various entities to encourage land-use decisions that are sensitive to the habitat needs of wildlife. This is demanding and sometimes controversial work - oftentimes resulting in land use decisions not altogether welcomed by the landowner.

While the number of requests has increased, the most notable change is the size and complexity of the projects staff are reviewing. We have seen a wave of new energy development technologies requiring staff to develop new review criteria and protocol to detect and measure potential wildlife impacts. We have also seen many project applicants request pre-application consultation meetings to incorporate wildlife needs/concerns during the project design phase rather than after they submit a plan to LURC or DEP. Just as the sophistication of project applicants and project design has increased dramatically, the WRAS staff continue to update our wildlife habitat data using new resources and protocols to provide more accurate and consistent data to all project applicants.

Animal Damage Control

Although wildlife has many positive attributes, it can, at times, become a nuisance or pose a hazard. It is the function of the Division's Animal Damage Control (ADC) program to address and remedy such problems. Wildlife biologists, game wardens, and over 200 registered ADC agents handle hundreds of nuisance wildlife complaints annually. Many complaints involve beaver plugging culverts or building dams which flood roads or other developments. The ADC program also responds to problems involving coyotes, bear, deer, moose, turkey, Canada geese, and numerous "house and garden" complaints involving raccoons, skunks, woodchucks, and squirrels.



Deer Wintering Areas

During the winter, when snow conditions force deer to "yard up" in softwood stands, WMS biologists conduct aerial surveys to locate and map deer wintering areas (DWAs). After biologists locate DWAs, they conduct ground surveys to assess the number of deer using the area and the characteristics of the wintering area's softwood cover. In Maine's unorganized towns, biologists use this information to develop long-term, cooperative management agreements with forest landowners; or they may present it to the Land Use Regulation Commission (LURC), which has the authority to zone the deer wintering area if it meets certain established standards. In the organized towns, wildlife biologists provide the municipalities with maps showing DWA locations. The state's Comprehensive Growth Management Act encourages municipalities to consider these DWA locations in their comprehensive plans.

Many land-use activities within zoned DWAs in unorganized towns, such as timber harvesting, require review and comment by MDIFW. This past year, WMS biologists helped various private landowners, including large industrial forest landowners, develop prescriptions for land-management activities on several thousand acres within zoned DWAs.

Bureau of Parks and Lands (BP&L)

The Regional Wildlife Management Section employs and assigns a wildlife biologist to the Bureau of Parks and Lands (BP&L) who works with the Bureau's regional managers to implement wildlife habitat management on the state's public reserved lands and state park land. The BP&L manages 575,000 acres of land, primarily in the northern third of Maine. Each large parcel of land referred to as "units" requires a multiple use management plan. The BP&L is currently in the process of developing second generation management plans for all the lands it manages.

Key to developing a management plan is to evaluate each property as to the "dominant" and "secondary" uses related to the natural, geological, historic, cultural, fisheries and wildlife, recreational, visual, timber, and renewable resource values. This process takes into account the broad character of the landbase, while identifying the diversity of resources and appropriate management activities.

This process subdivides the landbase into geographic units on the basis of its dominant resource features. A variety of standards are applied to the management of secondary uses that in turn enhance the management of dominant uses. For example, timber harvesting is often considered an appropriate secondary use within Wildlife Dominant Areas and may be permitted as a means to effectively manage certain wildlife habitats.

Below is a summary of the steps involved in the Management Planning process:

- Natural Resource Inventory. The landbase is examined and an inventory of the property's plants and plant communities is developed. Inventories for other resource values, such as wildlife and wildlife habitat, may be conducted at this time.
- Pre-plan Development. Regional BP&L field staff and staff specialists visit the property and, where applicable, prepare pre-plan reports based on each of the resource areas described in the Resource Allocation System;
 - Special Protection Areas - includes natural areas, historic/cultural areas, and ecological reserves
 - Backcounty Recreation Areas - includes non-mechanized and motorized recreation areas
 - Wildlife Dominant Areas - includes essential habitat, significant habitat, and specialized habitat areas and features
 - Remote Recreation Areas - includes trail corridors, shorelines, and remote ponds
 - Visual Consideration Areas - includes Visual Class I and Visual Class II Areas
 - Developed Recreation Areas - includes Developed Class I and Developed Class II Areas
 - Timber Management Areas
- Advisory Committee. An advisory committee is selected to assist in the development of each management plan. The committee is made up of individuals from both the public and private sector that provide expertise in the various resource areas.
- Draft Plan. Based upon the work of Bureau staff and the advisory committee, draft plans are prepared and distributed for review by Bureau staff, advisory committee members, and others on a list maintained by the Bureau.
- Public Meeting. A Public Meeting is held in the vicinity of the property under consideration, for the purpose of allowing for public comment regarding the findings and recommendations of the draft plan.
- Final Revision of Draft Plan. Comments from the public meeting are incorporated into the draft plan as appropriate, and a Final Plan is submitted to the Commissioner of Conservation for adoption.

To date BP&L has adopted second generation plans for the Flagstaff Region, the Downeast Region, Northern Aroostook and Seboomook Lake. Planning is nearly complete on Aroostook Hills and the Eastern Interior Regions.

--Joe Wiley
BP&L Wildlife Biologist



SPECIES PLANNING AND MANAGEMENT

WILDLIFE SPECIES PLANNING AND MANAGEMENT

Implementing successful wildlife management begins with a well thought out plan. To develop the plan, the Wildlife Division has developed a comprehensive species planning process. The major components of the process are: a **species assessment** providing what we know about a particular species or group of species; input from a **public working group** to develop species management goals and objectives; and, finally a **species management system** that lays out a path to achieving the goals and objectives. Maine's species planning process is a "state of the art" approach to integrate public participation into our decision-making process. The following is a summary of the species planning efforts over the past year.

We established a public working group to recommend management goals and objectives for Grasshopper Sparrows and Upland Sandpipers for the next 15 years. In response to the recommended goals and objectives for the two species, biologist Tom Hodgman is developing feasibility, desirability, capability of the habitat, and potential consequences statements; identifying potential problems in reaching the goals and objectives; and designing strategies to overcome those problems. Tom will present the recommended goals and objectives to the Commissioner's Advisory Council for their approval and adoption by the end of 2009. Jonathan Mays completed the Black Racer Management System, which the Wildlife Division reviewed and approved on June 25, 2009. Brad Allen completed draft management systems for the Leach's Storm Petrel, Island-nesting Terns, and Atlantic Puffins and Razorbills. The Wildlife Division will review and approve these management systems by the end of 2009.

During the coming year, we plan on completing species assessments for American marten, Black Tern, fisher, Canada lynx, Peregrine Falcon, spotted turtle, and ringed boghaunter. We also plan on convening public working groups to develop management goals and objectives for American marten, fisher, Canada lynx, Peregrine Falcon, and ringed boghaunter; and species specialists are planning to develop management systems for the American black bear, freshwater mussels, Red-necked Phalarope, Bald Eagle, Golden Eagle, and ringed boghaunter.

If you are interested in reviewing the Wildlife Division's species planning documents, please visit our website at <http://www.maine.gov/ifw/wildlife/species/plans/index.htm>.

ENDANGERED AND THREATENED SPECIES CONSERVATION

Perhaps the most challenging area of wildlife management is recovery of Endangered and Threatened species. The Wildlife Division staff has invested considerable effort in identifying species at risk and developing plans to recover these species to the point they can be delisted. You can find specifics of what the Wildlife Division is accomplishing for Endangered and Threatened wildlife in subsequent sections of this report.

Since European settlement, at least 14 species of wildlife have been extirpated from Maine. To prevent further losses, the Maine Endangered Species Act was enacted in 1975. In 1986, Maine's first list of 23 Endangered and Threatened species was adopted. After MDIFW reviewed the status of many of Maine's wildlife species in the mid-1990s, the Legislature added 20 new species to the list in 1997. The most recent revision of the list occurred on May 24, 2007. Changes included 14 new listings, 1 delisting, a change of status from Endangered to Threatened for 1 listed species, and adding the qualifier "breeding population only" to 2 species already listed as Endangered. To obtain a PDF version of what was proposed to the Legislature and eventually enacted, go to http://mainegov-images.informe.org/ifw/wildlife/species/pdfs/etlist_recommendations.pdf

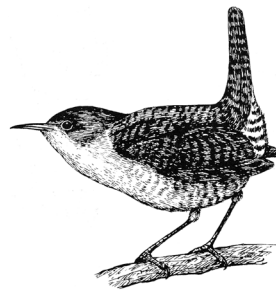
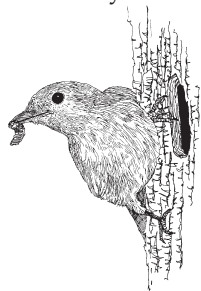
During the 2009 Legislative Session, the Legislature approved removal of the Bald Eagle from Maine's list of Endangered and Threatened species. Governor Baldacci signed the removal into law during a special ceremony on May 26, 2009. The law will become effective in September 2009. You can review the Department's rationale for recommending delisting the Bald Eagle at http://www.maine.gov/ifw/wildlife/species/endangered_species/baldeagle_delisting.htm

PLEASE NOTE that there is a separate list for state Endangered and Threatened marine species. The Maine Legislature has given The Maine Department of Marine Resources responsibility for maintaining and updating that list. <http://janus.state.me.us/legis/statutes/12/title12sec6975.html>

--George J. Matula, Jr.
E&T Species Coordinator & Wildlife Planner

BIRD GROUP

The breadth of the Bird Group's programmatic responsibilities involve stewardship of 223 bird species that nest in Maine, and many more that migrate through or winter in Maine. Several of Maine's birds occur statewide, but others occur only in portions of the state. Maine has a very diverse landscape and consequently a myriad of habitats suitable for various bird species. At least 29 inland breeding species of birds reach the northern limits of their breeding distribution in Maine, 28 species the southern limits, and 2 species their eastern limits. In addition, many of Maine's island-nesting seabirds reach their southern breeding terminus on Maine's islands, like Atlantic puffins and razorbills. The peregrine falcon and wild turkey have been reintroduced in Maine. The peregrine population is slowly increasing, and the wild turkey has expanded into areas beyond our expectations. Other species, such as the turkey vulture, blue-winged warbler, evening grosbeak, American oystercatcher, sandhill crane and several species of wading birds, have expanded their breeding range into Maine at various times over the past century. Bird conservation, management, and research in Maine is both very challenging but very rewarding.



Brad Allen, Bird Group Leader – Oversees group activities and budgets and currently serves as a co-investigator on a common eider survival study. Brad coordinates Department interests in most seabird research and management activities.

Danielle D'Auria, Wildlife Biologist – Danielle is the Department's species expert on marshbirds, wading birds, common loons, and black terns. Over the past year she has also devoted a great deal of effort to a statewide heron survey. Her other field-related duties include black tern surveys, bald eagle surveys and marshbird research.

Thomas Hodgman, Wildlife Biologist - Develops and implements programs and surveys to assess the status of songbirds in Maine and coordinates several priority bird research programs. Tom's recent focus is working with a graduate student studying saltmarsh sharp-tailed sparrows and monitoring grassland birds. Tom routinely provides technical assistance and advice to the Wildlife Management Section regarding bird migration and the ever-expanding windpower development.

Kelsey Sullivan, Wildlife Biologist – Kelsey coordinates waterfowl banding programs, surveys, and research to assess the status of game bird populations in Maine. Game bird species that Kelsey is responsible for include ruffed grouse, American woodcock, wild turkeys, several species of ducks, and Canada geese. He is Maine's representative on the Atlantic Flyway Council Technical Section.

Charlie Todd, Wildlife Biologist – Charlie has devoted nearly 30 years of his professional career to the recovery of bald eagles in Maine, culminating in proposed delisting this year. Charlie also leads MDIFW's peregrine falcon recovery program. Charlie's experience makes him a valuable advisor to other staff on all Endangered and Threatened bird species issues.

Lindsay Tudor, Wildlife Biologist - Coordinates the Department's Migratory Shorebird Program with current emphasis on shorebird habitat protection under the Natural Resources Protection Act and piping plover and least tern management. Lindsay's research involves the ecology of purple sandpipers wintering in Maine and her primary survey responsibilities include all species of shorebirds and harlequin ducks.

The Bird Group would like to thank the following dedicated biologists who have assisted us with our bird conservation and management tasks over the last year: Michael Merchant, Robby Lambert; Maine Warden Service pilots Charlie Later, Dan Dufault, and Daryl Gordon; Maine Forest Service pilots Shawn Rogers and Chris Blackie; Betty Hayes, John Drury, Glen Mittelhauser, Dave Hiltz, Greg Runge, Chris West, Don McDougal, Jim Dyer, students from Nokomis Regional High School, Bill Hanson, Chris DeSorbo, Wing Goodale, Lucas Savoy, Bruce Connery, Lesley Rowse, Joe Wiley, Margo Knight, Don Mairs, Ron Joseph, Patrick Keenan, Bill Johnson, Cheryl Daigle, Diane Winn, Marc Payne, Maine Audubon, Heron Observation Network volunteers and MDIFW regional staff.

BIRD CONSERVATION AND MANAGEMENT

Colonial Wading Bird Census and Heron Observation Network

Maine is home to several colonial wading birds during the spring and summer: great blue herons, snowy egrets, great egrets, and black-crowned night-herons, as well as occasional cattle egrets, little blue herons, tricolored herons, and glossy ibis. These magnificent birds build large stick nests in trees or shrubs and nest in groups. The great blue heron is the largest of Maine's wading birds and nests in the greatest numbers both inland and along the coast.

As recent as 1995, there were as many as 13 coastal islands occupied by 643 pairs of nesting great blue herons. More recently we noticed that many of these colonies no longer existed or that the numbers of nesting birds had waned. There had not been a comprehensive wading bird survey of the coastal islands since the mid-1990s, and there has never been a comprehensive survey effort for the rest of the state.

With funding from State Wildlife Grants and the Oil Spill Recovery Fund, we set out to conduct a statewide census for great blue herons and other colonial wading birds. With the help of pilots from the Warden Service and Forest Service, biologists conducted over 60 hours of aerial surveys. Over 170 historical nest site locations were checked, and 67 new sites were discovered during the surveys or as a result of information provided by the public. In addition to aerial surveys, biologists visited over 30 colony sites on the ground to help verify colony locations and to gather more precise counts of active nests.

Survey efforts revealed 1,036 nesting pairs of great blue herons at over 80 colonies, ranging in size from 1 to 120 active nests. A majority of the colonies were small in size (less than 10 nests) and located in beaver flowage settings. As in the past, the largest colonies were located on coastal islands, with the exception of a colony located on an island in Aziscohos Lake in Lynchtown. With approximately 60 active nests, the Aziscohos Lake colony is the largest inland colony in the state and has persisted for at least 23 years.

Additional on-the-ground efforts included surveys of two coastal islands for nesting black-crowned night-herons, a species that was recently listed as Threatened in Maine. It was encouraging to find 87 active nests between these two islands. Black-crowned night-heron colonies can be difficult to detect from the air because they tend to nest beneath the canopies of deciduous trees or shrubs. Future efforts will be made to conduct on-the-ground surveys on additional islands.

This year's survey effort was extremely time and labor intensive, and thus cannot be performed on an annual basis. To ensure that we continue to collect nesting data for great blue herons and other colonial wading birds, we began a volunteer adopt-a-colony program this year called the Heron Observation Network (or HERON for short). Over 60 people across the state signed up to be a part of HERON this year! More than half of these volunteers are tracking and reporting their time, which can be used as a match for federal funds for future research and monitoring. We plan to continue this program in the coming years, and appreciate all who have contributed thus far. If you know of a wading bird colony, we'd love to know about it too! Please don't hesitate to contact Danielle D'Auria (danielle.dauria@maine.gov, 941-4478) with information about wading bird colonies, or if you'd like to sign up to be a HERON volunteer.



This work is supported by funds from State Wildlife Grants as well as revenues from the Loon Conservation Plate and the Inland and Coastal Surface Oil Spill Cleanup Fund.

--Danielle D'Auria

Grasshopper Sparrow Conservation: small steps toward recovery?

This year, 2009, marked a turning point in the conservation of Endangered and Threatened Species in Maine. The most publicized was the delisting of the bald eagle. But another, less glamorous species, may have made at least some small steps toward recovery. In 2009, the Maine Department of Inland Fisheries and Wildlife (MDIFW) began to take a hard look at the conservation status of one of the rarest birds in Maine, the grasshopper sparrow.

First listed as an Endangered Species in 1986, based on its small population size and occurrence at just a few sites, this species has experienced more than its fair share of ups and downs since. For the first half of the 20th century, this species could be best described as an uncommon breeder in southern Maine with casual observations scattered throughout central and eastern Maine. From roughly 1950 until the early 1980s there were no credible records of the

species in Maine. In 1981, Peter Vickery discovered a small population at The Plains in Kennebunk. Through his diligence, and that of others such as Jeff Wells, we began to learn more and more about this small population. A series of land acquisitions and habitat conservation measures were spearheaded by The Nature Conservancy (TNC) and MDIFW working with a broad set of conservation partners and additional financial assistance from the Lands for Maine's Future program. The grasshopper sparrow became the flagship species for grassland species conservation at the newly conserved Kennebunk Plains Wildlife Management Area.

Southern Maine's Kennebunk Plains is not the only site occupied by this species. However, its breeding range in Maine is restricted to portions of York and Cumberland Counties. A concerted effort to inventory grassland birds at locations likely to support grasshopper sparrows was done in the 1980s. Additional populations were discovered at the Sanford Airport, Brunswick Naval Air Station (BNAS), and the Wells Barren. A fifth location, near the Augusta Airport, was thought to support a maximum of two singing males from roughly 1988 to 1994. Despite seemingly abundant habitat in eastern Maine, observations there have been scant and breeding records lacking.



Additional surveys and monitoring have been conducted to find new populations and to examine trend at occupied sites. Regular monitoring began in the mid 1980s at the Kennebunk Plains and has continued through 2009. Although personnel have changed several times and important changes to methodology were made in the 1990s, this is the longest running and arguably the most important reference for conservation of this species in our state. Similar monitoring (i.e., repeated surveys) has taken place at the Wells Barren, BNAS, Sanford Airport, and even for a limited period of time at Augusta Airport. Yet, none of these efforts provides the trend information like monitoring at the Kennebunk Plains.

Ecologists with TNC and biologists from MDIFW have been concerned for at least the last three years at what appears to be a decline in the population at Kennebunk Plains. Shortly after monitoring began in 1984, a low of 11 pairs (i.e. singing males) were detected on The Plains. By 2001, through the efforts of controlled burns and other habitat improvements implemented by TNC, the population was estimated at 49 pairs. However, over the past 10 years those gains seemed to erode away with the 2008 population estimate at only 10 pairs; the lowest number since the land came under conservation ownership and management. Infrequent surveys at the other occupied sites left little to buffer or to help explain the apparent decline.

Three of the occupied sites had problems of their own. The site near the Augusta airport, if ever supporting a population of its own, was considered marginal habitat on the outer edge of the species' range and was rapidly succeeding to shrubby habitat. Similarly, the Wells Barren became occupied with dense shrubs following abandonment of blueberry culture there. Finally, the Naval Air Station at Brunswick was decommissioned by the U.S. Navy and targeted for redevelopment, with a potential to compromise the core habitat for this species at the site. Taken together, these issues led MDIFW staff to take a closer look at all the circumstances surrounding this species.

Beginning in 2008, MDIFW staff developed and reviewed an assessment of the conservation status of this species in Maine. A working group comprised of technical experts on the topics of grassland birds, early successional habitat, and conservation planning met and identified a series of goals and objectives that should pave the way for improved management of this species. At the core of these discussions was the desire to verify the decline at Kennebunk Plains and to identify habitats within the range of this species that if not occupied, could be managed to support the species.

During June of 2009, staff from MDIFW and TNC with experience surveying grassland birds conducted three visits each to 32 points distributed across Kennebunk Plains. These are the same points that have been monitored for over two decades. Although the final estimates have not yet been tallied, it appears that between 17 and 20 pairs were present this year, indicating perhaps a slight increase in the population. Also, three parcels of land approximately 15 miles to the north hold promise for improved conservation of this species.

We may never be able to celebrate delisting of the grasshopper sparrow. It's hard to rally around a small brown bird that to some sounds more like an insect than a bird. Until we have a better understanding of statewide populations and trends and have additional sites in conservation management, this species remains close to the edge. But, with renewed enthusiasm by conservation partners, a continued commitment to long-term monitoring and a search for additional suitable habitat, we remain poised to secure the future of this species in Maine.

This work is supported by funds from State Wildlife Grants as well as state revenues from the Loon Conservation Plate and Chickadee Checkoff Funds.

--Thomas P. Hodgman

Migratory Game Birds

Maine contributes to several programs that the U.S. Fish and Wildlife Service uses to assess migratory bird populations and harvests. For migratory game birds, harvests are measured using 1) Harvest Information Program (HIP) with data on harvest numbers, active hunters and days afield and 2) the Wing-Collection Survey where hunters contribute wings of harvested birds and serves as a measure of productivity (or recruitment).

American Woodcock

Woodcock management is divided into two units based on previous radio-telemetry and banding studies that showed that birds were utilizing two geographic areas east and west of the Appalachian Mountain Chain. For this reason, two management units, eastern and central, were established. Management is based on the woodcock population and harvest trends within that unit. Maine is one of the most important states for breeding woodcock and woodcock harvests within the Eastern Management Unit (EMU).

To assess the woodcock population each year, beginning in 1968, a coordinated survey called the Singing Ground Survey (SGS) was developed. Each survey participant records the number of singing male woodcock they hear in the spring on specific routes distributed throughout Maine and their breeding range. Unfortunately, these data reveal a long term decline across the woodcock range between 1968 to 2009. On a positive note, 2009 marks the sixth year in a row that the EMU population appears to have stabilized. In 2009, the number of males heard on Maine's SGS routes (3.28) was below but very close to the 10 year average of 3.35. Habitat loss appears to be the biggest factor in the long term population decline.

Hunting Season

Based on data using the Harvest Information Program (HIP), 5,400 woodcock hunters harvested 18,800 woodcock in Maine. This is up substantially from an estimated harvest level of 13,700 woodcock in 2007. The increase in harvest is likely attributable to the higher recruitment rate of 2.1 immature (young of the year) to one adult female in 2008. This is greater than the 1.7 recruitment rate over the long term (1963-2007). Recruitment rate is a measure of the ratio of immature woodcock per adult female derived from the Wing-Collection Survey described above. Maine hunters provided 1,237 wings to the survey. If you participated, thank you!

Waterfowl

Waterfowl harvest metrics are also derived from the same Harvest Information Program used to assess woodcock harvest. Harvest information for the 2001 to 2008 waterfowl seasons are listed below in Table 2.

Table 2. Maine Waterfowl Harvest 2001-2008.

Species	2001	2002	2003	2004	2005	2006	2007	2008
American Black Duck	5,868	9,717	5,045	5,765	7,623	5,387	5,000	4,683
Mallard	7,839	15,744	12,025	12,218	16,855	12,231	12,700	11,265
Green-winged Teal	2,723	9,287	5,248	2,750	3,077	4,309	6,100	7,872
Wood Duck	7,323	7,319	3,822	4,231	6,224	5,577	5,400	3,461
Ring-necked Duck	610	1,845	459	529	699	1,300	300	747
Common Goldeneye	704	431	357	1,745	3,777	2,091	1,600	2,307
Total	25,067	44,343	26,956	27,238	38,255	29,895	31,100	30,335
Canada Goose	5,165	12,800	9,637	7,000	7,826	9,800	9,100	13,800
Sea Ducks								
Common Eider	17,257	20,600	28,967	14,736	10,842	18,133	13,100	11,143
Long-tailed Duck	1,371	2,800	2,612	1,754	690	1,779	1,000	4,305
Scoter	5,371	6,400	14,721	4,210	2,168	2,288	1,700	4,052
Total Sea Duck Harvest	23,999	29,800	46,300	20,700	13,700	22,200	15,800	19,500

Based on data using the Migratory Bird Harvest Information Program (HIP), 5,700 waterfowl hunters harvested 57,300 waterfowl in Maine (includes puddle ducks, diving ducks, sea ducks and geese). The 2008 total harvest was slightly above the 2007 harvest of 54,100 waterfowl, and likewise, the number of waterfowl hunters was above the 2007 estimate of 5,500.

Upland Game Birds

Wild Turkey

Maine's wild turkey population is flourishing in southern, central and parts of western Maine, increasing in parts of Downeast Maine, low in the north and non-existent in far northern and northwestern Maine. The wild turkey program is a

great success story in wildlife restoration which has allowed the Department to provide opportunity to harvest wild turkey during spring and fall hunting seasons in Wildlife Management Districts that meet specific population criteria and harvest levels. Spring turkey hunting lends is the season of choice for the majority of turkey hunters because of the nature of wild turkey behavior during the mating season. Tom (and jake) turkeys are most receptive to turkey calls in the spring which makes for a more exciting and successful hunt. Although spring wild turkey hunting license sales have seen a slight decrease, the harvest success rate remains high at over 30%. The fall harvest remains low although spiking in 2007 with the introduction of a shotgun season in certain Wildlife Management Districts. The drop in 2008 may be a reflection of waning interest and a mast crop year which would draw turkeys more into the woods and away from fields (Table 3).

Table 3. Wild Turkey Spring (1999-2008) and Fall (1999-2007) Harvest.

Season	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Spring	890	1559	2544	3391	3994	4839	6236	5931	5984	6348	5766*
Fall	NA	NA	NA	151	246	204	157	198	1843	685	

*please note; the 2009 spring harvest is a preliminary figure

Current Wild Turkey Management

Now that Maine’s wild turkey population is strong in many parts of the state, the Department is faced with the challenge of managing for (1) various populations in certain areas of the state, (2) a successful hunt, and (3) a positive perception of the population on the landscape. During the latest legislative session (the 124th) the legislature passed a resolve requiring the Department to study all aspects pertaining to the wild turkey resource in Maine and to present a written report with management recommendations to the legislature by January, 2010. A Wild Turkey Working Group has been formed to study and consider issues such as increased hunting opportunity, future trap and transfer efforts, nuisance wild turkey issues, and alternative harvest management options.

Ruffed Grouse

Since 1994, moose hunters have been asked to report the number of grouse they and their party saw or harvested during the moose hunting season. Data are compiled by geographic region and MDIFW then calculates the number of grouse seen per 100 hours of moose hunting effort. Compared to an all-time low count in 2005, grouse numbers appear to be on the rise. The grouse population is following the peak and dip cycle inherent in their ecology. The cycle is closely associated with the predator/prey cycle of Maine’s hare populations. As hare populations increase predation pressure on grouse decreases, allowing the grouse populations to rebound. Other factors are involved as well. 2008 grouse numbers were much higher than the 2005 low but lower than the spike in 2007 (Table 4). Along with the long term population cycle, grouse experience annual fluctuations related to spring rainfall. This factor likely explains the spike in 2007 when conditions were dry in the spring and early summer.

--Kelsey Sullivan

Table 4. Grouse Seen or Harvested/100 hours of Moose Hunter Effort in Maine 1994-2008.

Location	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Northeast	35	84	15	24	42	41	30	53	23	35	27	11	26	37	31
Northwest	38	125	22	33	48	47	50	55	43	50	56	24	45	44	51
Eastern Lowlands	31	57	16	22	27	30	25	55	29	29	24	8	20	53	23
West & Mountains	31	97	23	26	41	29	28	30	25	26	30	13	25	44	19
Downeast	-	-	-	-	-	-	-	-	13	21	20	9	22	19	28
Statewide Average	35	107	20	25	43	37	33	48	31	34	33	13	24	39	27

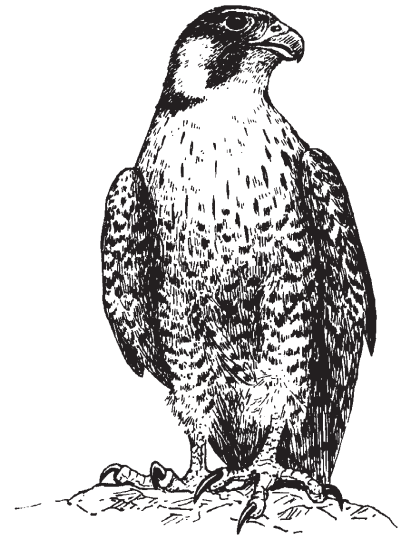
Peregrine Falcon

Maine and most eastern states still recognize resident breeding populations of peregrines as an Endangered Species under state law. The worldwide fate of peregrines has steadily improved following ambitious restoration efforts undertaken by more than 35 nations. Peregrine numbers plummeted during the 20th century, and the subspecies native to this area was virtually extirpated in the eastern U.S. Captive breeding programs used stock from around the world to supply reintroductions in coordinated recovery programs. The re-established population in this region is largely from the fruits of that restoration undertaken by wildlife agencies in cooperation with The Peregrine Fund and other conservation partners.

Surveys still underway in 2009 have thus far identified 25 nesting pairs of peregrines in Maine. This is the state’s highest count of the resident population in at least 60 years. Peregrines now reside at 20 cliffs / coastal headlands across Maine as well as 5 bridges / buildings in urban regions. There are local strongholds of falcons in both the western mountains and in eastern coastal Maine. The preliminary tally, by county, for nesting peregrines in 2009 is:

- Androscoggin County = 1 nesting pair

- Cumberland County = 1 nesting pair
- Hancock County = 6 nesting pairs
- Knox County = 1 nesting pair
- Oxford County = 10 nesting pairs
- Piscataquis County = 1 nesting pair
- Sagadahoc County = 1 nesting pair
- Somerset County = 1 nesting pair
- Waldo County = 1 nesting pair
- Washington County = 1 nesting pair
- York County = 1 nesting pair



Peregrines are perhaps best known for their unrivaled speed in flight and spectacular vertical stoops in pursuit of avian prey. Cliffs provide both optimal nesting and foraging conditions. Nests are usually simple scrapes in gravel on a ledge under a cliff overhang. Sometimes peregrines lay eggs in the remnant of a former raven nest to assure good drainage. Peregrines only hunt in expansive openings like over a nearby water body, wetland, grassland, or the airspace above woodlands. The rim of a cliff yields ideal viewing and strategic heights to initiate their attack.

Recreational climbing and some hiking trails that ascend steeper portions of cliffs are among the few management challenges in such settings. Even before the demise of the traditional population in the region, peregrines had begun to explore a new niche in urban regions to exploit relatively abundant prey populations. Peregrines nesting in urban situations usually benefit from the installation of a gravel tray in a setting that provides some overhead shelter. One urban peregrine pair was monitored this year via an Internet camera operated by BioDiversity Research Institute of Gorham; see <http://www.briloon.org/watching-wildlife/peregrine-cam.php> for prime-time viewing during March – June, although this pair and others resident in Maine may reside locally throughout the year.

In Maine, nesting peregrines were absent for 25 years following the 1962 disappearance of the last breeding pair in Acadia National Park. Releases of 153 young peregrines at 7 locations across the state during 1984 – 1997 enabled a second chance for the species. Memorable “firsts” in the early years of recovery efforts in Maine include the first returning bird: an unpaired male at Baxter State Park in 1985, a territorial pair in 1986 and active nesting attempt the following year at Mount Kineo, and the first successful nesting at C Bluff Mountain in 1988. Biologists at Acadia National Park, the White Mountain National Forest, and Maine Bureau of Parks and Lands all are valued partners in peregrine monitoring and management that collectively enable gradual increases almost every year.

Each and every possibility of nesting peregrines should be reported to MDIFW. Some species don’t get a second chance, and all help is welcomed in safeguarding the early phases of peregrine recovery in Maine: a remarkable species that inhabits spectacular settings! Many amateur and professional birds enjoy the relatively large numbers of peregrines that pass through Maine during fall migration from Canada and Greenland. Offshore settings in the Gulf of Maine (like Monhegan Island) are widely renowned for autumn falcon viewing.

This work is supported by funds from State Wildlife Grants as well as state revenues from the Loon Conservation Plate and Chickadee Checkoff funds. The U.S. Fish and Wildlife Service (New England Field Office) provided funds in 2009 for Maine to participate in the second installment of nationwide monitoring conducted every 3 years.

–Charlie Todd

Piping Plover

Piping plovers are small, sand-colored shorebirds that nest on sandy beaches and dunes along the Atlantic Coast from Newfoundland to South Carolina. Habitat loss, lack of undisturbed nest sites, and predation are the primary factors jeopardizing populations of piping plovers. With less than 2000 nesting pairs on the Atlantic coast the piping plover is federally listed as Threatened and is listed as Endangered in Maine. Maine’s population of piping plovers has been monitored annually since 1981. During this period the number of pairs reported has fluctuated between 7 pairs at 4 sites in 1983 to 66 pairs at 20 sites in 2002. Until recently the overall population trend has been one of increase.

Unfortunately, due to recent habitat loss from devastating spring storms, coupled with higher predation rates and greater presence of unleashed dogs on plover nesting beaches, plover numbers in Maine are declining at an alarming rate. Maine’s piping plover population plummeted from a high of 66 pairs in 2002 to only 24 nesting pairs in 2008. In 2005, Maine piping plovers experienced a dismal nesting season. At 18 different beaches a total of 49 pairs of plovers made 82 nesting attempts but produced only 27 fledglings (0.55 chicks fledged per pair). This was the lowest productivity recorded since 1981, far below the productivity rate needed to sustain the plover population. In 2006, only 40 pairs of piping

plovers returned to Maine to nest; nine plover pairs lost entire broods to predation and all other nests lost one or more chicks to predation. In 2007, piping plover habitats were plagued with a series of damaging spring storms combined with predation and human related disturbances, plovers produced only 37 fledglings, another dismal year!

With only 24 pairs of piping plovers returning to nest in 2008 and the realization we were very close to losing this species from our state, municipalities, landowners, government agencies, and private organizations combined efforts to protect nesting piping plovers and attempt to reverse the declining trend in plover numbers. The towns of Wells, Ogunquit, Old Orchard Beach, and Scarborough are committed to managing their beaches using guidelines established with MDIFW that provide recreational opportunities for beachgoers and still protect plover broods. These towns have included funds in their budgets to hire plover volunteer coordinators. Plover volunteer coordinators recruit and coordinate volunteers who monitor and help protect plover nests and chicks during the nesting season.

MDIFW, Maine's Bureau of Parks and Lands, Rachel Carson National Wildlife Refuge, Maine Audubon Society, APHIS Wildlife Services, The Nature Conservancy, and Bates College have a long-standing collaboration regarding piping plover management. Since the early eighties they have monitored and protected nesting plovers by providing field personnel, negotiating management agreements with landowners, compiling data, and working collaboratively with municipalities on beach management issues.

Intensive management efforts and dedication by the "plover community" in 2008 saw a reverse in the declining trend of plover productivity. Despite a 17-year low in nesting numbers, breeding success was rising with a total of 24 nesting pairs successfully fledging 41 young.

Encouraged by last year's success and with a better understanding of factors that limit nesting success, efforts are now underway to achieve even higher productivity rates for plovers in 2009. Management similar to last year will be combined with new initiatives. This year, town officials in Old Orchard Beach and Ogunquit are taking extra steps to assure plover success by designating a small portion of their beaches as a "Natural Beach Area". These areas are left in a natural state, allowing washed up seaweed or "wrack" to accumulate, trapping sand, encouraging beach grass, and providing habitat for plovers. Invertebrates within the wrack are an important food source for fast growing plover chicks and provide cover from predators.

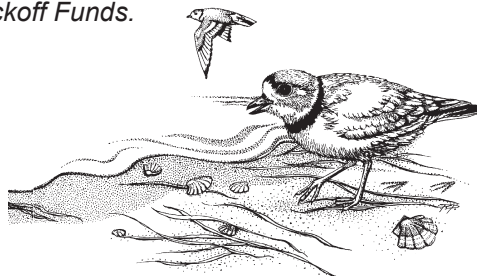
Plovers also nest on beaches within Maine's State Parks. Maine's Bureau of Parks and Lands have a long-term commitment to these lands and wildlife protection. The Bureau will also provide plovers with fenced, natural areas, for nesting and park personnel will assist with plover monitoring efforts. Further, Cabela's, Inc. has generously donated two night vision cameras to allow the Bureau to monitor disturbance and predation events that may occur in plover areas after staff hours.

This year, Maine Warden Service wardens will be patrolling beaches in southern Maine throughout the nesting season making sure that beach visitors are respectful of the piping plover nesting areas, and to assure that dog owners keep their dogs on leashes and away from nesting areas.

MDIFW is asking for help from all beachgoers to assure the survival of these remarkable birds by observing these simple guidelines:

- Avoid fenced areas marked with "Restricted Area" signs.
- Observe birds and chicks only from a distance, with binoculars.
- Keep pets off the beach or leashed from mid-April to mid-September.
- Don't fly kites near posted areas. They resemble hawks and can keep birds away from nests.
- Take your food scraps and trash off the beach when you leave; it attracts predators such as skunks and raccoons.
- Call the Maine Warden Service to report harassment of birds. It's a federal offense to harm an Endangered Species.

This work is supported by funds from State Wildlife Grants and Section 6 Funding as well as state revenues from the Loon Conservation Plate and Chickadee Checkoff Funds.



--Lindsay Tudor

MAMMAL GROUP

The **Mammal Group** is one of 4 groups in the Wildlife Resource Assessment Section (WRAS), in the Bangor Office. We develop and oversee the implementation of all management systems for Maine's mammals; address public and Departmental information needs through the development of research programs, monitoring protocols, species assessments, and public presentations; and assist in the formulation of harvest regulations by analyzing biological data, meeting with regional biologists, and making recommendations to the Department's upper administration.

Wally Jakubas, Mammal Group Leader – Supervises mammal group personnel, oversees all group activities, coordinates group activities within and outside of the Department, manages the group's budgets, shares responsibilities for New England cottontail restoration and management efforts, and serves as lead biologist on wolf and cougar issues.

Randy Cross, Wildlife Biologist – Supervises bear field crews; assists in analyzing bear data; oversees the processing and aging of moose, deer, and bear teeth; and gives public information talks and demonstrations on bear management activities.

John DePue, Wildlife Biologist – Oversees furbearer and small mammal management, annually reviews and proposes changes to Maine's trapping regulations, designs small mammal surveys, assists in New England cottontail restoration and management activities, monitors white-nose syndrome in bats, and serves as Departmental spokesperson on furbearer and small mammal issues.

Lee Kantar, Wildlife Biologist – Oversees the management of Maine's white-tailed deer and moose populations, including biological data collection and analysis, formulation of annual season recommendations, and monitoring chronic wasting disease. Lee is the Departmental spokesperson on deer and moose issues.

Jennifer Vashon, Wildlife Biologist – Oversees black bear and lynx programs, including biological data collection and analysis, formulation of annual season recommendations for black bear, providing technical advice on nuisance bear issues, and development and implementation of the lynx management program. Jen also serves as the Departmental spokesperson on lynx and bear issues.

Scott McLellan, Bio Specialist – Helps coordinate field activities for the lynx research project, including field camp operations, trapping, and chemical immobilization of research animals, and assisting the lynx project leader with data entry and analyses.

2008-09 Contract Workers & Volunteers – Contract Workers: Lisa Bates - bear and deer projects, Jerry Collier - deer project, Brandon Coones - bear project, George Haley - deer project, Laura Kennedy - moose project, Jessie Kuester - lynx project, Lonna Perry - lynx project, Dave Pert - bear project, Ellen Robertson - deer project, Eric Rudolph - deer and lynx projects, Ethan Tracy - deer project, and Dan Wagner - bear project. Volunteers: Brandon Coones - lynx project; Stephen Dancho - bear project, Kristy McLellan - lynx project, Andrew Ocampo - bear project, Carmen Vanbianchi - lynx project, and Kelly Young - bear project.

We deeply appreciate the dedication and hard work we receive from our contract workers and volunteers!

MAMMAL CONSERVATION AND MANAGEMENT

White-tailed Deer

2008 Season Dates and Structure

Maine Deer hunters could hunt white-tailed deer for 85 days within the structure of five different hunting seasons during 2008. Deer seasons included the expanded and special (October) archery, rifle, muzzleloader, and youth day.

2008 Doe Quotas, Any-Deer Permits, and Applicants

During 2008, doe harvest quotas ranged from zero in 18 Wildlife Management Districts (WMDs; Figure 1; districts 1-14, 18, 19, 27 and 28) to 1,045 in WMD 17. Among the 11 WMDs in which a doe harvest was desired, the doe quota totaled 6,080. The 51,850 permits allocated represent a 22% decrease in antlerless deer hunting opportunity compared to 2007 (66,275 permits). Permit allocations ranged from zero in the 18 WMDs with a zero doe quota, to 9,925 permits in WMD 17. The top 5 WMDs receiving any-deer permits on a per 100 mi² basis were WMD 22 (1,581 permits), WMD 23 (1,271 permits), WMD 24 (1,003 permits), WMD 21 (982 permits), and WMD 20 (775 permits). Maine residents drew 39,578 permits (76%), landowners drew 8,421 permits (16%), and nonresidents drew 3,579 any-deer permits (7%). In addition,

1,573 Superpack licenses were assigned and Superpack permittees won 272 permits (1%). Overall, 66,947 people applied for any-deer permits during 2008 (51,613 residents; 8,673 landowners; 5,088 nonresidents; and 1,573 Superpack).

2008 Statewide Statistics

Overall, 21,061 deer were registered during 2008 and were taken during the expanded archery and regular archery, youth day, regular firearms, and muzzleloader seasons (Table 5). There were 7,823 fewer deer harvested in 2008 than in 2007 (28,884 deer vs. 21,061), which represents a 27% decrease from the 2007 season. This was the second year in a row that the annual deer harvest was below the average harvest under the any-deer permit system.

Buck Harvest

The statewide harvest of antlered bucks (13,564) in 2008 is a 16% decrease from the previous year (16,103; Table 6). The top 5 buck-producing (per mi² basis) WMDs in 2008 were (in descending order), districts 24, 21, 22, 23, and 17 (excluding 29), all in central and southern Maine. Among the antlered bucks taken in 2008, *roughly* 5,019 (37%) were 1½ year-olds (yearlings) sporting their first set of antlers, while more than 2,035 (25%) were mature bucks (4½ to 15½ years old). Male fawns are reported with antlerless deer. The higher percentage of mature bucks and significant drop in yearlings in the 2008 statewide harvest reflected high winter fawn losses following the catastrophic winter of 2007-08.

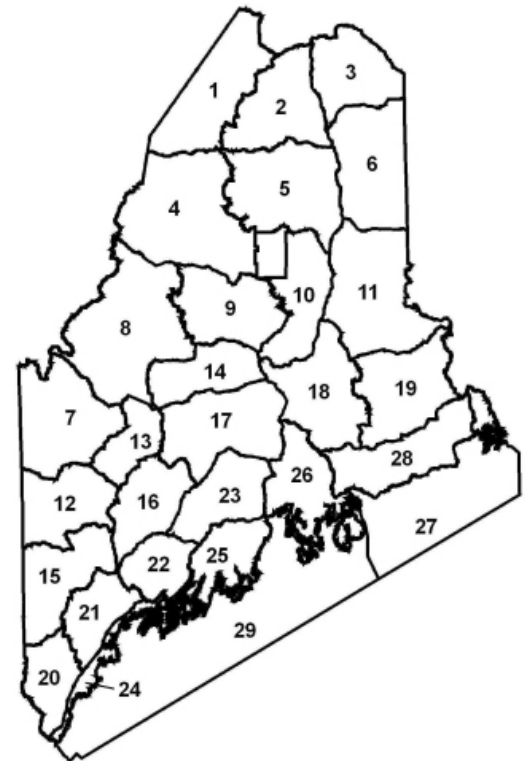


Figure 1. Maine's Wildlife Management Districts.

Antlerless Deer Harvest

The statewide harvest of adult (older than fawn) does during 2008 was 5,154, which was 18% below the pre-set quota (~6,080 adult does). It is unclear whether this decrease was due to the selection of bucks over does, decreased interest in harvesting an adult given a severe winter, or availability of adult does. During 2008, any-deer permittees also tagged 2,827 fawns, while archers and youth day hunters tagged 516 young of the year. Overall, 7,497 antlerless deer were registered by hunters during the 2008 season.

Harvest by Season and Week

In 2008, approximately 90% of the total deer harvest occurred during the 4-week firearms deer season (Table 7). Overall, archery was down 17% compared to 2007. Both October-regular archers and expanded archery participants had decreased success over 2007 by 23% and 14% respectively. Again, the harsh winter of 07-08 led to decreased survival across all cohorts, especially fawns. Typically the muzzleloader harvest comprises a small proportion of the overall harvest (7% of the total deer harvest in 2007). In 2008, the muzzleloader harvest comprised 5% of the total harvest. Good tracking conditions during the season may have improved hunting conditions despite an overall tough season.

Table 5. Sex and age composition of the 2008 deer harvest in Maine by season type and week¹.

Season	Sex/Age Class				Total Deer	Total Antlerless Deer
	Adult		Fawn			
	Buck	Doe	Buck	Doe		
Archery	635	834	178	206	1,853	1,218
Expanded	404	621	132	154	1,311	907
October	231	213	46	52	542	311
Youth day	175	202	69	63	509	334
Regular firearms	12,209	3,722	909	810	17,650	5,441
Opening Saturday	1,619	462	120	110	2,311	692
Nov 3-Nov 8	2,889	776	197	176	4,038	1,149
November 10-15	2,746	626	178	146	3,696	950
November 17-22	2,635	697	152	142	3,626	991
November 24-29	2,320	1,161	262	236	3,979	1,659
Muzzleloader	530	390	51	78	1,049	519
Dec 1-6	273	123	17	23	436	163
December 8-13	257	267	34	55	613	356
Total	13,549	5,148	1,207	1,157	21,061	7,512

¹Records corrected for season omissions

Sex/age data were corrected for errors in the deer registrations

Table 6. Sex and age composition of the 2008 deer harvest in Maine by Wildlife Management District¹.

Wildlife Management District	Adult		Fawn		Antlerless Deer	Total All Deer
	Buck	Doe	Buck	Doe		
1	81	0	1	1	2	83
2	43	3	1	0	4	47
3	57	4	1	1	6	63
4	73	2	0	0	2	75
5	129	1	1	0	2	131
6	198	23	9	6	38	236
7	380	13	5	2	20	400
8	250	4	2	0	6	256
9	79	2	1	0	3	82
10	86	3	1	0	4	90
11	384	22	8	8	38	422
12	487	27	9	6	42	529
13	351	28	11	6	45	396
14	335	22	11	7	40	375
15	929	434	77	78	589	1,518
16	890	387	94	89	570	1,460
17	1,676	813	186	187	1,186	2,862
18	266	16	3	4	23	289
19	141	3	3	0	6	147
20	802	400	107	97	604	1,406
21	926	511	122	116	749	1,675
22	800	515	118	107	740	1,540
23	1,152	626	149	160	935	2,087
24	457	346	88	78	512	969
25	728	318	52	55	425	1,153
26	1,029	327	79	79	485	1,514
27	314	22	6	3	31	345
28	205	10	0	0	10	215
29	316	272	46	62	380	696
Statewide	13,564	5,154	1,191	1,152	7,497	21,061

¹Sex/age data were corrected for errors in the deer registrations

The seventh youth day took place on Saturday, October 25th. This was an either-sex hunt, and youth hunters capitalized on the opportunity to take antlerless deer. Of the 509 deer harvested on youth day 66% were antlerless deer.

Harvest By Hunter Residency

Residents tagged 91% (19,100 deer) of the total harvest during 2008 (Table 7). Among seasons, the proportion of the harvest registered by Maine residents was highest for the extended muzzleloader (98%), followed by youth day (97%), statewide muzzleloader (96%), regular archery (94%), and expanded archery (91%).

Table 7. Deer registrations by season type and residence of successful hunters, 2008.

Season & Week	Deer Registrations By:			Total	Percent by Residence
	Residents	Nonresidents			
Archery	1,709	144		1,853	92
Expanded	1,197	114		1,311	91
October	512	30		542	94
Youth day	493	16		509	97
Regular firearms	15,880	1,770		17,650	90
Opening Saturday	2,311	0		2,311	100
Nov 3-Nov 8	3,570	468		4,038	88
November 10-15	3,271	425		3,696	89
November 17-22	3,085	541		3,626	85
November 24-29	3,643	336		3,979	92
Muzzleloader	1,018	31		1,049	97
Dec 1-6	417	19		436	96
December 8-13	601	12		613	98
Total	19,100	1,961		21,061	91

Regional differences occurred in the distribution of the harvest by residents and visitors to Maine. In the more populous central and southern WMDs, most successful deer hunters were Maine residents. In 2008, non-residents harvested fewer deer than normal. The proportion of deer harvested by non-resident hunters was highest in WMD 8, along the Quebec border, where 48% of the harvest went to non-residents (primarily residents of Quebec). At the other end of the spectrum, 99% of the deer killed in heavily populated WMD 24 (south-coastal Maine) and WMD 27 (Downeast coast) were registered by Maine residents (Table 8).

Table 8. Deer registrations by Wildlife Management District and hunter residence, 2008¹.

Wildlife Management District	Deer Registered By:				Total
	Residents		Nonresidents		
	Number	Percent	Number	Percent	
1	53	64	30	36	83
2	31	66	16	34	47
3	59	94	4	6	63
4	44	59	31	41	75
5	71	54	60	46	131
6	226	96	10	4	236
7	235	59	164	41	399
8	134	52	122	48	256
9	53	65	29	35	82
10	64	71	26	29	90
11	342	81	80	19	422
12	473	89	56	11	529
13	343	87	53	13	396
14	258	69	117	31	375
15	1395	92	125	8	1,520
16	1383	95	77	5	1,460
17	2532	88	330	12	2,862
18	250	86	41	14	291
19	123	84	24	16	147
20	1330	95	77	5	1,407
21	1638	98	36	2	1,674
22	1512	98	28	2	1,540
23	1866	90	217	10	2,083
24	957	99	11	1	968
25	1123	97	30	3	1,153
26	1453	96	62	4	1,515
27	342	99	3	1	345
28	199	93	16	7	215
29	648	93	49	7	697
Statewide	19,137	91	1,923	9	21,061

¹Not adjusted for sex and age

Hunter Participation and Success Rate

During 2008, 202,401 licenses that permit deer hunting were sold in Maine; of these 85% were bought by residents. Hunter density, therefore, averaged about six per square mile, statewide, and these hunters expended an estimated 1.08 million hunter-days effort pursuing deer over Maine's 85-days of deer hunting.

Compared to the regular firearms season, which attracts over 170,000 participants, the expanded archery and special muzzleloading seasons attract far fewer hunters. In its 12th year, the expanded archery season attracted fewer than 10,000 participants (over 90% residents). On a positive note, the sale of special muzzleloading season permits has increased substantially over the last 10 years. In 2008, muzzleloading permits rose to 18,094 permits.

Deer hunting success in Maine during the regular firearms season was estimated at 8% in 2008. The success rate for hunters who drew an any-deer permit (range 20% - 48%) is typically higher than for hunters who were restricted to "bucks-only" during the regular firearms season (range 7% - 22%).

Prospects for the 2008 Deer Season

In 2009, we will offer 5 separate deer hunting seasons in Maine. The expanded archery season will open September 12th and run until to December 12th (79 days). This season is limited to WMDs 24 and 29 (formerly WMD 30 Northeast to Vinalhaven), as well as 9 other locations, primarily in residential-suburban sprawl areas with firearm discharge ordinances. Hunters with a valid archery license may purchase multiple antlerless permits for \$12.00 each and one buck permit for

\$32.00. This amount of bowhunting opportunity is aimed at increasing the harvest of does and fawns in order to meet population density objectives for areas that are difficult to access for hunting. In the expanded archery zone, deer populations can only be reduced if the limited number of archers that can gain access to huntable land are each able to harvest a substantial number of deer.

The regular (statewide) archery season will run from October 1 - October 30 (26 days). Youth day will be Saturday, October 24th, and is reserved for hunters between 10 and 15 years old, who are accompanied by a licensed adult (who is not allowed to carry a hunting weapon). The 25-day regular firearms season opens for Maine residents on Saturday, October 31st, and for nonresidents the following Monday. This season ends the Saturday following Thanksgiving (November 28th). Finally, the muzzleloader season will begin in all WMDs on November 30th, but will end on December 6th (6 days) in WMDs 1 – 11, 14, 19, 27 and 28. Elsewhere, the muzzleloading season will continue until December 12th (12 days). Crossbow archery season will coincide with modern firearms.

Availability of any-deer permits among our 29 WMDs is directly related to our deer management objectives. Very conservative doe harvests are required in eastern and northern WMDs where we are trying to increase deer densities. In contrast, does must be more heavily harvested in WMDs where current objectives are to stabilize deer populations at 15 to 20 deer/mi²; abundance targets set in the strategic plan.

To accomplish deer management objectives in 2009, we have set doe harvest quotas ranging from zero to 798 among our 29 WMDs. Totalling 4,787 does statewide, the 2009 doe quota is 7% below the doe harvest we achieved in 2008. The reduced doe quota in 2009, reflects the tremendous impact the harsh winter of 2008 had on deer populations throughout the state. A total of 45,385 any-deer permits will be issued statewide ranging from 600 permits in WMD 29 to 7,980 in WMD 22. WMDs 1-14, 18, 19, 27 and 28 will not have any permits allocated.

The allocation of 45,385 any-deer permits, along with the archery and youth seasons, should result in the statewide harvest of roughly 4,787 does and an additional 2,139 fawns in 2009. Antlered buck harvests should approximate 11,460 about a 16% decrease from the 2008 buck kill of 13,564. The impact of two tough winters on deer survival made it necessary to reduce permit allocations and the overall predicted harvest. If normal hunting conditions and hunter effort take place the statewide deer harvest in Maine should be in the vicinity of 18,976 deer. This would be lower than the 20-year average harvest since the any-deer permit regulations were put into effect (28,704) and represent the lowest harvest since 1971.

--Lee Kantar

**FOR MORE INFORMATION ON DEER HARVESTS, SEASONS, ETC.,
PLEASE VISIT THE DEPARTMENT LINK LISTED BELOW:
http://www.maine.gov/ifw/wildlife/surveys_reports/research_management/index.htm**

Moose

2008 Season Dates and Structure

Maine moose hunters could hunt moose for 6 days by permit within the structure of a split season framework (September/October) during 2008. The September season ran from September 22nd to September 27th, while the October season ran from the 13th through the 18th. In addition, 2008 marked the first November moose hunt in Department history (covering southern Wildlife Management Districts 15, 16, 23 and 26). The season ran concurrent with the November deer season from November 3rd to November 29th and opened for Maine residents on November 1st.

2008 Moose Permits and Applicants

The annual allocation of moose permits is related to the management goals for each wildlife management district (WMD; Figure 2), which are categorized as either recreational, compromise, or road safety management goals. Permit levels remained the same for all traditional moose hunting districts between 2007 and 2008; however with the addition of the southern Maine moose hunt in WMDs 15, 16, 23, and 26, an additional 135 any-moose permits were allocated. An any-moose permit allows the permittee to harvest either a bull or cow. The total number of moose permits issued in 2008 was 3,015.

During 2008, Antlerless Only Permits (AOPs) ranged from zero in 7 WMDs (districts 2, 4, 5, 7-9, and 14) to 280 in WMD 6. Among the 19 WMDs in which a cow harvest was desired, the permit allocation totaled 780. The number of AOPs we allocate in a given district is a reflection of that WMDs moose cow quota. Consequently, WMDs that can sustain only limited cow mortality are allocated relatively few antlerless permits. In contrast, WMDs that can support higher cow mortality (and still meet management objectives) are allocated more permits (Road Safety Management WMDs). The southern Maine WMD moose hunt is a slight variation on this. Permit type was structured as any-moose and the season

was extended to the length of the November deer season to increase the chances of a hunter to harvest a moose within a district where densities are low and landowner access is difficult. The November time frame was chosen to honor recommendations by landowners that if southern WMDs were open to moose hunting that the season would be opened concurrently with the November firearms season for deer.

Permits are allocated to qualified applicants in a random computer lottery. Maine residents can purchase additional chances in the lottery as follows: one chance for \$7.00, three chances for \$12.00 and, six chances for \$22, while non-residents can increase their odds as follows \$15.00 = One-chance, \$25.00 = Three-chances, \$35.00 = Six-chances, \$55.00 = Ten-chances. In addition, nonresidents may purchase multiples of 10 chances at \$55.00 each. No more than 10% of the permits for each WMD may go to a non-resident. Upon selection, resident and non-resident permit fees are \$52.00 and \$477.00 respectively. Overall, 64,450 people applied for a moose permit during 2008. This included 46,313 residents and 18,137 non-residents. Out of those applicant pools, 5.9% of the residents and 1.6% of the non-residents were selected for permits.

2008 Statewide Statistics

Overall, 2,241 moose were registered during 2008 (Table 9). In 2008, 154 more moose were harvested during the Sept/Oct hunt than in 2007 or a 7.5% increase (2,052 vs 2,206) moose). The 2008 harvest was 4% below the average number of moose harvested over the last 8 years of moose permit allocations by Wildlife Management District. Since the re-institution of moose hunting in 1980, moose season timing (split season started in 2002) and areas open to hunting has changed several times.

Table 9. Moose harvest and success rates by sex, age and Wildlife Management District (WMD), 2008.

WMD	Bull	Cow	Bull Calf	Cow Calf	Total Antlerless	Total	Total Permits	Total Success
1	108	15	0	0	15	123	140	88%
2	93	0	0	0	0	93	95	98%
3	201	161	10	16	187	388	455	85%
4	220	0	1	0	1	221	255	87%
5	113	0	0	0	0	113	125	90%
6	205	174	5	6	185	390	500	78%
7	105	0	0	0	0	105	125	84%
8	190	0	0	0	0	190	235	81%
9	42	0	0	0	0	42	50	84%
10	66	7	1	0	8	74	110	67%
11	106	62	3	3	68	174	280	62%
12	24	14	2	0	16	40	55	73%
13	26	6	0	1	7	33	45	73%
14	26	0	0	0	0	26	35	74%
15	9	5	0	0	5	14	25	56%
16	9	1	0	0	1	10	20	50%
17	19	7	1	0	8	27	60	45%
18	39	9	0	0	9	48	100	48%
19	53	11	0	0	11	64	105	61%
23	3	4	0	0	4	7	45	16%
26	3	0	1	0	1	4	45	9%
27	12	1	0	0	1	13	30	43%
28	34	8	0	0	8	42	80	53%
Totals	1,706	485	24	26	535	2,241	3,015	74%

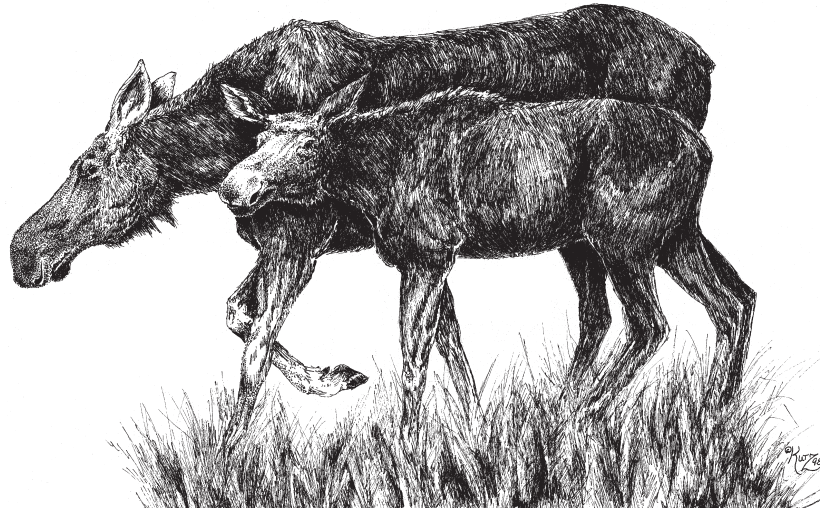
Bull Harvest

The statewide harvest of bulls during the Sept/Oct season (1,682) in 2008 marked a 5% increase from the previous year (1,599). Among the antlered bulls taken in 2008, roughly 147 (10%) were 1½ year-olds (yearlings) carrying their first set of antlers, while 335 were 2.5 years old making up 26% of the bull harvest. Mature bulls (4½ to 14½ years old) comprised 53% of bulls older than 2.5.

Breeding bulls can lose an average of approximately 15% of their body weight during the rut. Because of this and the timing of the fall harvest, bull weights reflect a decrease in body weight from September to October. Average bull weights in the 2008 harvest for September were 738 pounds versus 663 pounds in the October harvest (>10% decline). The heaviest bull weighted in at 1,125 dressed (no heart, lungs, or liver) and was killed in WMD 3 during the September season. The largest measured spread was 66.9" on a 7.5 year old bull harvested in WMD 7, and the highest number of points was counted on a 9.5 year old bull shot in WMD 2 with a total of 30 legal points. Among 1,539 bulls examined in the harvest, 19% of the bulls sported cervicorn (branching) antlers and 36% of these animals were yearlings; 17% were mature bulls (>4 years old) including the oldest at 14.5.

Antlerless Harvest

The statewide harvest of adult (older than calf) cows during 2008 was 485 compared to 382 in 2007 or a 27% increase. During 2008, antlerless-only permittees also tagged 50 calves that included 24 males and 26 females. Overall 535 antlerless moose were registered by hunters during the 2008 season. This increase included the antlerless moose taken as part of the 135 Any-moose permits issued within the southern zones that were opened for the first time in 2008. The antlerless moose harvest in the southern zones was comprised of 10 adult cows and one male calf.



Harvest by Season and Week

Maine's moose hunting was split into two seasons (i.e., September and October) from 2002-2007. In 2008 the southern Maine moose hunt added the month of November to the roster. Now, a hunter is issued a permit for one of three seasons and can hunt for a maximum of 6 days during September or October, or during the entire firearms deer season in WMDs 15, 16, 23, and 26. Permit levels for the three separate moose hunting seasons were 1,133 for September, 1,747 for October, and 135 for November.

Hunter Participation, Residency and Success Rate

In 2008, 2,720 residents and 295 non-residents won permits to hunt moose. A total of 295 non-residents hunted for moose across all open WMDs with a 100% success rate. Representing 32 states (as far away as Nevada) and 2 provinces (New Brunswick and Quebec); the majority (23%) came from Massachusetts. Resident success rates were 71.5% and when combined with the outstanding success by out-of-staters, the total success rate was 74% statewide. Success rates over the last 9 years have been around 79%.

Changes for the 2009 Moose Season

In 2009, we will offer 3 separate moose hunting periods in Maine; September, October and November. The September season will run from September 28th to October 3rd in WMDs 1-6, 11 and 19; the October season will run from October 12th through the 17th and include WMDs 1-14, 17-19, 27, and 28. In WMDs 15, 16, 23 and 26, the season will coincide with November's deer season running from November 2nd through November 28th. Opening day for Mainer's will be on Saturday October 31st. In 2008, these 4 additional WMDs were opened up to limited hunting to meet the goal of reducing moose-vehicle collisions in central Maine. A total of 135 permits will be allocated for any moose (bull, cow or calf) in WMDs 15, 16, 23, and 26. The respective distribution in these WMDs will be 25, 20, 45, and 45 permits. In total, Maine's moose hunt will offer a total of 3,015 permits for 2009.

--Lee Kantar

Black Bear

The expansive forest of northern, eastern, and western Maine supports abundant wildlife populations including the largest black bear population in the eastern United States. Despite their abundance, people rarely see bears because they often inhabit dense forest. Because of their elusiveness, bears have become a symbol of the wild. Once considered a pest, hunters, outdoor recreationalists, and the general public now value bears. For more than 30 years, the Department has been committed to conserving Maine's black bear population. Since 1975, the Department has been monitoring Maine's bear population in 3 different areas to ensure our management decisions are based on current and sound scientific information. Recently, we began an effort to update and improve our population estimates. During the winter of 2008, we initiated a 3-year effort to update black bear home-range and density estimates by replacing traditional VHF collars with GPS collars. These collars provided more information on bear movement patterns than traditional radio collars and will help us assess the importance of different habitat to bears. Also in 2008, we began collecting bear teeth from hunters that harvested bears to estimate the age structure of Maine's bear population and monitor population trends.

Living with Black Bears

Although Maine's forests and fields provide an abundance of food for Maine bears, when natural foods are limited, especially in the spring, bears are easily attracted to the food odors near people's homes. After a long winter of fasting, bears emerge from their dens each spring to a world where natural foods (grass, tree buds, and other vegetation) are less abundant and nutritious. In their search for food, some bears encounter food odors that attract them to back yards and communities. Once berries begin to ripen, bears usually stop visiting human food sources. Since many of us choose to live close to the woods, we can take a few steps each spring to reduce encounters with black bears!

- Bring your bird feeders in and do not resume feeding birds until the fall.
- Keep your garbage secure in a building until the morning of trash pick-up.
- Keep dumpster lids secure and if a dumpster is overflowing with garbage, call the disposal company and have the waste removed.
- Keep pet and livestock feed in a building or other enclosure.
- Clean your outdoor grill to reduce food odors, and if possible, store the grill in a building when not in use.



The 2008 Black Bear Hunting and Trapping Season

The general hunting season for black bears opens the last Monday in August and closes the last Saturday in November. Hunters are allowed to hunt bears near natural food sources or by still-hunting throughout this 3-month period. Hunting bears over bait is permitted for the first 4 weeks and with the use of hounds for a 6-week period that overlaps the last 2 weeks of the bait season. Trappers can harvest a bear in September and October. Despite a long stalking and still-hunting season, most bears in Maine continue to be harvested over bait. In 2008, 75% of the bears were taken over bait, 12% with hounds, 6% by still-hunting or stalking, and 3% in traps (Table 10). More bears were harvested in Aroostook County than any other county accounting for 36% of the harvest. Few bears were harvested in central and coastal Maine (i.e., Knox, Lincoln, Waldo, Cumberland, Sagadahoc, Kennebec, and York counties) where bear populations are low and hunting opportunity is limited.

Non-resident hunters continue to enjoy hunting bears in Maine with just over half the bear permits sold to non-residents. Although non-resident permit holders account for half of Maine's bear hunters, they harvest about 2/3 of the bears. While most non-resident hunters hire a guide, few resident bear hunters hire guides, which may account for the higher success rate of non-residents. Non-resident hunters harvested the majority of bears during the bait (75%) and hound season (69%). Hunting over bait is also the most popular method for resident bear hunters accounting for 59% of their harvest. Although few bears are taken during the firearms season for deer or in traps, Maine residents harvested the majority of bears taken by these methods.

Since 2005, hunters harvested approximately 3,000 bears each year, when the previous 4-year harvest averaged 3,700 bears. A variety of factors likely contributed to the lower harvest rate (weather, natural food availability), but most noticeable was the decline in bear hunters. In 2003, resident bear permit fees went from \$5.00 to \$25.00 and non-residents permit fees went from \$15.00 to \$65.00. This change in fees was followed by a drop in permits purchased by residents. A pending bear hunting ballot initiative in 2004 may have been responsible for continued high interest among

non-residents bear hunters (6,500 permits). Guides reported very strong interested in non-residents wishing to book hunts prior to the bear referendum. Since non-resident hunters harvest the most bears (70%), bear harvest remained above 3,500 bears in 2003 and 2004. Since 2005, non-resident bear permit sales have declined steadily. Despite the addition of 1,304 permits in 2008, when trappers and non-resident deer hunters were required to purchase a bear permit, permit sales continued to decline. The down turn in the US economy has likely contributed to lower bear hunter participation. If hunter participation continues to decline, we may need to increase hunting opportunities to meet bear management goals

This work is supported by federal excise taxes on sporting arms, handguns, ammunition, and archery equipment (Pittman-Robertson Fund), hunting and trapping license revenues, and a grant from Safari Club International and GMO.

--Jennifer Vashon

Table 10. Number of bears harvested in Maine in 2008 by Wildlife Management District (WMD).

WMD	Method of Take					Total Harvest	Archery	Assisted by Guide	Resident	Non-resident
	Hunting with Bait	While Deer Hunting	Hunting with Dogs	Trapping	Unknown					
1	140	2	9	2	24	177	13	157	8	169
2	86	3	33	0	3	125	10	114	10	115
3	146	3	20	3	17	189	25	141	55	134
4	226	5	2	0	3	236	27	195	46	190
5	168	4	7	1	6	186	15	159	19	167
6	206	3	14	3	11	237	22	177	59	178
7	92	8	15	9	5	129	13	88	44	85
8	178	3	40	19	5	245	12	162	100	145
9	66	10	5	0	4	85	6	54	34	51
10	87	4	5	3	3	102	12	86	19	83
11	149	10	36	4	5	204	17	143	60	144
12	67	18	23	8	1	117	13	53	69	48
13	15	11	20	2	2	50	1	26	25	25
14	50	6	13	5	2	76	3	42	43	33
15	23	16	6	1	3	49	6	4	38	11
16	4	2	3	0	1	10	0	3	8	2
17	24	9	11	3	1	48	3	14	36	12
18	107	10	9	2	5	133	15	77	54	79
19	71	5	25	2	3	106	5	84	19	87
20	4	0	0	0	2	6	0	0	6	0
21	1	0	0	0	2	3	0	0	3	0
23	0	0	0	0	1	1	0	0	1	0
25	1	0	0	0	1	2	0	1	2	0
26	16	8	0	1	4	29	4	3	24	5
27	29	7	8	1	3	48	6	19	29	19
28	80	8	24	6	4	122	12	82	41	81
29	2	0	1	0	1	4	1	2	2	2
State Totals	2,038	155	329	75	122	2,719	241	1,886	854	1,865

Furbearers and Small Game Mammals

Furbearers include all mammals harvested primarily for their pelts. In Maine, these include coyote, red and gray fox, bobcat, fisher, marten, raccoon, skunk, short- and long-tailed weasels, mink, otter, beaver, muskrat, and opossum. The pelts of all furbearers, except weasel, raccoon, muskrat, skunk, and opossum are tagged for tracking the furbearer harvest. Pelt tagging is one of the primary population indices used in our furbearer management systems. Furbearers are primarily trapped but some species (i.e., fox, coyote, bobcat, raccoon, and skunk) are also hunted. Small game that can be hunted includes snowshoe hare, gray squirrel, woodchuck, porcupine, and red squirrel.

Overview of Trapping Season

Trappers enjoyed a little milder weather conditions this past trapping season than the previous year. Although better weather conditions may have helped the trappers' spirits, lower pelt prices did not help matters. Last year's sharp decline in oil prices hit Russia, one of the largest fur buying nations, pretty hard. With less money flowing into the country the demand for furs plummeted. The result was a general decline in fur prices (Table 11) especially late in the season. Unfortunately, the fur harvest data has been slow coming in this year and is not complete in time for this report. All we can present is last year's fur harvest results at this time (Table 12). We will be keeping a close eye on the fisher harvest to

see how the 10 fisher per trapper limit impacted the fisher harvest this year.

Private property damage caused by beaver nuisance issues appears to have increased over the past year. The harsh trapping conditions of 2007-2008, which resulted in a 50% decrease in the beaver harvest, certainly did not help alleviate many nuisance problems. We are working with trappers and private property owners to try to reduce the number of nuisance beaver conflicts by increasing trapping opportunities, and by encouraging land owners to use water control devices at problem sites.

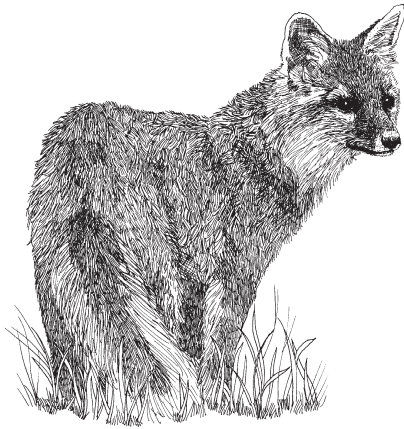


Table 11. Average pelt price offered for furs by Maine furbuyers over the last 6 trapping seasons. Prices followed by a superscript (h or L) were significantly higher or lower than the average pelt price the previous 5 years for that species.

Species	08-09	07-08	06-07	05-06	04-05	03-04
Beaver	\$18	\$21 ^h	\$21 ^h	\$18	\$17	\$16
Coyote	\$16 ^L	\$21	\$22 ^h	\$17	\$16	\$21
Red fox	\$17 ^L	\$20	\$22 ^h	\$17	\$16	\$22
Fisher (Male)	\$39	\$61 ^h	\$71 ^h	\$31	\$27	\$25
Fisher (Female)	\$42	\$63 ^h	\$74 ^h	\$27	\$21	\$21
Muskrat	\$2.56	\$2.56	\$6 ^h	\$2.60	\$1.69	\$2.15
Raccoon	\$10	\$11 ^h	\$11 ^h	\$7.80	\$8.78	\$10.24
Weasel	\$3.13	\$3.67 ^h	\$3.31 ^h	\$2.21	\$1.96	\$2.00
Bobcat	\$51	\$60 ^h	\$59 ^h	\$49	\$44	\$50
Grey fox	\$21	\$32 ^h	\$24 ^h	\$17	\$12	\$14
Pine Marten	\$26	\$32	\$45 ^h	\$25	\$21	\$19
Mink (Male)	\$12	\$13	\$22 ^h	\$15	\$12	\$10
Mink (Female)	\$7	\$7	\$13 ^h	\$10	\$8	\$8
Otter	\$41	\$41 ^L	\$45 ^L	\$70	\$68	\$65
Skunk	\$3.14 ^L	\$4.67 ^h	\$5 ^h	\$3.50	\$2.79	\$2.54

Table 12. Harvest of furbearing animals in Maine. Harvest records are from pelt-tagging records collected from the 2000-2001 to 2007-2008 trapping seasons. Pelt-tagging records may under-represent the harvest of coyote and beaver.

Species	07-08	06-07	05-06	04-05	03-04	02-03	01-02	00-01
Beaver	6,357	12,635	11,094	10,436	8,222	7,809	11,757	9,803
Bobcat	410	344	344	376	273	331	269	308
Coyote	1,819	2,007	2,077	2,175	2,459	2,287	2,741	1,977
Fisher	993	1,968	1,810	2,174	2,526	2,630	3,117	2,028
Red fox	1,030	1,245	1,067	1,413	1,535	1,469	2,056	1,272
Grey fox	161	107	67	125	196	172	164	89
Marten	2,401	2,350	3,873	2,248	5,088	2,908	5,529	1,832
Mink	1,888	2,280	1,108	1,224	904	935	2,031	1,606
Otter	493	968	1,041	1,113	931	803	1,103	943

Funds for managing Maine's furbearers primarily come from the sale of hunting and trapping licenses, and from federal excise taxes on sporting arms, handguns, ammunition, and archery equipment (Pittman-Robertson Fund), and funds from Loon Conservation Plate funds.

--John DePue

Canada lynx

The lynx is a medium-sized cat and can be distinguished from a bobcat by its completely black-tipped bobbed tail, longer ear tufts, and larger paws. Lynx populations are influenced by the numbers and distribution of snowshoe hare -- their primary prey. Maine is at the southern extent of the lynx range where forests transition from spruce-fir to hardwood and where winter snow depths lessen. Snow track surveys initiated in 2003, and historic information, indicate that lynx distribution has not changed substantially over the last 100 years. Lynx remain most common north of Moosehead Lake and west of Route 11, rare in areas south and west of Moosehead Lake, and absent from the remainder of the state.

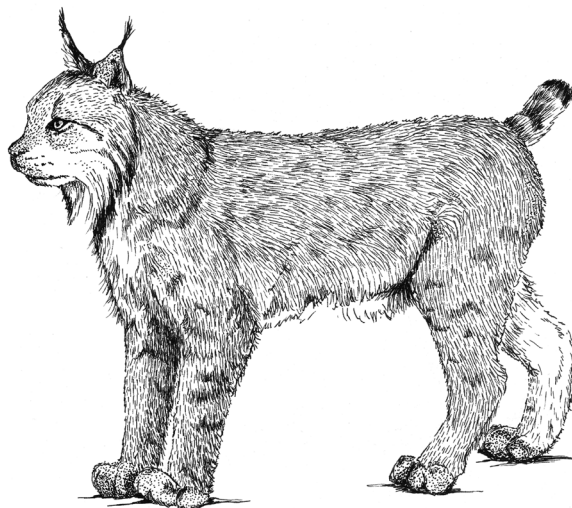
A history of lynx in Maine

Historically, it appears that lynx have persisted in low numbers in Maine. Snowshoe hare are most numerous in forests with a dense understory of young conifers. Prior to European settlement, most of Maine's forests were old, and understories of young conifers occurred in patches. By the mid 1800s, young conifers and lynx were more common in northern Maine following the first major spruce budworm outbreak that was triggered by forest cutting practices. However, as the forest matured, lynx again became less common. The abundance of mature spruce and fir triggered another major budworm outbreak by the late 1970s. The extensive clearcutting of infected spruce and fir that followed, created a historically high amount of suitable lynx habitat by the late 1990s. However, this level of forest harvesting was unsustainable. Future conservation efforts will strive to maintain a sustainable level of lynx habitat that will likely maintain a lower but more stable population of lynx in northern Maine.

State and Federal Protection

In 1832, a statewide bounty was offered on all wildcats and remained in place until 1967, when Maine's legislature closed the season on lynx. In 1997, lynx were considered for state listing as endangered or threatened, but information on the status of lynx in Maine was insufficient to warrant additional protection. Although not listed, lynx were designated as a species of special concern. This status identifies species that could easily become endangered or threatened and thus warrant special attention. In 2000, the US Fish and Wildlife Service (USFWS) listed lynx as a threatened species in 14 states including Maine. In 2005, the Department reviewed the status of the species on the State's threatened and endangered species list. Although federally listed, lynx did not meet the State's threatened or endangered listing requirements. Information gathered from snowtrack surveys and telemetry studies in northern Maine were critical in making this determination. That same year, the USFWS drafted a recovery outline for lynx that serves as an interim strategy to guide recovery efforts. This recovery outline was also used in the critical habitat designation process for Canada lynx in the contiguous United States. In 2009, the USFWS designated critical habitat for lynx in Maine that included 9,500 mi² of private forest in northern Maine.

As a threatened species, lynx are protected from intentional and accidental take that may or may not result in the direct death of a lynx. Since lynx were listed, the Department has been working with the USFWS to minimize potential takes of lynx in Maine. More recently, to reduce the accidental capture of lynx in traps set for other furbearers, the Department placed restrictions on traps set in northern Maine. In 2008, the Department submitted an incidental take plan to the USFWS that would allow a low level of incidental take of lynx by fur trappers. This plan provides measures to minimize the accidental catch of lynx in traps to the maximum extent practicable. The USFWS is currently reviewing this plan.



Department studies lynx

In 1999, the Department and the USFWS initiated a radiotelemetry study to determine the status of lynx and identify factors that may limit lynx in Maine. Since 1999, we have captured and radiocollared 77 lynx (42 males and 35 females) and documented the production of 37 litters of kittens. From 2000-05, home-range size, productivity, and survival rates

suggest lynx were thriving in Maine. More recently, snowshoe hare densities and the number of lynx producing litters have declined on the study area. Over the next year, MDIFW, the University of Maine, and USFWS will continue to collect and analyze additional data to determine if lynx can be maintained at lower levels and to identify the conditions (e.g. hare, habitat) needed to maintain lynx in Maine.

This work is supported by non-game federal funds (Section 6 and State Wildlife Grants), federal excise taxes on sporting arms, handguns, ammunition, and archery equipment (Pittman-Robertson Fund), hunting and trapping license revenues, the Maine Outdoor Heritage Fund, Loon Conservation Plate funds, the National Fish and Wildlife Foundation, the National Council for Air and Stream Improvement, the Wildlife Conservation Society, Davis Conservation Foundation, Fuller Foundation, Sweet Water Trust, Wilma K. Wilensky, Lynx System Developers, Defenders of Wildlife, Maine Forest Products Council, and the Cooperative Forest Research Unit.

--Jennifer Vashon

New England Cottontail

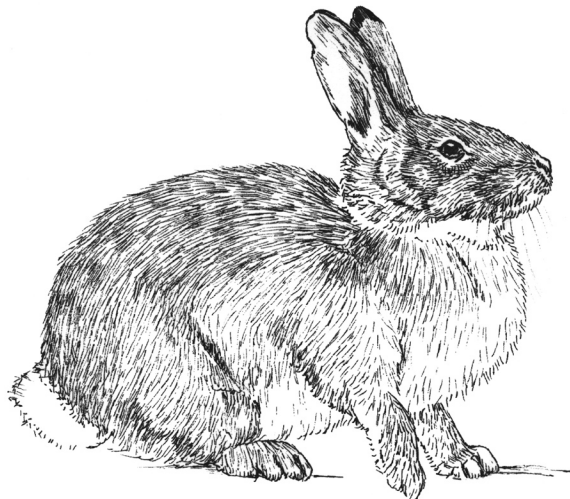
Arguably, the mammal that has the greatest need for management attention in Maine is the New England cottontail rabbits (NEC; *Sylvilagus transitionalis*). The NEC was added to Maine's endangered species list in 2007 and is being considered for listing under the federal endangered species act. Two relatively snowy winters in succession have not helped the situation for NEC in Maine. Only 17% of the sites that previously held NEC 5 to 6 years ago continue to have rabbits. Whether the decline in the number of occupied NEC sites was caused by rabbits not being able to make it through the severe winters or was a consequence of the small size of the sites is not known. In Maine, 55% of NEC habitat patches were 5 acres or less in size 5 or 6 years ago, and we know that NEC survival in these small patches is about half of the survival rate of NEC in patches >25 acres. Regardless, of the reason for the decline in occupied sites, immediate action is needed to reverse the population trend for NEC.

A number of organizations in Maine are hard at work in getting NEC restoration efforts off the ground. These organizations participate in the NEC Working Group which meets about every 6 weeks to discuss management and research needs and progress. This year, the US Fish and Wildlife Service (USFWS) and Environmental Defense were instrumental in acquiring a grant which allowed us to hire a New England cottontail restoration coordinator (Kelly Boland) for Maine. Kelly will work out of the Rachel Carson National Wildlife Refuge office in Wells, Maine, and will work with landowners who are interested in setting up conservation agreements for NEC management on their land.

Good progress has been made on the landscape genetics project being conducted by Dr. Adrienne Kovach and her graduate student, Lindsey Fendersen, at the University of New Hampshire. Lindsey's work will help us determine the size of the NEC populations in Maine, and which landscape features are acting as barriers or corridors for NEC. Department accomplishments include completion of a NEC management system, and submitting a plan to the USFWS for a landowner protection agreement (Candidate Conservation Agreement with Assurances).

The Department will likely be doing its first translocation of NEC in 2010 to prevent an incidental taking of NEC at the Portland Jetport. Approximately 8-13 acres of occupied NEC habitat is slated to be lost next year when the Portland Jetport addresses some wildlife safety issues at the end of one of its runways. As part of this translocation effort, the Department is considering whether it is feasible to capture and propagate rabbits from the Jetport and use the offspring in future translocation efforts. Legislative approval may be needed before any offspring from a propagation effort are translocated to other areas of the state. Site selection for this translocation / propagation effort is underway. We hope to begin site preparations this summer.

--Wally Jakubas



REPTILE, AMPHIBIAN, AND INVERTEBRATE GROUP

The Wildlife Division expanded its commitment to the conservation of the full diversity of Maine's wildlife with the creation of a Reptile, Amphibian, and Invertebrate Group in 2005. Maine is home to 18 species of frogs and salamanders (amphibians), 16 species of turtles and snakes (reptiles), and over 16,000 species of terrestrial and freshwater invertebrates, from beetles and butterflies to mayflies and mussels, to name just a few. Coordinating survey, research and conservation priorities for such a diverse suite of organisms is challenging! One of the Group's highest priorities is to address the protection and recovery needs of the large number of reptiles and invertebrates currently on the state's official list of Endangered and Threatened species (21 of 46 species). Some state endangered invertebrates, such as the Katahdin Arctic Butterfly and Roaring Brook Mayfly, are state or regional endemics – found nowhere else in the world but in Maine or a small area of the Northeast.

Phillip deMaynadier, Wildlife Biologist and Group Leader – Supervises Group activities and serves as the Department's lead biologist on issues related to the conservation of amphibians, vernal pools, butterflies, and dragonflies.

Beth Swartz, Wildlife Biologist – Works closely with the Department's Habitat Group and the Maine Natural Areas Program on Natural Heritage methodologies – a system for tracking state rare and endangered plants and wildlife. Beth also has extensive expertise on aquatic invertebrates with recent efforts devoted to the survey and conservation of Clayton's Copper butterfly, freshwater mussels, and rare mayflies.

Jonathan Mays, Wildlife Biologist – Jonathan brings professional experience working with a diversity of reptile, amphibian, and invertebrate species. Currently Jonathan serves as the Department's lead biologist on reptile issues where he coordinates survey and research on several rare turtle and snake species. Jonathan is also coordinating efforts to document the distribution and status of all reptiles, amphibians, spiders, snails, and tiger beetles.

REPTILE, AMPHIBIAN, AND INVERTEBRATE CONSERVATION AND MANAGEMENT *Amphibians and Reptiles*



Partners in Amphibian and Reptile Conservation

MDIFW continues to cooperate with an initiative entitled Partners in Amphibian and Reptile Conservation (PARC). Modeled partly after the successful Partners in Flight (PIF) bird conservation program, PARC's mission is to forge partnerships among diverse public and private organizations in an effort to stem recent declines of amphibian and reptile (herptile) populations worldwide. MDIFW participates in northeastern chapter PARC meetings where discussions focus on conservation initiatives for herptiles and habitats of regional conservation concern. To date, PARC-Northeast has made progress on drafting model state regulations, compiling a list of regional species of conservation concern, and publishing management recommendations for habitats of special importance to northeastern herptiles. For more information on PARC conservation efforts, or to join the northeastern working group, visit the PARC website at www.parcplace.org.

Funding for this work comes from Loon Conservation Plate and Chickadee Check-off funds.

--Phillip deMaynadier and Jonathan Mays

Maine Amphibian and Reptile Atlas Project (MARAP)

From 1986-1990, MDIFW, in cooperation with Maine Audubon and the University of Maine, conducted the Maine Amphibian and Reptile Atlas Project (MARAP). During a four-year period, over 250 volunteers from around the state contributed approximately 1,200 records of observations of amphibians and reptiles. This initiative culminated in the 1992 publication of the book *The Amphibians and Reptiles of Maine*. The first edition sold out within two years of publication.

By 1998, considerable new data had been compiled and there was increasing demand for updated information on the state's amphibians and reptiles. Editors Malcolm Hunter, Jr., Aram Calhoun, and Mark McCollough revised a second edition, incorporating information from 1,300 new records into updated range maps and species narratives, and added color photographs, and a CD of the calls of the frogs and toads of Maine. Copies of the updated 1999 edition of *Maine Amphibians and Reptiles* can be ordered for \$19.95 from the Information Center, MDIFW (207-287-8000).

MDIFW continues this atlas work and maintains a comprehensive database on the distribution of Maine's 34 amphibian and reptile species. Though most of this work is opportunistic, in 2008 a species specific survey targeting the Northern

Spring Salamander was conducted in Maine's Central and Western Mountains and Foothills eco-regions. Through this focused effort and the hard work of contract herpetologist Trevor Persons, Spring Salamanders were documented in 41 new townships and we learned a great deal on the species habitat assemblages and ecology at the northern extent of their range. There is much left to learn regarding the distribution and ecology of other species and we encourage members of the public to share their reptile and amphibian observations and photographs by completing the MARAP card below (Figure 2). **Please submit observations of any of the four state-listed reptiles – Eastern Box Turtle (Endangered), Blanding's Turtle (Endangered), Spotted Turtle (Threatened), and Black Racer (Endangered) -- to MDIFW immediately (jonathan.mays@maine.gov or call 207-941-4475).**

Funding for this work comes from Loon Conservation Plate and Chickadee Check-off funds.

-- Jonathan Mays and Phillip deMaynadier

Maine Amphibian & Reptile Atlas Project (MARAP) Report Card													
SPECIES OBSERVED (describe field marks below): _____				Photo		Handled		Observed		Heard (frogs only)		ID Confidence (%)	
				Yes No		Yes No		Yes No		Yes No			
DATE: ____ / ____ / ____ <small>YEAR MONTH DAY</small>				PRINCIPAL OBSERVER:									
TOWNSHIP: _____				Name _____		Address _____		City/State/Zip _____		Phone _____		Email _____	
COUNTY: _____				ADDITIONAL OBSERVERS:									
SITENAME: _____				_____									
DELORME Map Page & Grid (e.g., 02B3): _____				_____									
LOCATION (be specific, reference mapped landmarks, when possible include GPS coordinates): _____ _____													
HABITAT DESCRIPTION: _____ _____													
NOTES (Description, # observed, Behavior, Age, Sex): _____ _____													
<i>Return this form and labeled photos to:</i>													
MARAP: Reptile, Amphibian, & Invertebrate Group Department of Inland Fisheries & Wildlife 650 State Street, Bangor, ME 04401						jonathan.mays@maine.gov or email phillip.demaynadier@maine.gov							

Figure 2. Maine Amphibian and Reptile Atlas Project (MARAP) Record Card.

Amphibian Monitoring

Since 1989, scientists have been concerned that frogs, toads, and salamanders (amphibians) may be declining worldwide. Unfortunately, a recent scientific analysis confirms these suspicions with fully 32% of the world's amphibian species now considered threatened with extinction, a rate exceeding that for birds or mammals. Maine, like many other states, had little data to assess trends in its own amphibian populations. In 1996, MDIFW and Maine Audubon received an Outdoor Heritage Fund grant to initiate a statewide amphibian-monitoring program, which was launched in 1997. Maine's Calling Amphibian Survey is part of a nationwide effort organized by the U.S. Geological Survey. Sixty-one road-monitoring routes were randomly established across the state. Each spring and summer season, volunteers drive their individually assigned route three times, recording the diversity and intensity of calling frogs and toads. Several vacant routes still exist, with new volunteers especially needed in northern Maine. Participants are provided training materials to assist them with the identification of each of Maine's nine species of frogs and toads. With twelve years of data collected (through 2008), we anticipate the ability to analyze preliminary population trends for several species of frogs and toads soon. Currently Leopard Frogs (Special Concern), Pickerel Frogs, and Mink Frogs are among the state's least commonly reported species. Those interested in participating in this citizen-science initiative should contact Maine Audubon's Susan Gallo at 207-781-6180 (ext. 216) or visit the website at: www.maineaudubon.org/conservation/citsci/mamp.shtml.

Funding for this work comes from Maine Audubon Society, Loon Conservation Plate, and Chickadee Check-off funds.

--Phillip deMaynadier

Rare Snakes

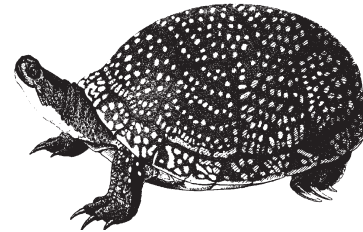
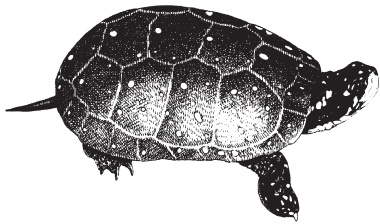
Maine is currently home to at least nine species of snake, one of which is state Endangered (Northern Black Racer) and two of which are state Special Concern (Ribbon Snake and Brown Snake). A tenth, the Timber Rattlesnake, was historically native but is now thought to be extirpated from the state. The Maine Amphibian and Reptile Atlas Project (MARAP) continues to provide location records for all snakes, but more detailed research is needed in order to assess movements, habitat requirements, and potential threats to our rare snakes.

To determine home range size, over-wintering sites, and habitats used, MDIFW is in the third year of an ongoing radio telemetry project studying Black Racers in southern Maine. Racers are long, slender snakes, jet black in color with a white chin/throat and gray belly. Black Racers reach the northern extent of their range in southern Maine. At present, less than 30 sites in Maine are known to host Black Racers and only six of those locations have had racers observed at them within the last five years. To date, 14 racers have been implanted with radio transmitters and data analysis has shown that these animals are using very large home ranges in early successional habitat (ca. 100 contiguous hectares of predominantly scrub/shrub habitat and surrounding grasslands and open forests). Field herpetologist Trevor Persons and MDIFW's veterinarian Dr. Russell Danner have both been instrumental in this project. In addition, Parker Schuerman and Jon Bailey (Southern Maine Land Stewards with The Nature Conservancy) along with other generous land owners continue to provide access, project support, and continued management to maintain habitat that benefits Black Racers. Knowledge gained from this study is informing protection efforts and habitat management of Maine's longest and fastest reptile.

Historically, snakes have been misunderstood, feared, and even persecuted. Many have stated that snakes are among the least appreciated of Maine's wildlife. While this may be true, snakes fill an important place in the environment and provide balance: preying on small mammals, insects, and other reptiles and amphibians, and providing food for various predatory birds and mammals. Snakes are fascinating creatures and our state is certainly richer with them here.

Funding for these projects comes from U.S. Fish and Wildlife Service, Maine Department of Transportation, Loon Conservation Plate, and Chickadee Check-off Funds.

--Jonathan Mays



Rare Turtles

Over the past 18 years, MDIFW has actively researched the distribution and status of Blanding's and Spotted Turtles in Maine. Blanding's Turtles (Endangered) are 7 to 10 inches long with a yellow throat and light colored flecking on a helmet shaped shell. Spotted Turtles (Threatened) are 5 to 6 inches in length, have yellow spots on the head, tail, and legs and a somewhat flat, yellow spotted shell. Both species are semi-aquatic preferring small, shallow wetlands in southern Maine including pocket swamps and vernal pools. Undeveloped fields and upland forests surrounding these wetlands provide habitat for nesting, estivating (a period of summer inactivity), and inter-wetland movements.

Despite the attention these turtles have received, habitat loss and fragmentation continue to threaten both species' viability in Maine. As the human population expands, road mortality become an ever increasing threat. The turtle's shell has provided sufficient protection from predators for millions of years, but unfortunately is no match for a car tire. Both Blanding's and Spotted Turtles are long-lived animals that take a minimum of 7 (Spotted) to 14 (Blanding's) years to reach reproductive age. This coupled with low hatchling success places all the more importance on adult survivorship. Recent population analyses of several freshwater turtle species indicate that as little as 2-3% additive annual mortality of adults is unsustainable, leading ultimately to local population extinction. In other words, losing just a few breeding adult turtles each year to road kill may be the greatest factor threatening the extinction of Blanding's and Spotted Turtles in Maine. To this end, MDIFW and the University of Maine initiated a cooperative research project in 2004 to investigate the extent and significance of road mortality to rare turtles in southern Maine. Frederic Beaudry, after radio-tagging 91 turtles (50 Blanding's and 41 Spotted) over three field seasons, successfully completed his research in southern Maine. Fred's work looked at the nature, extent, and frequency of overland movements of Blanding's and Spotted Turtles, the road mortality risk associated with their movements, and the consequences of this mortality on the population viability of both species. One of the results of Fred's research was the discovery that Blanding's Turtles use on average 6.5 unique wetlands within a single season (one individual male Blanding's Turtle used 20!). MDIFW is currently working with cooperators – including

Maine Department of Transportation, The Nature Conservancy, and local towns – to apply results from this research toward designing solutions for areas with a high number of turtle road crossings (e.g., “turtle crossing” signage, barrier fencing, and turtle friendly underpasses).

Due to suspected declines throughout the Northeast, a “distinct population segment” of the Blanding’s Turtle may be considered for federal listing by the U.S. Fish and Wildlife Service. Active habitat protection is critical for the preservation of Blanding’s and Spotted Turtles in southern Maine. MDIFW is committed to working with landowners and towns to help conserve remaining large blocks of habitat needed to sustain viable populations of these rare turtles. Southern Maine’s landscape is rapidly developing, and some of the best remaining populations of Blanding’s and Spotted Turtles can be found on a 35,000 acre area surrounding Mt. Agamenticus in York County. MDIFW is working closely with the Mt. Agamenticus Conservation Coalition – including the U.S. Fish and Wildlife Service, The Nature Conservancy, local land trusts, water districts, and towns – to protect habitat for turtles and other rare species in this area, one of the largest remaining contiguous coastal forest ecosystems between Acadia National Park and the New Jersey Pine Barrens. To learn more about progress on habitat conservation in the Mt. Agamenticus area visit: <http://www.agamenticus.org/>

Funding for this work comes from Loon Conservation Plate, Chickadee Check-off funds, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Maine Department of Transportation, The Nature Conservancy, and the Maine Outdoor Heritage Fund.

-- Jonathan Mays and Phillip deMaynadier

Invertebrates

Rare Dragonflies

Insects in the order Odonata, damselflies and dragonflies, are a conspicuous component of Maine’s wildlife diversity. Presently, 158 species have been documented in the state, comprising nearly 36% of the total North American fauna. Several of Maine’s odonate species are of national and global conservation concern. Maine currently lists three species as Endangered or Threatened and fully 25 species as Special Concern. While several odonates are highly sensitive to freshwater habitat degradation and experiencing declines nationwide, baseline information for the group had been lacking in Maine, until recently.

In 1998, MDIFW initiated the Maine Damselfly and Dragonfly Survey (MDDS), a multi-year, citizen scientist atlas initiative designed to improve our knowledge of the distribution, status, and habitat relationships of damselflies and dragonflies statewide. In addition to accumulating a tremendous amount of data, the MDDS engaged over 200 of Maine’s non-game enthusiasts and raised public awareness of invertebrate conservation generally. To our knowledge, the MDDS is among the first completely state-sponsored dragonfly atlas projects of its kind in North America and has received considerable notoriety (visit: <http://mdds.umf.maine.edu/~odonata/>). Having completed its final “official” field season in 2003, the survey’s results exceeded expectations and are best summarized by the following:

Public Outreach and Involvement:

➤ Volunteer participation statewide:	>200
➤ Volunteers trained in MDDS seminars:	95
➤ Newsletter issues published (“Mainensis”):	4
➤ Major press articles covering the MDDS project:	5
➤ Website hits (http://mdds.umf.maine.edu/~odonata/):	>20,000

Scientific Contributions:

➤ Total records submitted (% increase over 1999 baseline):	17,264 (229%)
➤ New Rare, Threatened, and Endangered species records:	297
➤ New state species records:	10
➤ New U.S. species records (Quebec Emerald & Canada Whiteface):	2
➤ Scientific publications completed or in progress:	5

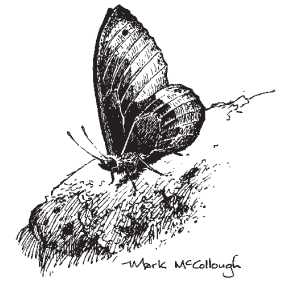
With the volunteer atlas component of the MDDS project coming to closure, MDIFW recently contracted Paul M. Brunelle, an accomplished odonate expert and graphic design artist from Nova Scotia, to assist with authoring and designing the project’s capstone product: *An Atlas and Conservation Assessment of Acadia’s Damselfly and Dragonfly Fauna*. Populated largely with data contributed by MDDS volunteers, this atlas will serve as the first authoritative publication on the distribution and natural history of odonates from Maine and the Canadian Maritime Provinces.

Funding for this work comes from Loon Conservation Plate, Chickadee Check-off funds, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and the Maine Outdoor Heritage Fund.

--Phillip deMaynadier

Rare Butterflies

Hessel's Hairstreak, Purple Lesser Fritillary, and Crowberry Blue are just some of the state's rarest butterflies that are both colorful in name and on the wing. In an effort to improve our knowledge of these and other rare butterflies MDIFW is actively studying the group during statewide regional surveys. Attractive, conspicuous, and ecologically important, butterflies have garnered increasing attention from scientists and the general public. By documenting the distribution and status of the state's butterfly fauna MDIFW hopes to improve its understanding of the group and prioritize conservation efforts towards those species most vulnerable to state extinction.



Further supporting this goal, MDIFW received a grant from the Outdoor Heritage Fund in 2002 to contract a professional lepidopterist, Dr. Reginald Webster from New Brunswick, to help assemble a comprehensive assessment of the state's butterfly fauna. Drawing from published literature and specimen records located in museums and amateur collections throughout the Northeast, Reggie assembled the first baseline atlas and database of Maine's butterfly fauna – an essential step toward conservation and management of the group by MDIFW and cooperators. The baseline atlas project compiled nearly 9,000 records and added 11 previously undocumented butterflies to the state list, which now stands at 119 species. Of special note is the relatively high proportion (~20%) of Maine butterflies and skippers that are extirpated (5 species) or state-listed as Endangered, Threatened, or Special Concern (19 species), a pattern consistent with global trends elsewhere for the group. Contact MDIFW to receive an updated checklist of the butterflies of Maine (phillip.demaynadier@maine.gov) or visit <http://www.state.me.us/ifw/wildlife/wildlife.htm> to download a pdf copy of Maine's first baseline butterfly atlas.

Finally, we are pleased to announce that a statewide volunteer butterfly atlas took flight in 2007. Sponsored by MDIFW, in partnership with the University of Maine at Farmington (Dr. Ron Butler), Colby College (Dr. Herb Wilson), and Dr. Reginald Webster of New Brunswick, the Maine Butterfly Survey (MBS) is a 5-year, statewide, volunteer survey effort. Following in the tradition of previously successful state-sponsored wildlife atlasing projects, including most recently the Maine Damselfly and Dragonfly Survey, data generated from the MBS comes primarily from citizen scientists. The survey will help fill information gaps identified during the baseline assessment (above) on butterfly distribution, flight seasons, and habitat relationships for one of the state's most popular insect groups. The next state-sponsored training workshop for new MBS volunteers is currently scheduled for spring 2010; check the MBS website for further details (<http://mbs.umf.maine.edu>) or contact the volunteer coordinator, Dr. Herb Wilson, at whwilson@colby.edu (207-859-5739).

Funding for this work comes from Loon Conservation Plate, Chickadee Check-off funds, The Nature Conservancy, U.S. Fish and Wildlife Service, and the Maine Outdoor Heritage Fund.

--Phillip deMaynadier

Clayton's Copper Butterfly

The Clayton's Copper (*Lycaena dorcas claytoni*) is a small, orange-brown butterfly known only from a handful of sites in Maine and western New Brunswick. It is found only in association with its single larval host plant, the Shrubby Cinquefoil. This uncommon shrub has a scattered distribution in Maine and rarely occurs in stands large enough to support viable populations of the butterfly. Where it grows best is along the edges of calcareous wetlands (i.e., rich in calcium carbonate or limestone), which are a rare habitat type in Maine. Not found everywhere its host plant grows, the Clayton's Copper is even rarer – with only nine occurrences currently documented in the State.

This butterfly takes one year to complete its life cycle. In late July and August, when shrubby cinquefoil is blooming, females lay their eggs singly on the underside of cinquefoil leaves. Leaves and eggs drop to the ground in autumn, and the eggs overwinter. The pale green larvae hatch in spring and crawl back up the plant to feed on its leaves. After the larvae molt and pupate in early summer, adult butterflies emerge during July and August to start the cycle over again. Throughout the flight period, Clayton's Copper remains local to its cinquefoil stands, where the abundant yellow flowers provide its primary nectar source.

Clayton's Copper is listed as Endangered in Maine because of the extremely limited number, size, and distribution of its populations; the rarity of its habitat, and its near-endemic status (i.e., limited almost exclusively to Maine). In 2008, MDIFW continued its partnership with the University of Maine to investigate key life history and conservation questions about this rare butterfly. Under the guidance of Drs. Judith Rhymer and Frank Drummond, UMO graduate student Emily Knurek surveyed each of the state's occurrences to estimate the size of Clayton's Copper populations in Maine. Having a baseline population estimate is critical to assessing a species' true status and recovery potential, as well as establishing management goals and monitoring population trends. Emily is also investigating the butterfly's taxonomic status. While most lepidopterists accept that Clayton's Copper is an isolated subspecies of the more widely distributed Dorcas Copper (*Lycaena dorcas*), the taxonomic distinction between the two has never been quantified. By performing detailed

morphological and genetic analyses, Emily hopes to determine if Clayton's Copper is a true subspecies, thus confirming and further increasing its conservation significance in Maine.

Two additional UMO graduate students have also begun cooperative research projects with MIDFW to follow up on Emily's work and investigate some new areas of Clayton's Copper life history and status. Corrine Michaud, also working with Dr. Rhymer, will be looking at the genetic structure of Clayton's Copper populations in Maine; gathering basic life history information; and also analyzing the quality and selection characteristics of the butterfly's host plant (shrubby cinquefoil). Under the guidance of Dr. Cyndy Loftin, Sarah Drahovzal will be doing an environmental assessment of the circumneutral fen (wetland) habitats where the Clayton's Copper host plant is found, and comparing characteristics of areas occupied by the butterfly to those in areas of unoccupied habitat.

Funding for this work comes from the U.S. Fish & Wildlife Service, University of Maine, The Nature Conservancy, American Philosophical Society, Maine Outdoor Heritage Fund, Loon Conservation Plate, and Chickadee Check-off funds.
--Beth Swartz

Rare Mayflies

Two species of mayflies are currently protected by Maine's Endangered Species Act. The Tomah Mayfly, which is listed as Threatened, is a unique insect once thought to be extinct. It was rediscovered in Tomah Stream (Washington Co.) in 1978 and is now known to be extant at about 21 sites in Maine and at least one site in New York. The nymphal stage of the Tomah Mayfly, unlike other species of mayflies, is carnivorous - preying largely upon other mayfly nymphs. This species depends on highly productive, seasonally-flooded, sedge meadows along large streams or rivers to complete its life cycle. Although sedge meadows are not an uncommon habitat type in Maine, the Tomah Mayfly is found at only a small number of sites.

The Roaring Brook Mayfly is listed as Endangered in Maine. First discovered in 1939 on Mt. Katahdin, this species was not reported again until MDIFW went looking for it in 2003. Found in two small tributaries of Roaring Brook, it was originally believed to occur nowhere else in the world but Mt. Katahdin. Recently, however, one specimen was found in a collection from the Green Mountains of Vermont and another from the White Mountains of New Hampshire. Additional surveys by MDIFW in 2007 and 2008 have documented 5 new sites in the mountains of western Maine. This rare mayfly appears to be restricted to undisturbed, high-elevation headwater streams along the northern Appalachian Mountain Range, and may be New England's only endemic mayfly.

In addition to these two listed species, thirteen other mayflies are considered Special Concern in Maine. As part of the Department's ongoing surveys for rare species, MDIFW continues to look for new occurrences of these uncommon insects in order to better understand their status and conservation needs.

Funding for this work comes from the Maine Outdoor Heritage Fund, U.S. Fish and Wildlife Service, Loon Conservation Plate, and Chickadee Check-off funds.

--Beth Swartz

Freshwater Mussels

Freshwater mussels are relatively sedentary, bottom-dwelling invertebrates found in most of Maine's lakes, ponds, rivers, and streams. Often referred to as a "clam," the freshwater mussel's inconspicuous and seemingly drab lifestyle belies its importance. As filter-feeders, mussels provide a valuable service to aquatic environments by filtering suspended particles such as algae, bacteria and detritus from the water, and by returning nutrients to the ecosystem. In turn, mussels provide food for a variety of wildlife such as muskrats, raccoons, and otters.

Freshwater mussels also have a rather unique and interesting life cycle. They start life as free-floating larvae, called "glochidia", which are quite different in appearance from the adults. The glochidia of most species must encounter and attach to a very specific fish host in order to mature into the more familiar adult form. Once the tiny mussels have dropped off their mobile nurseries (they do no harm to the fish) and burrowed into the substrate, they often remain in the same spot for their entire lives. For some species, a lifetime can span 100 years or more.

Habitat integrity is an important factor influencing mussel survival. Freshwater mussels are sensitive to contaminants and changes in their environment - a vulnerability compounded by specific habitat and fish host requirements, and an inability to leave their surroundings. Consequently, they are one of our most valuable indicators of water quality and aquatic ecosystem health. They are also one of the most imperiled groups of animals in the country. Of the nearly 300 species of freshwater mussels found in the United States, more than a third have already vanished or are in danger of extinction, and over 75% are listed as Endangered, Threatened, or Special Concern at the state level. These dramatic declines have been caused largely by the degradation and loss of mussel habitat from pollution, dams, and the channelization and

sedimentation of our once clean, free-flowing rivers and streams. Poaching of shells for sale to the Orient's pearl culture industry, and the recent invasion of a prolific foreign competitor, the Zebra Mussel, are also jeopardizing many mussel populations.

Maine's freshwater mussel fauna has fared relatively better than that of many states. We haven't lost any species, our freshwater habitats are reasonably clean or have improved in water quality, and the zebra mussel has not yet found its way into our waterways. However, we are not immune to the problems of habitat loss and degradation that have eliminated populations and extirpated species in other parts of the country. Of our ten native species, three (Yellow Lampmussel, Tidewater Mucket, Brook Floater) are currently listed as Threatened under the Maine Endangered Species Act and one (Creeper) is considered of Special Concern. Fortunately, compared to most states within the range of these species, Maine hosts some of the best remaining populations and may be a last stronghold for these rare mussels.

In 2008, MDIFW continued surveys to document new occurrences for rare mussels and initiated a study to better assess the population status of the Brook Floater. The Department also worked closely with two large-scale projects to ensure impacts to rare mussels would be minimized or avoided. The Penobscot River Restoration Project seeks to remove two hydropower dams on a 5½ mile stretch of the Penobscot where all four listed mussels occur. MDIFW biologists helped coordinate pre-project mussel surveys in order to plan for future recovery and post-monitoring efforts when the dams eventually come out. The Department also helped coordinate and implement a major recovery and relocation effort for rare mussels left stranded after the removal of the Fort Halifax Dam on the Sebasticook River in Winslow. Proposals to remove both small and large hydropower dams are becoming increasingly common in Maine, and occasionally impact rare species found in the impoundments or below the dams. When a dam is removed where rare mussels are present, the only conservation tool available to MDIFW is to move stranded mussels to safety. This can be a daunting undertaking on projects like these where extensive areas of substrate, and potentially large numbers of mussels, are exposed as the water recedes. But through cooperation and coordination by everyone involved, a significant portion of the rare mussels affected can be recovered and relocated upstream – from where they may one day help repopulate the newly restored river section below.

More information on Maine's mussels (Figure 3) can be found in *The Freshwater Mussels of Maine* (Nedeau et al. 2000), available through the Department's online store (<http://www.mefishwildlife.com/>) or Information Center (207-287-8000).

Funding for this work comes from the U.S. Fish and Wildlife Service, Maine Outdoor Heritage Fund, Loon Conservation Plate, and Chickadee Check-off funds.

--Beth Swartz

Eastern Pearlshell (<i>Margaritifera margaritifera</i>)	
Eastern Elliptio (<i>Elliptio complanata</i>)	
Triangle Floater (<i>Alasmidonta undulata</i>)	
Brook Floater (<i>Alasmidonta varicosa</i>)	THREATENED
Eastern Floater (<i>Pyganodon cataracta</i>)	
Alewife Floater (<i>Anodonta implicata</i>)	
Creeper (<i>Strophitus undulatus</i>)	SPECIAL CONCERN
Yellow Lampmussel (<i>Lampsilis cariosa</i>)	THREATENED
Eastern Lampmussel (<i>Lampsilis radiata radiata</i>)	
Tidewater Mucket (<i>Leptodea ochracea</i>)	THREATENED

Figure 3. Freshwater Mussels of Maine

Special Habitats for Reptiles, Amphibians, and Invertebrates

Pitch Pine Woodlands and Barrens

Pitch Pine woodlands and barrens are lightly forested upland areas with dry, acidic, often sandy soils. Pitch pine, red pine, scrub oak, blueberry, huckleberry, and/or bluestem grasses are commonly among the sparse vegetation of this unique natural community. It's thought that over half of the state's original pine barren acreage has been lost to residential development, agriculture, and gravel mining. Many dry woodlands and barrens also require periodic fire to prevent succession to a more common, closed canopy white pine-oak system, a natural disturbance that is now short-circuited by habitat fragmentation and fire suppression.

Once viewed as unproductive "wastelands", Maine's few remaining pine woodlands and barrens are now recognized as areas of exceptional wildlife value, providing habitat for a variety of highly specialized plants and animals. Several

rare and endangered species persist in one of the State's few remaining intact barren communities, mainly in the towns of Kennebunk, Wells, Waterboro, Shapleigh, Hollis, and Fryeburg. These unique habitats are especially rich in rare lepidoptera (butterflies and moths), hosting species that feed on the specialized barrens vegetation, such as Edwards' Hairstreak (Endangered), Sleepy Duskywing (Threatened), Cobweb Skipper (Special Concern), and Barrens Buck Moth (Special Concern). Other rare species associated with Maine's barrens include Black Racers (Endangered), Grasshopper Sparrows (Endangered), Upland Sandpipers (Threatened), Short-eared Owls (Threatened), and Northern Blazing Star (a Threatened plant). To learn more about two barrens of statewide ecological significance visit "Focus Area Descriptions" on the Maine Natural Areas Program website (http://www.mainenaturalareas.org/docs/program_activities/land_trust_descriptions.php), and select "Kennebunk Plains and Wells Barrens" or "Waterboro and Shapleigh Barrens".

Funding for barrens research and management comes from the Loon Conservation Plate, the Chickadee Check-off, and The Nature Conservancy.

--Phillip deMaynadier

Vernal Pools

Vernal pools are small, forested wetlands that frequently fill with water from early spring snowmelt and rains and then dry partly or completely by mid to late summer. Many of Maine's amphibians use vernal pools as breeding or foraging habitat. Some, like Spotted Salamanders, Blue-spotted Salamanders, and Wood Frogs, breed more successfully in these fishless habitats than in any other wetland type. Additionally, vernal pools provide habitat for a variety of small mammals, wading birds, waterfowl, aquatic invertebrates, and several state-listed animal species including Blanding's Turtles (Endangered), Spotted Turtles (Threatened), Wood Turtles (Special Concern), Ribbon Snakes (Special Concern) and Ringed Boghaunter dragonflies (Threatened).



We still have more to learn about why some vernal pools receive greater wildlife use than others. To this end, grants from the Maine Outdoor Heritage Fund and the U.S. Environmental Protection Agency helped support a recently completed University of Maine study by Dr. Robert Baldwin and Dr. Aram Calhoun to research the wildlife use and characteristics of vernal pools in four southern townships – Falmouth, Biddeford, Kennebunkport, and North Berwick. Rob and Aram's results suggest that wood frogs and other pool-breeding amphibians range widely in the forested landscape following breeding and that surrounding upland forests and forested swamps provide important habitat outside of the brief pool-breeding season. Rob also developed a landscape model that highlights the vulnerability of vernal pools in southern Maine to habitat loss and fragmentation from insufficient conservation lands and wetland regulations.

MDIFW is currently cooperating with the Department's of Environmental Protection and Conservation, Maine Audubon Society, and the University of Maine to identify potential strategies for protecting the unique values provided by smaller wetlands that "fall through the cracks" of current wetland regulations. Workshops on vernal pools continue to be held throughout the state for landowners and land managers, and several new publications designed to offer voluntary techniques for protecting vernal pools and their wildlife are now available. A vernal pool fact sheet, describing threats and management considerations, is available upon request from MDIFW for use by landowners, municipalities, land trusts, and other cooperators. The *Maine Citizen's Guide to Locating and Documenting Vernal Pools* provides a comprehensive introduction to recognizing and monitoring vernal pools, including color photographs of the indicator species. Also available to the public are two complementary guide-books for protecting vernal pool habitat during timber management (*Forestry Habitat Management Guidelines for Vernal Pool Wildlife*) and development (*Conserving Pool-breeding Amphibians in Residential and Commercial Developments in the Northeastern United States*). Together, these publications provide recommendations designed to help maintain functioning vernal pool landscapes throughout Maine. All of the guides can be obtained by contacting Becca Wilson at Maine Audubon Society (207-781-6180 ext. 222; bwilson@maineaudubon.org).

Finally, the Department's of Inland Fisheries and Wildlife and Environmental Protection recently developed a definition of Significant Vernal Pools, a new Significant Wildlife Habitat under the state's Natural Resource Protection Act, recently approved by the state legislature. Criteria for designating Significant pools include a) the presence of a state Endangered or Threatened species, or b) evidence of exceptional breeding abundance by amphibian indicator species. Recognizing a subset of vernal pools as Significant will help state biologists provide guidance on development activities within a critical upland buffer zone surrounding one of the state's highest value wildlife habitats.

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--Phillip deMaynadier

MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

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