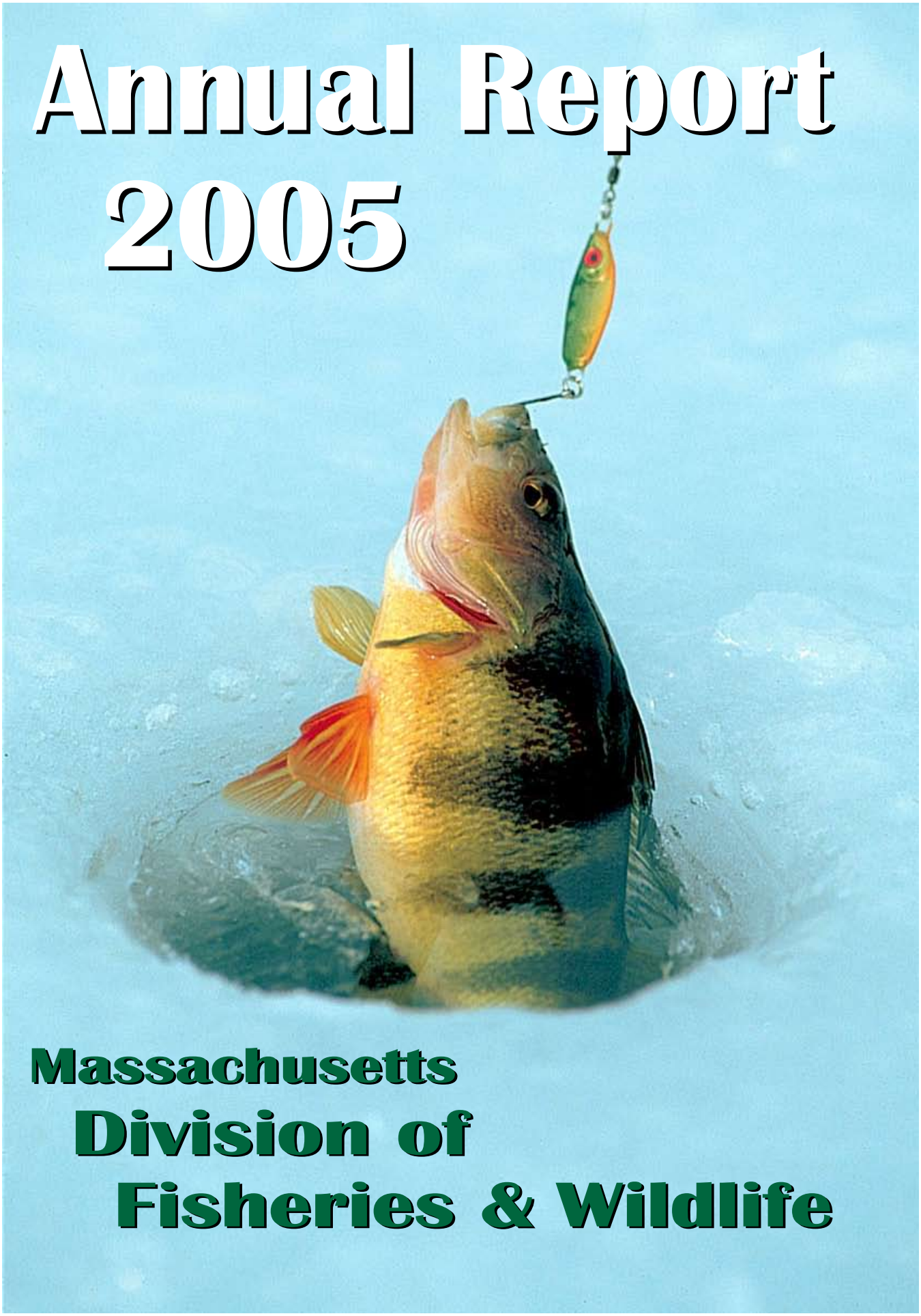
Annual Report 2005



Massachusetts Division of Fisheries & Wildlife

Annual Report 2005

Massachusetts Division of Fisheries & Wildlife

Wayne F. MacCallum
Director

Jack Buckley
Deputy Director
Administration

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Deputy Director
Field Operations

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Errata: The 2004 Annual Report cover photo of an American Bittern was taken by William Fournier

THE BOARD REPORTS

George Darey
Chairman

The Massachusetts Fisheries and Wildlife Board is a group of seven persons, each selected for a demonstrated interest in wildlife. By law, the persons appointed to the Board are volunteers, receiving no remuneration or expenses for their service to the Commonwealth. Five of the seven are selected on a regional basis, with one member, by statute, representing agricultural interests. The two remaining seats are held by a professional wildlife biologist or manager, and a representative with a specific interest in the management and restoration of those wildlife populations not classified as game species. Each member is appointed by the Governor to a five year term. The Board oversees operations of the Division of Fisheries and Wildlife, reviews the agency's programs, and sets policy and regulations pertinent to wildlife in the Commonwealth.

At the start of this fiscal year the Board was deeply concerned about the status of the agency, which was operating with 20% fewer staff than it had three years ago. This shortage had forced the Board to prioritize and reduce the agency's work to core activities. The agency was fortunate to be able to keep all District offices and hatcheries operating with staff at the minimum level necessary to keep the facilities open. Further, the state budget, despite the agency's surplus of fiscal resources in the Inland Fish and Game Fund, did not appropriate sufficient funds for maintenance or equipment. This was also of great concern, as the agency has been operating on a deferred level of maintenance for the past five years. In view of the agency's long history of fiscal responsibility, substantial treasury of surplus funds, and the increase in license fees that the state's sportsmen supported for better services and more programs, the situation was cause of great frustration.

Fortunately, after a great outpouring of support from the Board and the public (and particularly the sportsmen), the dedicated fund has been restored, a trust has been established for operating the Natural Heritage and Endangered Species Program, and the land stamp monies have been appropriated. There was even more good news when Governor Romney waived the assessment of indirect fees for the trust fund.

All core positions have now been filled and the Board is very optimistic about the FY06 budget, which should allow the agency to return to full operation and to start to tackle the deferred maintenance and equipment needs. We commend all of the agency's staff who have worked so hard to keep core operations going through this difficult period, and hope that we can now put this behind us.

Aside from working to meet the many fiscal and personnel challenges which greeted us at the start of the fiscal year, the Board has continued to hold monthly meetings at locations around the state, hold public hearings on proposed regulatory changes, and address issues of specific concern. While many different matters and issues were brought before the Board this year, most of its time was spent in scrutiny and review of agency programs and proposals for regulatory changes. Among the items examined were:

Waterfowl Regulations

The Board heard the annual presentation from Waterfowl Project Leader H Heusmann on the framework and proposed season dates, bag and possession limits for the 2004 waterfowl seasons. Following a public hearing on these proposals, the Board voted unanimously to accept them.

Endangered, Threatened and Special Concern Species

The Board heard a summary of proposed changes to the list of endangered, threatened and special concern species. Four species were involved: three invertebrates to be removed, and one plant to be added. A public hearing was held to solicit public comment on the proposed changes, and following discussion and consideration, the Board voted to accept the changes as presented.

Furbearer Issue

The Board heard a report from Deputy Director Rob Deblinger on a management issue at the John C. Phillips Wildlife Sanctuary in Boxford. The issue involved beaver-caused flooding that had inundated a dirt road used occasionally for emergency access by the local fire department to extinguish brush fires on Bald Hill. Noting that this is a Sanctuary, with much more restrictive regulations than those which apply to Wildlife Management Areas, the Board voted to maintain the beaver dam and current water levels as recommended by the Natural Heritage & Endangered Species Advisory Committee, and to research the possibility of conducting controlled burns at Bald Hill to reduce fuel levels and restore fire adapted plants.

Hunting Zone Regulation

After hearing a presentation from Wildlife Biologist Jim Cardoza, and following a public hearing on the matter, the Board voted unanimously to change the zone boundaries for all species still regulated by county zones to zones compatible with existing Deer Management Zones. Further, in order to simplify public understanding of the zones, which are based on ecological rather than political boundaries, the Board voted to rename the Deer Management Zones, which will henceforth be called Wildlife Management Zones.

Deer Management Regulations

After hearing a presentation from Deer Project Leader Bill Woytek covering the 2004 deer harvest, the Board voted unanimously to approve staff recommendations for antlerless permit allocations for the 2005 season. The Board also heard a report on the status of Chronic Wasting Disease, and was alarmed to hear that CWD has now been detected in central New York. In view of the report, the Board voted unanimously to instruct the Director to implement emergency regulations to prohibit any deer parts other than de-boned meat, antlers, cleaned hides and skullcaps from being brought into Massachusetts from states in which CWD occurs. A public hearing has been scheduled to consider permanent regulations pertaining to the importation of deer carcasses from CWD-infected states, and to prohibit the importation of any members of the deer family, including moose and elk.

The Board held its November meeting on Nantucket at the request of town officials. This meeting included discussion of a proposal for special deer hunting regulations, as well as a public hearing on the subject. Deputy Director Rob Deblinger presented a history of deer hunting on Nantucket, including results, and explained the hunter access and hunter effort that would be required to reduce deer numbers on the island. The town Selectmen had requested a special season: a 12 day season in February that would require permits and closure of the rabbit season during the period. After considering public comment and in view of the fact that this proposal involves a public health issue, the Board voted unanimously to authorize a special deer season in February, but in view of local concerns, the proposed two week season on Nantucket was reduced to one week.

The special hunt went as planned, with great effort from MDFW staff and the Office of Law Enforcement, resulting in a total deer harvest on Nantucket of about 800 deer, 246 of which were taken during the special hunt. Some of Nantucket's Selectmen have been replaced since the hunt, however, and the Board received a request from the current Selectmen to cancel the hunt for 2006. A public hearing has been scheduled.

The Board also heard a review by Deer Project Leader Bill Woytek on the status of moose in the state. This presentation also included a review of the duties of the Large Animal Response Team (LART).

MESA Review

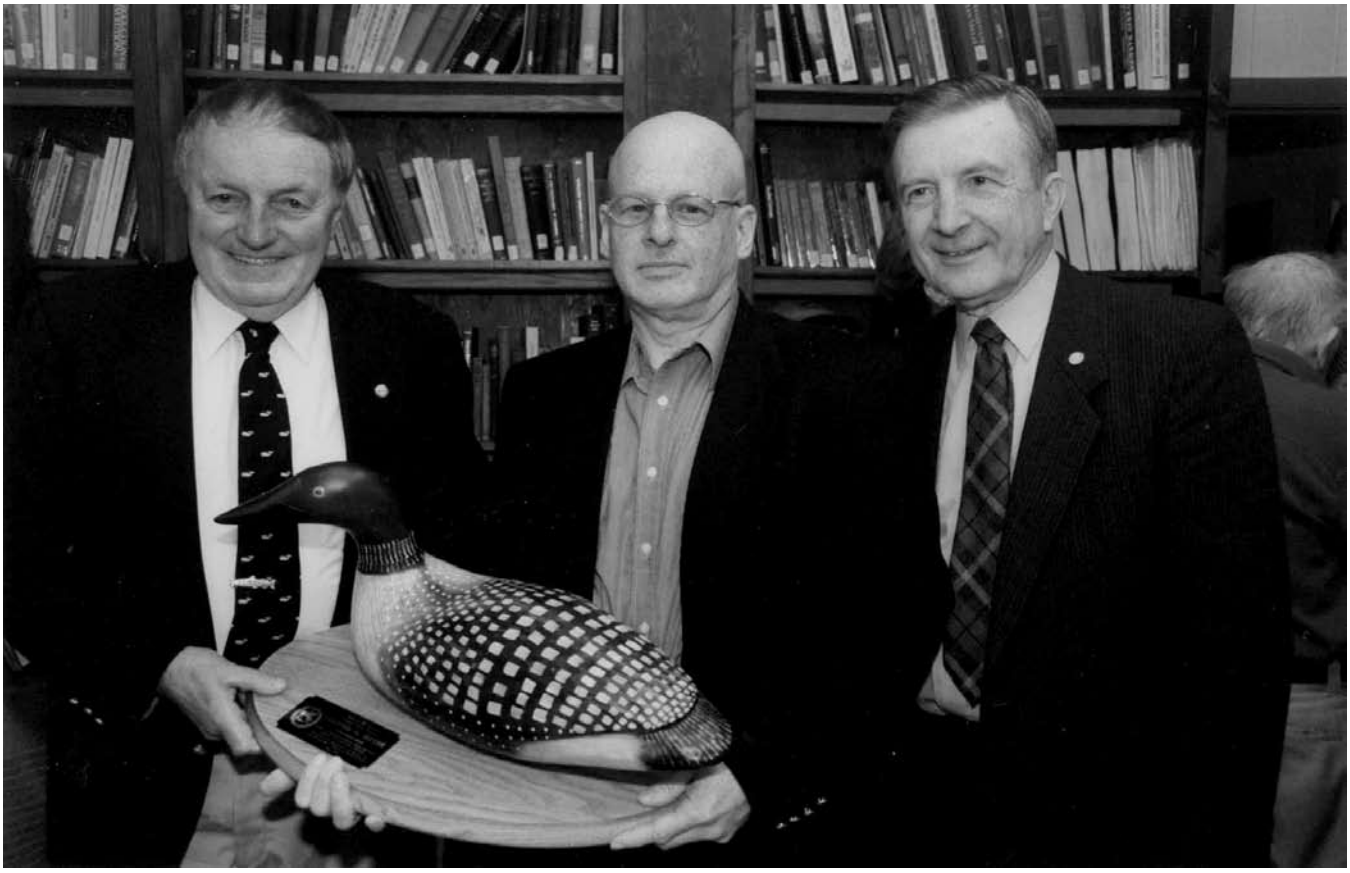
The Board heard a presentation on proposed regulations changes to the Massachusetts Endangered Species Act (MESA), with particular emphasis on information relative to the delineation of priority habitat, and reviewed activities and projects within priority habitat. A public hearing on the proposed changes was held, and the Board, noting the importance and potential impact of the regulations, extended the comment period to 30 days. There were 91 written comments and 45 people who testified on the proposed regulations, which will set timelines and standards for environmental review of proposed developments in documented rare species habitats. After much discussion and consideration, the Board voted to adopt the proposed regulations. The Board is very grateful to Deputy Director Jack Buckley, Commissioner David Peters and all MDFW staff involved in formulating and writing these regulations. It is very pleased that a funding mechanism has now been put in place to insure adequate staffing for environmental review.

Youth Pheasant Hunt

The Board heard a presentation by Dr. Mark Tisa on a proposal to establish a Massachusetts Young Adult Pheasant Hunt Program. The program has been developed as a partnership between the MDFW and local sportsmen's clubs. The agency would provide the pheasants, planning guide, safety equipment and the regulatory framework necessary for the program, while the clubs would carry out the implementation. The program is designed to provide young hunters with a fun and enjoyable experience that includes gun safety, shooting practice, cleaning and cooking game, and a day in the field with an experienced hunter. The Board, being in complete agreement with the goals and activities involved, voted unanimously to adopt the program. Jim Cardoza reported later that, to implement the program, two minor regulatory changes would be required; namely, to allow youths to take two pheasants instead of one, and to change "October 20TH" in the regulations to the "Saturday after Columbus Day." A public hearing has been scheduled.

Comprehensive Wildlife Conservation Strategy

The Board was pleased to receive a draft copy of the Comprehensive Wildlife Conservation Strategy from CWCS Coordinator John O'Leary. This draft has now been issued to the public for review and comment. It will be further refined based on the comments received, and the Board will receive the final draft early in the next fiscal year for additional review and a request for approval. If approved, it will then have to be accepted by the National Review Team, which is necessary to qualify for the State Wildlife Grant. The Board has full confidence that the plan will be accepted.



Board Chairman George Darey (left) and Dr. Joseph Larson (right) present the 2005 Francis Sargent Award to Dr. Steven M. Meyer of Sudbury.

Black Bear Regulations

The Board heard a review of the status and history of black bear regulations from Jim Cardoza, and a staff recommendation to (1) allow black bear hunting during the two week shotgun deer season; and to (2) change county-based boundaries to zone based boundaries to allow bear hunting in wildlife zones 1-9. A public hearing has been scheduled for the first meeting next fiscal year.

Miscellaneous

The Francis Sargent Award was presented to Dr. Stephen M. Meyer of Sudbury.

Dr. Meyer, whose sharp, inquiring mind, wide expertise in conservation matters and broad understanding of public policy issues have been a great asset to the Natural History and Endangered Species Advisory Committee. Dr Meyer was cited specifically for his creation of a matrix which delineated, in a new way, a concept for the rationale behind proposals for listing species identified as endangered, threatened or of special concern.

He was further cited for his leadership in efforts, begun in 1998, to address the importance of riparian corridors to a broad variety of listed species, both aquatic and terrestrial which has led to an ongoing attempt to educate the Department of Environmental Protection about the importance of riparian corridors and buffer zones as essential habitat for many wildlife species.

The Board was pleased to enjoy an informative slide presentation by Assistant Director Tom O'Shea on the new Burrage Pond Wildlife Management Area in Hanson/Halifax. Coincidentally, the Board voted later in the year to submit Burrage Pond as a potential site for a wetlands bank in the Commonwealth.

The Board heard a review of the status of the ruffed grouse in the Commonwealth by Assistant Director Tom O'Shea, and a review of the Bald Eagle restoration project by Dr. Tom French. The Board also heard a presentation by Ken MacKenzie on the Landowner Incentive Program; and another by John Scanlon on the Forest Reserve Program. As these programs will help insure the conservation of biodiversity and are fully compatible with MDFW goals, the Board endorses them wholeheartedly.

The Board passed a motion unanimously in September to go on record with a statement to Secretary Herzfelder and the consultant working on recommendations for the operation of the Division of Law Enforcement to the effect that it feels that the biological component qualification is what separates an environmental police officer from others in law enforcement, and that a natural resource background is an essential qualification for all such officers.

The Board, after noting that there was no mention of agency wildlife lands in the Department of Tourism's 2005-6 edition of the "Massachusetts Getaway Guide"

(and also some incorrect information regarding hunting in the Quabbin Reservation), voted to send a letter to the Department urging them to correct and update their guide.

The Board was pleased to receive the final report on the Environmental Law Enforcement Review Panel from Commissioner Peters, and is confident that it will play an important role in advancing improvements to the Commonwealth's environmental law enforcement capabilities.

The Board voted on the recommendation of Commissioner Peters to re-appoint Kathleen Anderson, Mark Mello and Glenn Motzin to the NHESP Advisory Committee. It also voted to nominate Dr. Stephen M. Meyer for the 2005 Francis Sargent Award in view of his distinguished career and long service to the NHESP Advisory Committee, wildlife conservation and endangered species protection.

FISHERIES

Dr. Mark S. Tisa
Assistant Director

Introduction

Fishing, hunting, and wildlife related recreation are important recreational activities for both residents and nonresidents of Massachusetts. According to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, more than 278,000 Massachusetts residents age 16 and older went freshwater fishing during 2001. Additionally in 2001, more than 47,000 nonresidents fished the state's lakes, ponds, rivers and streams. The average angler in the Commonwealth fishes 14 days a year and spends $632.00 on direct and indirect expenses. Fishing pressure in Massachusetts is estimated at 40 trips/acre as compared to the national average of 27 trips/acre. The American Sportfishing Association, in a survey released in 1996, estimated that anglers spent $274,273,777 for freshwater recreational fishing in Massachusetts, generated over $26 million in sales tax revenue, and created some 5,636 jobs.

The Commonwealth's aquatic resource inventory includes a variety of both lotic and lentic fisheries habitat ranging from coldwater, wild trout fisheries to warmwater panfish species. There are approximately 2,675 lakes and ponds, totaling about 142,681 surface acres. Ponded waters are mostly less than 500 acres in size. The two largest bodies of water, both man-made drinking water supplies, are the Quabbin (25,000 acres) and Wachusett (5,000 acres) reservoirs. The largest river in Massachusetts is the Connecticut River with 72 miles (7,284 acres) transecting the Commonwealth. The 2,027 named streams flow about 10,704 miles and comprise approximately 14,900 acres. The protection, management and enhancement of these inland fisheries resources and their associated habitats involve several ongoing fisheries projects.

Personnel

Leanda Fontaine was hired in March 2005 as a fisheries technician to assist the project leaders with field sampling and data entry and analysis. Ms. Fontaine comes to the Division by way of the Biology Department at University of Massachusetts at Amherst, and the Conte Anadromous Fish Laboratory in Turners Falls where she worked as a research assistant.

Lack of funding and other agency priorities still leaves the Fisheries Section with the three vacancies that were created through early retirements in FY02. These vacancies need to be filled because they are critical biological positions to sustaining a viable statewide fisheries program including the warmwater and coldwater fisheries programs, wild trout and Quabbin fisheries resources.

Fisheries Survey and Inventory Project

The Stream Survey project involved participation in the following projects:

1. Statewide Fisheries Survey and Inventory
2. Target Fish Community Development
3. Coldwater Fishery Resource Designation

1. Statewide Fisheries Survey and Inventory

Watersheds were sampled as part of the 5-year basin cycle using a standard sampling protocol (Appendix I). Of 131 sites sampled in FY05, the majority of the samples were taken from the Deerfield (30), Westfield (19), Mystic (17), Connecticut (17), Nashua (9), Blackstone (9), and Quinebaug (9) watersheds. Samples were also taken in the French, Housatonic, Concord, and Chicopee rivers. The sampling resulted in the collection of 14,970 fish of 40 different species. Requests for potential stream survey and inventory sampling locations in the above watersheds were solicited from agencies and stakeholders and were used to prioritize sampling locations. Planning was initiated to focus FY06 sampling on the Deerfield, Farmington, Connecticut, Chicopee, Shawsheen, Parker, and Taunton River Watersheds. This planning was specifically geared toward identifying areas with poor historic information and identifying small streams which offer potential wild trout habitat.

2. Target Fish Community Development

Efforts continued to develop Target Fish Community models based on the protocols of Bain and Meixler (2000). The planning process was continued, in coordination with the Charles River Watershed Association, for drafting target fish communities in the Charles River.

The Target Fish Community illustrates what a river fish population *should* look like in Southern New England, and represents a measurable goal for restoration. A plan was developed to use inventory procedures, Target Fish Communities, Indexes of Biotic Integrity, and MesoHabitat Mapping to set priorities for habitat protection and for statewide stream and river restoration. Data and Target Fish Community Analyses were employed and published in Armstrong et al. (2004).

Refinements to the Target Fish Community concept were forwarded by federal and state fisheries experts from the northeast. When combined with Statewide Fisheries Survey and Inventory, the Target Fish Community concept continues to illustrate that riverfish communities are being impacted by water quality and quantity issues and by habitat alteration.

The Executive Office of Environmental Affairs, as part of their ongoing development of a statewide water policy, planned for the funding of two contract positions for two years at MDFW to create Target Fish Communities statewide and to develop a statewide Index of Biotic Integrity. These positions should be posted early in FY06.

3. Coldwater Fisheries Resource Designation

A project to identify waters that the Division considers to be Coldwater Fishery Resources (CFRs), initiated in FY01, was continued and updated based on the fish samples collected in FY04. The current list of waters contains nearly 600 streams statewide.

This list of CFRs is useful as a screening tool to highlight environmentally sensitive areas. It is not yet a definitive list of all waters that are CFRs. Each year, as sampling results are recorded, the list of CFR's is updated to reflect the most current information.

The Department of Environmental Protection (DEP) is currently in the process of completing their triennial review of the MA Water Quality Standards. A project was initiated with DEP to:

1) list all of the waters in the Division's CFR database as "existing uses" and

2) increase the number of streams protected as "designated uses" in this round of the water quality standards revisions.

In the future, the Division will participate in a pilot project with the DEP to determine the range of natural thermal regimes encountered by the coldwater resources in the state and to develop standards that protect this habitat.

Anadromous Fish Investigations

Overview

Budgetary problems prevented hiring of any seasonal workers to conduct the Atlantic salmon smolt production assessment work in Connecticut River tributaries in the first half of the fiscal year. However, Federal monies directed to the Connecticut River Atlantic Salmon Commission (CRASC) for salmon restoration were used to hire three USFWS seasonal employees that were detailed to MA restoration efforts in the summer of 2004. These seasonal employees assisted the project leader in performing index site surveys of Atlantic salmon fry growth and survival.

During the second half of FY05, funding became available to hire six seasonal workers to stock salmon fry and staff the fishways on the Connecticut, Westfield, and Merrimack Rivers. Some 1,840,249 unfed Atlantic salmon fry from the Roger Reed State Fish Hatchery and the White River National Fish Hatchery were scatter-planted from shore into tributaries of the Connecticut River in Massachusetts during the spring of 2005.

Because 2005 fishway operations are ongoing at this time, this report will summarize 2004 fish passage activities. No major malfunctions were experienced at any of the fishways on the Connecticut or Merrimack Rivers in Massachusetts in 2004. An American eel upstream passage facility was constructed and installed at the DSI dam on the Westfield River in West Springfield and ran for the entire elver passage season in 2004 (May-October).

Connecticut River

The project leader actively participated in the Connecticut River Atlantic Salmon Commission (CRASC), and will assume the chairmanship of the CRASC Technical Committee effective in the fall of FY06. He will continue as chairman of the CRASC Shad Studies Group. The project leader also participated in the Connecticut River/Long Island Sound Eco-team (CTR/LIS ET) and as a member of the CTR/LIS ET fish passage sub-committee. The project leader was actively involved in the re-licensing of the Holyoke dam on the Connecticut River in Holyoke, MA; re-licensing of the Woronoco hydroelectric project on the Westfield River in Russell, MA; and an application for FERC exemption of the Westfield Paper dam in Russell, MA. Many telephone, electronic, and written requests for information were also answered by the project leader who also responded to requests to expand the Atlantic salmon egg rearing program (ASERP) to 30 schools in the CT River watershed. The project leader was actively involved with the River Restore Program, acting as the Division of Fisheries and Wildlife's representative on the Dam Removal Triage team. This involved traveling around the state observing and evaluating dams that may be removed. One dam on Yokum Brook in Becket, MA was removed in Feb 2003 and another is scheduled to be removed during the summer of 2005.

Holyoke

The City of Holyoke (Holyoke Gas and Electric Co. HG&E) bought the Holyoke Hydroelectric project from Northeast Utilities in 2002. The project leader has been involved in ongoing negotiations with the new owner to settle the outstanding issues and finalize the FERC license for the project. Holyoke Gas and Electric Co., as directed by the conditions of their new FERC hydroelectric license, hired seasonal employees for the Holyoke fishway in spring 2004. The Project Leader supervised their activities. The Holyoke Dam fishlift was operated for upriver fish passage from April 12 through July 2, 2004, except during periods of high water April 15-17, May 26-27, and the tailrace lift was not operated May 11-12 due to an equipment malfunction. Seven species of anadromous fish were identified and enumerated during the spring/summer fish passage season. The number of Atlantic salmon trapped at the fishlift increased from 28 in 2003 to 34 in 2004. Four Atlantic salmon were radio-tagged and released at Holyoke as per agreement with HG&E.

The total number of shad lifted in 2004 (191,290) was 27% of the record high passage of 1992. 2004 passage was 71% of the previous five year mean, and 73% of

the previous ten year mean. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed this project on the 27TH day of passage, May 17TH. American shad were sampled for biological data on 10 days between May 6 and May 23. Fork length, weight, sex and scale samples were collected from 306 individuals. This represents 0.16 % of the total American shad passed for the year and between 0.1% and 1.1% of the daily shad passage at the facility. The weighted percentage of the run sampled (the total number of fish passed on days of sampling expressed as a percentage of the entire run) was 50%. The weighted sex ratio of American shad lifted at the Holyoke facility in 2004 was 56.7% male and 43.3% female.

Fishlift personnel trapped a total of 856 shad in 2004 for within-basin restoration efforts.

Blueback herring passage in 2004 was 145. This was 0.02% of the maximum passage of 1985, 2% of the previous five year mean and 0.5% of the previous ten year mean.

Sea lamprey passage in 2004 (59,476) was 61% of the record passage in 1998 and was 137% of the previous five year mean and 135% of the previous ten year mean.

Gizzard shad passage in 2004 (287) was 2% of the previous five year mean and 3% of the previous 10 year mean.

Turners Falls

Spillway, Cabot, and Gatehouse facilities were operated during the andromous fish passage season in 2004 (May and June). Due to staff limitations, passage was recorded on video tape to be reviewed later by representatives of the Conte Anadromous Fish lab and/or Northeast Utilities. All ladders were monitored from 06:00h until the loss of daylight made video monitoring impossible around 20:00h. All fishladders remained open for passage twenty-four hours each day.

Four adult Atlantic salmon were allowed to pass the Holyoke fish passage facility. Of these, one was observed passing the fish ladders at Turners Falls.

The number of shad passing the Gatehouse fishladder in 2004 (2,192) was 4% of the maximum passage of 1992, 64% of the previous five year mean and 28% of the previous 10 year mean.

The number of shad passing the Spillway fishladder in 2004 (1,980) was 17% of the maximum passage of 1992, 56% of the previous five year mean and 67% of the previous 10 year mean.

The number of shad passing the Cabot fishladder in 2004 (5,933) was 6% of the maximum passage of 1992, 45% of the previous five year mean and, 33% of the previous 10 year mean.

Examining the cumulative percent of shad passed at Gatehouse, 50% of fish passed this ladder on the 32ND day of operation, 22 May, 2004. Examining the cumulative percent of shad passed at Spillway, 50% of fish passed this ladder on the 31ST day of operation, May 21, 2004. Examining the cumulative percent of shad passed at Cabot, 50% of fish passed this ladder on the 29TH day of operation, May 19, 2004.

Only 1.1% of the shad lifted at Holyoke (191,290) passed the Gatehouse observation window, well below the restoration goal of 50%.

Westfield River

In 2004 a fish ladder was operated for the eighth year at the Fibermark Decorative Specialties International Inc. (DSI) dam in West Springfield, MA. The fishway and associated downstream bypass facilities were constructed in the fall of 1995.

The DSI fishway was operated for upriver passage during spring/summer (April 20 through July 3, and September 15 through October 31). Closures due to high water occurred on May 25-26. Five species of anadromous fish and six species of resident fish were identified and enumerated during the spring/summer fish passage season.

An eelway for upstream passage of juvenile American eel was constructed in the lower section of the fishway in August of 2001 and was operated from May to the closure of the fishway for the season on October 31, 2004.

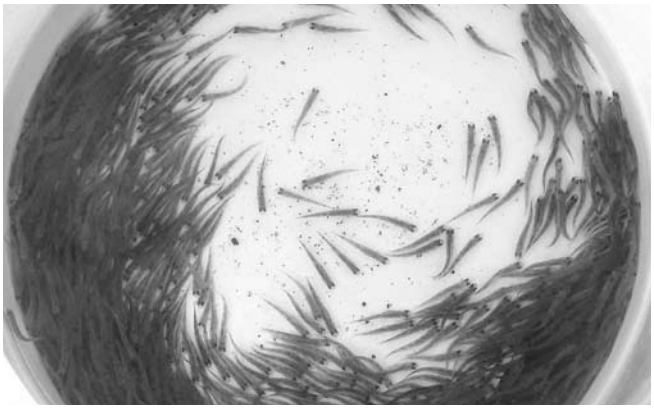
During the spring/summer season, 12 Atlantic salmon were trapped. All salmon were transported to the Richard Cronin National Salmon Station, Sunderland, MA by personnel of the United States Fish & Wildlife Service. One salmon had been previously captured at Holyoke and fitted with a radio transmitter. It was transported from Cronin NSS to the upper Westfield River.

A total of 913 American shad; 1,171 sea lamprey; 0 striped bass; 1 Blueback herring; and 0 gizzard shad were passed upstream in spring/summer 2004. The shad passage represents 19% of the record high of 4,720 in 2001.

Atlantic Salmon Fry Stocking, Survival and Habitat Assessment

Between April 11 and May 7, 2005, 1,840,249 unfed Atlantic salmon fry from the Roger Reed State Fish Hatchery and the White River National Fish Hatchery were scatter-planted from shore into the Deerfield River Basin (16 tributaries), the Westfield River (3 main branches and 23 tributaries), the Fall River (mainstem and one tributary), Four Mile Brook, the Manhan River (one branch and one tributary), Mill Brook (Northfield), the Mill River in Williamsburg (two branches and two tributaries), the Millers River, and the Sawmill River.

The Westfield Watershed Association (private group) organized two fry stocking days (100,000 fry each day), and Millers River Chapter of Trout Unlimited also helped to organize and stock 100,000 fry.



Atlantic Salmon Fry

Index sites in river basins stocked in 2003 were sampled by electro-fishing to evaluate Atlantic salmon fry growth and survival. Thirty-six streams were sampled by MDFW staff in 2004.

A single-pass technique utilizing a battery powered backpack shocker was employed on all streams sampled. All fish seen were captured. Fish were held in live cars after capture, identified to species, and measured for total length. Upon completion of a subsequent 'work up', all fish were released back into the index site. Index sites were selected to be proportionately representative of the habitat types in each stream. To prevent over or under estimation due to disproportionate stocking, index sites were selected, whenever possible, near the middle of a stocking section.

A survey of the total amount of Atlantic salmon habitat in the tributary waters of the Connecticut in Massachusetts is now largely complete. An estimated 49,281 units (one unit equals 100 square meters of river area) of Atlantic salmon habitat have been assessed through this effort.

Merrimack River

In 2004 the project leader actively participated in Merrimack River Policy and Technical Committee meetings as well as several working group meetings. In addition, several requests from the public were received which required extensive written and oral responses.

The two mainstem dams on the Merrimack River in Massachusetts were operated and monitored for anadromous fish passage during the spring/summer of 2004. The absence of seasonal staff in 2004 meant that the project leader spent a significant amount of time at the fish passage facility in Lawrence during the season.

Essex Dam

The Essex Dam fish elevator operated for 77 days between April 29 and July 15, 2004. For the fall season the fishway was operated from September 15 through November 1, 2004. During the spring migration period the Essex Dam fish elevator operated seven days per week. Hours of operation were generally 8:00 A.M. to 4:00 P.M. throughout the season. During the fall, four lifts per weekday were completed by personnel of CHI Energy Inc.

One hundred thirty one adult Atlantic salmon were counted at the Essex fishlift during spring 2004. All were trapped for broodstock purposes. The captured salmon were transported to the U.S. Fish and Wildlife Service National Fish Hatchery at Nashua, New Hampshire to be spawned. No salmon were seen in the fall.

The total number of shad lifted in 2004 (45,115) was 70% of the record high passage of 2001. 2004 passage was 73% of the previous five year mean and 116% of the previous ten year mean. Examining the cumulative percent of shad passed at Lawrence, 50% of fish passed this project on the 32ND day of operation, June 5. Some 2,296 shad were trapped and trucked to locations both in-basin and out-of-basin for restoration efforts in MA, NH and ME. Two hundred seventy one shad were sampled for biological information on six days between May 14 and June 25. The number of shad sampled each day varied from 19 to 51 individuals, which represented 1% to 19% of daily passage. The weighted percentage of shad sampled (the number of shad passed on sampling days divided by the total number of shad passed) was 19%. From these data the estimated sex ratio of shad passed at Lawrence was calculated to be 37% female, 63% male.

From 1996 through 2000 the numbers of river herring passing through the Essex fishway increased steadily from 51 to 23,585. In 2001, however, herring passage declined to only 1,550 fish. This decline continued in 2002 with only 526 herring observed. Herring passage rebounded in 2003 to 10,866, and in 2004 passage was 14,945. This was 3% of the record high passage of 1991. 2004 passage was 187% of the previous five year mean and 91% of the previous ten year mean.

The totals of sea lamprey, striped bass, and gizzard shad passing through the Lawrence fishlift were 6,669; 806; and 17 respectively.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator began on May 6TH, one week after shad began to move through the Lawrence fishway, approximately 12 miles downstream, and concluded on July 2ND when upstream movement of shad had declined to a negligible number. The system was operated seven days per week, generally from 7:00 A.M. to 6:00 P.M. Frequency of lifts varied between 0.5 to 2 hours based on the density of fish observed in the hopper bucket. Estimates of fish passage were made by CHI employees who observed the hopper bucket during each lift.

Maintenance of the facility was satisfactory throughout the fish passage season.

The estimated numbers of anadromous fish passed at the Lowell facility is as follows: American shad, 11,028; river herring, 7,448; sea lamprey, 2,194; striped bass, 129; American eel, 60; gizzard shad 0. This represents 24% of the shad, 50% of the river herring, 33% of the sea lamprey, 16% of the striped bass, and none of the

2005 Fish Production

Table 1. Summary of the number trout produced from each of the Division's four trout hatcheries in FY05.
(Fall stocking 2004 and Spring stocking 2005)

Species	Size Cat. (inches)	Number of fish				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	9+	0	0	0	0	0
	12+	16650	51128	29674	0	97452
	14+	11500	177475	0	39605	228580
	18+	150	0	0	0	150
	Sub-total	**28300**	**228603**	**29674**	**39605**	**326182**
Brook Trout	6 - 9	28300	0	0	0	28300
	9+	0	14303	42944	9900	67147
	12+	0	0	0	16640	16640
	18+	0	0	0	681	681
	Sub-total	**28300**	**14303**	**42944**	**27221**	**112768**
Brown Trout	6 - 9	17300	0	0	0	17300
	9+	0	29100	42792	9500	81392
	12+	24100	0	16596	4680	45376
	18+	0	0	0	531	531
	Sub-total	**41400**	**29100**	**59388**	**14711**	**144599**
Tiger Trout	14+	0	0	0	2500	2500
		0	0	0	776	776
	Sub-total	**0**	**0**	**0**	**3276**	**3276**
	Total	**98000**	**272006**	**132006**	**84813**	**586825**

gizzard shad passing through the Lawrence fishway this season.

No sea-run Atlantic salmon were seen at the Lowell fishlift. All sea-run Atlantic salmon that enter the Lawrence fishlift, downstream, are captured and removed to serve as broodstock. However, a large number of domestic broodstock fish from the sport fishery in the mainstem Merrimack River in New Hampshire were seen in the vicinity of the Lowell fishlift. These salmon can legally be harvested in the Massachusetts portion of the Merrimack River and its tributaries upstream of the Essex Dam in Lawrence.

Hatchery/Trout Program

The Division met its annual trout production goal of between 400,000 and 450,000 pounds in FY05. This production goal is based on the capacity of each hatchery and the limits imposed by the National Pollution Discharge Elimination System permit that is issued to each hatchery by the U.S. Environmental Protection Agency. Capacity is determined by a combination of the quantity of the water supply and the amount of rearing space. The Division's four trout hatcheries produced a total of 432,923 pounds of trout, comprising a total of 586,825 brook, brown, rainbow and tiger trout in FY05, which includes the fall stocking in 2004 and spring stocking in 2005 (Tables 1 and 2). Spring trout stocking got started later than normal in FY05 due to the abnormally cold temperatures and frequent snow storms in March. Despite the late start, trout stocking was completed on time, thanks to the hard work and dedication of MDFW staff who are involved in the stocking program.

A total of 405,920 pounds of trout were stocked during the spring of 2005. This included 287,252 rainbow trout that ranged between 12 and 18+ inches long. There were more than 228,000 rainbow trout stocked that averaged 14 inches or longer. There were 106,287 brook trout that ranged between 6 and 18+ inches long, 135,599 brown trout that ranged between 6 and 18+ inches long and 3,276 tiger trout all averaging more than 14 inches stocked as well (Tables 1 and 2). A total of 50,730 trout weighing a total of 27,003 pounds were stocked in the fall of 2004. The fall-stocked trout included 38,930 rainbow trout, 5,800 brook trout and 6,000 brown trout all averaging twelve inches long.

Table 2. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY05.

(Fall 2005 and Spring 2005)

Size Cat. Species	(inches)	Weight of fish (lbs) Bitzer	McLaughlin	Sunderland	Sandwich	Total Wgt. of Fish
Rainbow Trout	9+	0	0	0	0	0
	12+	11672	27752	23063	0	62487
	14+	18829	195416	0	32626	246871
	18+	610	0	0	0	610
	Sub-total	**31111**	**223168**	**23063**	**32626**	**309968**
Brook Trout	6 - 9	7270	0	0	0	7270
	9+	0	6100	14023	1751	21874
	12+	0	0	0	9387	9387
	18+	0	0	0	1507	1507
	Sub-total	**7270**	**6100**	**14023**	**12645**	**40038**
Brown Trout	6 - 9	4266	0	0	0	4266
	9+	0	9309	12206	1583	23098
	12+	26885	0	16864	4956	48705
	18+	0	0	0	1875	1875
	Sub-total	**31151**	**9309**	**29070**	**8414**	**77944**
Tiger Trout	14+	0	0	0	3149	3149
		0	0	0	1824	1824
	Sub-total	**0**	**0**	**0**	**4973**	**4973**
	Total	**69532**	**238577**	**66156**	**58658**	**432923**

Table 3. Summary of landlocked salmon and Atlantic salmon produced at the Roger Reed Hatchery in FY05.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked salmon	smolts (8+)	14,170	3,295
	parr (4+)	6,250	252
	Sub-total	**20,420**	**3,547**
Atlantic salmon	green eggs	1,750,000	
	unfed fry (1+)	783,171	308
	adults (15+)	260	2,363
	Sub-total	**2,533,431**	**2,671**

The Roger Reed Hatchery in Palmer continued its important role in both the Atlantic salmon restoration program and the landlocked salmon program for Quabbin Reservoir in FY05. A total of 10,400 landlocked salmon smolts and 6,250 parr were produced and released into Quabbin Reservoir. A total of 1.75 million Atlantic salmon eggs were collected from broodstock held at the station and distributed among cooperating hatcheries in New England. A total of 783,171 unfed Atlantic salmon fry were also produced and stocked into rivers and streams in the Connecticut River drainage basin within Massachusetts. In addition, 260 adult broodstock salmon produced at Roger Reed Hatchery were stocked in selected waters across the Commonwealth. A summary of the numbers of each of the fish species produced by the Roger Reed Hatchery is presented in Table 3.

There were several hatchery staff changes in 2005. Amber Currier was hired to fill the Wildlife Technician I position at Sandwich Hatchery that was left vacant by the resignation of Peter Ho. Also at Sandwich Hatchery, Joseph Vasquez, who was hired in March 2004, resigned his position as Wildlife Technician I to pursue other career opportunities. Kevin Peloski, Wildlife Technician I at Sunderland Hatchery, transferred to the Connecticut Valley Wildlife District. Andrew Ostrowski was hired to fill his position.

Warmwater Fisheries Investigations

Esocid Program

The Division relies entirely on other states — PA, VA, NJ, and NY — for stock for the esocid program. In addition, the Pennsylvania Fish Commission specifically rears up to 15,000 tiger muskies (7-plus inches) for Massachusetts each year. Studies have shown that esocids stocked at less than seven inches suffer mortality rates as high as 90% in the first 40 days. Waters chosen for tiger muskie management are stocked for a minimum of five consecutive years with the 7+ inch fish to see if they can produce a viable fishery. Currently, each Wildlife Management District has one to three bodies of water that are stocked annually with tiger muskies depending on total number of fish available.

In the Northeast District, Lake Mascopic, Tyngsborough has been stocked for 10 consecutive years with 7+ inch tigers and, aside from anecdotal reports of a few sub-legal tigers produced during annual ice fishing derbies, it has not produced the fishery expected. Beginning in 2003, effort has been focused on Massapoag Lake, Sharon.

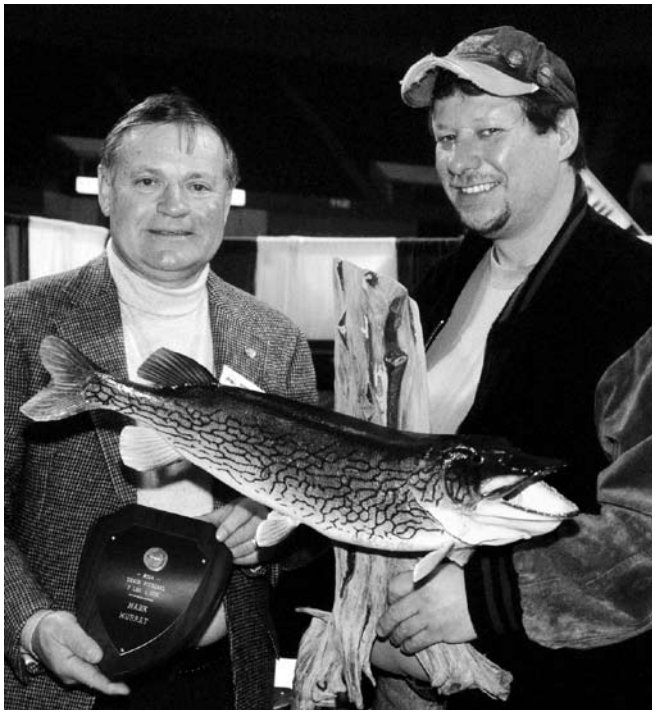
In the Southeast District, South Watuppa Pond, Fall River was stocked for five consecutive years and, as with Lake Mascopic, it has failed to produce a fishery. Effort is now focused on Lake Nippenicket, Bridgewater.

In the Central District, the A-1 Site and Lake Chauncey, Westborough, and Flint Pond, Shrewsbury are being managed actively.

In the Connecticut Valley District, Hampton Ponds, Westfield, have been stocked for over ten years and although the ponds have yielded a few legal fish, this too has not produced the fishery expected and a new body of water will be selected for next year.

Pontoosuc Lake, Pittsfield in the Western District, which has the most consistent stocking history in the state, continues to be the best producer of esocids. In fact, Pontoosuc Lake holds the world record for a tiger muskie caught through the ice at 27 pounds even (2001). A second body of water in the Western District, Shaw Pond in Becket, has also begun to receive surplus fish when available.

Surpluses of northern pike and tiger muskies from New Jersey, Pennsylvania and New York were made available to the Division once again for stocking waters



Director Wayne MacCallum and Mark Murray of Haverhill pose with the mount of the 7 lb., 1 oz. chain pickerel that won Mark gold for this species.

of the Commonwealth. As a result, nearly 16,000 7+ inch tiger muskies were stocked into six waters: Flint Pond, Nippenicket Lake, Massapoag Lake, Pontoosuc Lake, Hampton Ponds and Shaw Pond. Additionally, over 131,000 three inch tigers were stocked into Chauncey Lake, the A-1 Site and Shaw Pond. There were many fewer surplus northern pike than tiger muskies available in 2004. None of them were over seven inches in length. 73,000 two to five inch surplus northern pike from Pennsylvania, New Jersey and New York were stocked into Flint Pond, Chauncey Lake and East Brimfield Reservoir, Brimfield. In the fall of 2004, Quaboag Pond, Brookfield was, for the second consecutive year, the recipient of 1,000 18+ inch northern pike which were purchased from a private vendor by the Spencer Fish & Game Club. These fish provided an instant fishery with fish reported caught within days of stocking. Personnel from the Central Wildlife Management District and the Field Headquarters are conducting an ongoing winter creel survey on Quaboag Pond to monitor the catch of the newly stocked northerns. Although analysis is ongoing, hundreds of the pike were caught and released during the first two ice fishing seasons. By the second ice fishing season, northerns were caught just under the legal length limit, having gained an amazing 10 inches. The creel survey will continue to determine when the pike reach the legal fishery (28 inches).

Freshwater Sportfishing Awards Program

For over 40 years, the Freshwater Sportfishing Awards Program has been awarding pins to anglers who catch trophy size fish from the waters of the Commonwealth. Minimum qualifying weights are currently in place for 22 different species of fish. Upon submitting an

eligible fish to an authorized weigh station (there are nearly 100 across the state) or to a Division facility, the angler receives a bronze pin depicting the species of fish with the weight and year of catch stamped on the back. In addition to the bronze pin, the lucky angler who weighs in the largest fish of the year for each of the categories is awarded a plaque and gold pin at the Eastern Fishing and Outdoor Exposition held in February at the Worcester Centrum. Affidavits are still being received for 2005, so results from 2004 are presented here. 478 pins were awarded in all 22 categories for calendar year 2004.

Species	Total Pins	Gold Pin
Broodstock salmon	52	17 lb. 4 oz.
Brook trout	15	5 lb. 10 oz.
Brown trout	6	8 lb. 4 oz.
Bullhead	27	3 lb. 1 oz.
Carp	17	35 lb. 14 oz.
Chain pickerel	38	7 lb. 1 oz.
Channel catfish	31	18 lb. 2 oz.
Crappie	13	3 lb. 0 oz.
Lake trout	29	24 lb. 0 oz.
Landlocked salmon	2	5 lb. 2 oz.
Largemouth bass	11	8 lb. 6 oz.
Northern pike	17	20 lb. 1 oz.
Rainbow trout	10	10 lb. 8 oz.
Shad	35	6 lb. 6 oz.
Smallmouth bass	29	5 lb. 15 oz.
Sunfish	10	1 lb. 5 oz.
Tiger muskellunge	3	18 lb. 0 oz.
Tiger trout	4	9 lb. 7 oz.
Walleye	5	8 lb. 7 oz.
White catfish	15	6 lb. 10 oz.
White perch	71	3 lb. 2 oz.
Yellow perch	38	2 lb. 9 oz.

Two new state records were set in 2004, one for lake trout and the other for tiger trout. The third annual Angler of the Year Award (presented to the angler who submits the highest number of eligible species) was presented to Roy Leyva of Hyde Park who weighed in qualifying entries in 16 different categories, a new record for this award.

Bass Tournament Creel Analysis

The Division is monitoring the results of black bass (largemouth and smallmouth bass) tournaments to help establish a long term database of variables such as catch rates and average fish size for specific waters. Any organization which requests the use of a Public Access Board (PAB) facility to hold a fishing tournament must receive a Special Use Permit. As part of the permit, the PAB includes a creel sheet to be completed by the fishing club at the close of the event. Additionally, individual bass clubs as well as the Massachusetts Chapter of B.A.S.S. (Bass Anglers Sportsman Society) have been given creel sheets in an attempt to generate information on tournaments held on non-PAB ramps. The creel sheets are also available to download from the Division's website. The completed creel sheets are mailed to the warm/coolwater project leader at the Field Headquarters. The creel sheets ask for the following information: club name, date of event, location of event, start and end time, number of anglers, number of anglers weighing bass, number of anglers with limits of bass, total number of bass weighed in by species, total bass over 5 pounds, number of bass returned alive by species, total weight, winning weight and the weight of the biggest bass of the event. There is also space for the club to include comments. This information is entered into a database to allow the Division to detect long term trends in the bass populations in some of the Commonwealth's most heavily fished waters. Creel sheets are still being received for the 2005 tournament season, so results from the 2004 season are presented here.

In 2004, a total of 212 creel reports from bass tournaments were received by the project leader (same number as 2003). These 212 tournaments represented 61 different bass clubs fishing on 44 different waters. A total of 8,774 largemouth bass and 1,653 smallmouth bass were weighed in for a catch rate of approximately 1 bass per 3 + angler hours. The average weight of a bass weighed in was 1 lb 14 oz.; 85% of all anglers weighed at least one bass while 35% caught a limit (5 bass total of either/both species). 99% of all bass, largemouth and smallmouth, were returned to the waterbody alive at the close of the tournaments. These indices have not changed significantly since tracking began in 1996. For waters with more than four tournaments, as in 2003, Congomond Lake, Southwick produced the highest number of bass over 5 pounds (16) over 31 tournaments. Otis Reservoir, Otis produced the highest percent of anglers weighing bass (96%) and the highest percent of anglers who had taken their limit of bass (73%). A breakdown of the number of tournaments by waterbody revealed that only a few waterbodies had more than 1 tournament per year (less than 6) while the two highest occurrences took place on Congomond Lake and on the Connecticut River which hosted 31 and 26 respectively.

Fish Kill Investigations

Pursuant to the 1999 revised Fish Kill Memorandum of Understanding between the Department of Environmental Protection (DEP), the Division of Fisheries and Wildlife (DFW), the Division of Environmental Law Enforcement (DELE) and the Department of Food and Agriculture (DFA), DFW, as the coordinating agency, received 31 reports of dead fish, down 18 from the previous year. Numerous other calls were received through the fish kill response system which did not lead to a finding of dead fish. Breakdown on reports of the 31 documented fish kills was as follows: reported by private citizens 18, DFW & DELE 2, DEP 3, town officials 5, state parks 2, and private environmental consultant 1. Of these 31 reports, ten required field investigations

by DFW or DEP personnel to determine the cause of the kill. The final findings on the 31 calls were that 26 instances were natural kills, 1 was due to a chlorine discharge, 1 was due to an algal bloom, 1 was due to thermal stress and 1 was due to minnow traps.

Environmental Review

In 2004, DFW reviewed and provided comments on all major projects affecting fisheries resources published in the *Environmental Monitor*. DFW also provided technical information to a wide variety of consultants, town and state officials on local projects. There were 114 requests to review project proposals potentially affecting 107 different named waters (92 rivers and streams and 15 ponds) statewide. Sixty four percent of the requests were received from environmental consulting contractors to fulfill DEP and MEPA filing requirements. The remaining requests were from state agencies such as EOEA, DCR, DEP, MassHighways and the Division of Marine Fisheries (26%); federal agencies such as the Army Corps of Engineers and the Federal Energy Regulatory Commission (4%); and local entities such as conservation commissions, departments of public works, and lake associations (6%). Fisheries resources were partitioned as follows: warm water (28%), coldwater (21%), stocked (25%), anadromous (8%), threatened or endangered (1%), marine (2%), unknown (10%) and no fisheries resources (5%). The majority of the projects were bridge replacements/rehabilitations over streams (42%) and road reconstruction (8%). The remaining reviews involved lake management issues such as drawdowns, culverts, fill removal, dam repairs, fish passage and stream bank stabilization (21%), new well sites (15%), FERC issues (4%), new development (4%), stormwater management (3%), waste site clean-up (2%) and NPDES reviews (1%).

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WILDLIFE

Thomas K. O'Shea
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The Wildlife Section oversees research and management of all avian and mammalian species within the Commonwealth of Massachusetts which are primarily utilized in any way for meat, fur or sporting purposes. It is responsible the Division's sustainable forestry program and for the upland habitat program on over 100,000 acres of state wildlife management areas. The overall program goal is to promote biodiversity, to conserve the Commonwealth's game species, and more specifically, to maintain wildlife populations at levels that are in balance within the biological carrying capacity of their habitat and cultural carrying capacity of the public.

While the Wildlife Section is devoted primarily to research and management of wildlife populations of species that are hunted or trapped, as well as active habitat management, it is also responsible for the Division's pheasant stocking program, the testing and registration of PAC (problem animal control) agents and falconers, and the licensing and inspection of commercial deer farms and certain other wildlife propagation facilities.

The Wildlife Section has a staff of wildlife biologists and foresters, who conduct research and management projects throughout the state with assistance from District personnel and in cooperation with the U.S. Fish & Wildlife Service and the Massachusetts Cooperative Fish & Wildlife Research Unit (USGS). Biologists and foresters within the Wildlife Section engage in wildlife management programs under the following general classifications:

- Monitoring and research of wildlife populations and habitat
- Population analysis
- Harvest management
- Community-based human-wildlife conflict management
- Restoration of wildlife
- Ecological research
- Public use and methodology surveys
- Sustainable forest management
- Early-successional habitat management
- Habitat protection

Migratory Bird Census

Mourning Dove Census: The number of calling doves on three long-term survey routes increased 20% from 2004 to 2005. Counts on seven comparable routes decreased 10% from 2004 to 2005.

Woodcock Census: Results of the 2004 fall hunting season as measured by the woodcock wing-collection survey indicated that the average bag per hunt and per season decreased 20% and decreased 33.7% respectively when compared to the previous season. Production of young, which is measured in a ratio of immature birds per adult female, increased 19% when compared to the long-term average.

Eight randomized spring woodcock singing ground surveys were conducted in 2005. The total number of singing woodcock heard on comparable routes during the spring census in Massachusetts decreased 48% (16 from 31 woodcock heard) from 2004 counts.

Ruffed Grouse Census: The average number of drummings per stop (ANDS) for 26 random routes in 2005 was 0.10 + 0.03. By comparison, on 24 random routes run in 2004, the ANDS was 0.15 ± 0.04. These results show a 33% decrease in ANDS from 2004-2005.

The Western District has shown a slight decline in ANDS in the past four years with an average of 0.17, while the Connecticut Valley District seems to remain constant averaging 0.15. The Central District fluctuates at higher levels than either the Western or Valley Districts and it has a 4 year average of 0.27. The Northeast and Southeast districts have been consistent zeros.

Mourning Dove.

Division of Fisheries and Wildlife staff conducted an annual goose round-up.

Waterfowl Research and Surveys: MDFW personnel continued to conduct nest box checks on 52 sites used to monitor wood duck populations statewide. Summer checks revealed 428 wood duck nest starts in 640 available boxes, with 325 successful hatches (76%). In addition, there were 79 hooded merganser hatches from 104 starts.

Massachusetts participates in the Atlantic Flyway Resident Goose Banding Program. This program is designed to band 1% to 2% of a state's breeding Canada goose population. Geese are captured through round-ups conducted during the summer molting period. In FY05 a total of 1,140 Canada geese were banded at 61 sites in 54 towns in Massachusetts. This total includes 535 goslings and 605 adults. One hundred forty eight of the adult geese were banded with special bands to determine band reporting rates. An additional 240 previously banded geese were recaptured. We also participated in the second phase of a molt migration study conducted by the Cornell Wildlife Research Unit, removing blood quills from five adult female geese captured at different sites to be used in a DNA study.

A partial overhaul of the airboat engine resulted in it operating the best it has in many years. Hull leakage has grown worse, but installation of a bilge pump eliminated much of the water build up problem. Water conditions were low on rivers at the beginning of the season, but were generally satisfactory on impounded sites. However, several factors converged to limit airboating success. A number of traditional airboating sites were not boated because of low waterfowl numbers. Only 14 trips were made because pre-trip scouting eliminated several sites where few or no waterfowl were observed. Three trips this year resulted in no waterfowl being banded. On two of those (Long Pond River, Lakeville and West Hill Dam, Uxbridge) ducks were observed flying into the site on scouting trips made during the previous full moon period, but birds were not seen when airboating occurred. Since the September Canada goose season opened on Sept. 7, it is possible that hunting activity caused the ducks to leave, though neither site is a likely gathering place for Canada geese. Another possibility is that the birds left the areas on prevailing southward winds associated with major fronts that followed the remnants of hurricanes that moved through New England shortly before banding trips were made to the sites.

A major night lighting site has always been the Concord impoundments of the Great Meadows National Wildlife Refuge. This site was formerly boated four times a season, but in more recent years the number of trips was cut back to two, once in August, and once in September. Historically, Great Meadows accounted for 25% to 65% of the total airboat bandings in the state, but since the refuge began drawdowns on the impoundments, airboating has been restricted to once a season, and sometimes not boated at all. This year, the refuge staff began drawdowns without notifying us, eliminating the August trip, and began pumping water back into the lower impoundment only the last week of September, allowing for only a single trip to the site at the end of the season. Duck numbers were just beginning to build up in response to the food source generated by the moist soil management, but we had to boat the site just after the full moon period.

Division staff banded 569 birds with catches ranging from 0 to 137. Among the birds banded were 322 wood ducks, 201 mallards, and 14 American black ducks. Staff also participated in a federal band reporting rate study involving banding a sample of wood ducks, black ducks, and adult mallards.

Between September 7 and 25TH, Massachusetts conducted a resident Canada goose season with a five bird daily bag limit. The Migratory Bird Hunter Harvest Information Program (H.I.P) of the U.S. Fish and Wildlife Service estimated a September season harvest of 4,100 geese. This compares to a harvest estimate of 3,800 last year.

Duck hunting seasons in the Atlantic Flyway continued with the liberal option of 60-day seasons and a six bird daily bag limit. The Canada goose season was 60 days long with a two bird daily bag limit in the Central and Coastal waterfowl hunting zones, and 45 days with a

two bird bag limit beginning the fourth Saturday in October in the Berkshire zone.

The annual Midwinter Waterfowl Survey was restored to full coverage this year after last year's coverage was reduced due to a funding shortfall. American black duck numbers were low, with only 15,553 counted, 22% below the 10 year average. Mallard counts (3,871) were 8% higher than the 10 year average. Canada goose numbers (10,793) were 6% below the 10 year average.

Between January 15 and February 15, 2005, Massachusetts held a late, resident Canada goose season in the Central waterfowl zone while the season in that portion of the Coastal zone north of Cape Cod ran from January 24 to February 15. The USFWS estimated a harvest of 4,000 geese during this season compared to 3,900 birds last year.

During April and May we participated in the Northeastern states waterfowl breeding survey which is based on sampling randomly selected, one kilometer square plots. Massachusetts checked 93 of the 1,488 plots used in the survey. Eleven states participated in the 2005 breeding pair survey for waterfowl. The population estimate for mallards was 358,214 pairs $\pm$ 50,426. The estimate for black ducks was 21,471 pairs $\pm$ 6,254; wood ducks, 195,916 pairs $\pm$ 35,380, and Canada geese, 410,544 pairs $\pm$ 60,804. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its eighth year of the new federal Migratory Bird Hunter Harvest Information Program (HIP). HIP is designed to replace the previous survey based on collecting names of duck stamp buyers at post offices, and will allow for more specialized surveys of various migratory bird species. Waterfowl and woodcock hunters are required to register each time they buy a new license by calling a 1-800 number. Hunters were also able to register on line through the state's new internet registration system.

The project leader reviewed and scored a total of 54 North American Wetland Conservation Act large grant requests during the fall 2004 and spring 2005 application rounds. This work is done under the auspices of the Atlantic Coast Joint Venture project. The project leader also attended technical section meetings of the Atlantic Flyway Council in Delaware and Georgia.

Wild Turkey

Wild Turkey Range and Harvest Evaluation: The 15TH modern-day fall either-sex turkey season was held from October 25-30, 2004. The open zone included Wildlife Management Zones (WMZ) 01 through 09 and 13. A total of 212 turkeys was taken including 67 (32%) in Franklin County, 44 (21%) in Worcester County, 42 (20%) in Berkshire County, 41 (19%) in Hampshire County, 16 (7%) in Hampden County, 2 (1%) in Middlesex County, and none in Dukes County. There were 44 adult males, 76 immature males, two unaged males, and 90 females taken.

The 26TH Massachusetts spring gobbler hunt was held in April-May 2005. The four-week open zone included WMZs 01 through 10 and 13. The two-week zone included Zones 11 and 12. A total of 13,661 permit applications were received. A near-record harvest of 2276 turkeys was attained (the 14th straight year over 1000 and the 7th over 2000). There were 367 persons (2.7%) who took their second bird in the bag, as compared to 316 persons (2.3%) in 2004. The overall estimated success rate for taking one turkey was 14.0% as compared to 12.6% in 2004. The Worcester County harvest was 684 (30.0%), followed by Berkshire (454, 19.9%), Franklin (389, 17.1%), Hampshire (220, 9.7%), Hampden (175, 7.7%), Middlesex (97, 4.3%), Plymouth (96, 4.2%), Essex (70, 3.1%), Bristol (48, 2.1%), Norfolk (35, 1.5%), Barnstable (6, 0.3%), and Dukes (2, 0.1%). Adult males comprised 1145 (50%) of the take, as compared to 1221 (59%) in 2004.

Black Bear

Black Bear Distribution and Harvest Investigations: A record total of 3469 bear hunting permits were issued for the 2004 hunting season. A near-record total of 146 bears was taken during the 23-day split season, including 142 during the 23-day September segment and four during the six day November segment. Seventy-four females and 72 males were taken in Berkshire (n=56), Franklin (n=30), Hampden (n=33), and Hampshire (n=27) counties. There were 19 non-hunting mortalities (25 in 2003-04) including 14 road kills, three depredation kills, and 2 bears were found dead. A total of 99 problem bear complaints were received (117 in 2003-04), including 44 residential complaints, 26 trash and campground complaints, and 15 depredations on bird feeders. Additional untallied complaints were received by the Office of Law Enforcement and local officials.

The black bear field study conducted by the University of Massachusetts (in cooperation with DFW) had been shifted to DFW in 1999. Eleven radio-collared female bears were active in July 2004. One of these bears lost its collar in September and one was killed during the September hunting season. During winter 2004, eight of the remaining nine bears were tracked to their winter dens. The remaining bear was recaptured in a barrel trap in June. Four of the nine sows had a total of 10 cubs (5♀, 5♂), four had a total of 10 yearlings (8♀, 2♂) and one was prepubescent. Six female yearlings were collared and one male yearling was ear-tagged. The remaining three yearlings were not handled. One adult male was found by chance in a winter den and radio-collared. One young male was barrel-trapped and ear-tagged in June. A yearling male was darted as an urban nuisance, ear-tagged, and translocated in June. Three ear-tagged males were killed in 2004-2005: one by hunting, one as a nuisance in New York, and one by road kill. Fourteen radio-collared females and one male were being monitored as of July 1, 2005.

Furbearer Program

The furbearer program is responsible for the management and research of 14 species of wildlife in the Commonwealth. This group of species, called furbearers, includes beaver, muskrat, bobcat, eastern coyote, red and gray fox, river otter, fisher, striped skunk, mink, long-tailed and short-tailed weasel, raccoon and opossum.

Massachusetts' furbearers are abundant and widely distributed throughout the state. The populations of these species are scientifically managed and secure. None are threatened or endangered. The value of the Commonwealth's furbearer resource is very diverse and includes economic, ecological, cultural, biological, aesthetic and educational opportunities to individuals in the state.

The furbearer management program presents many challenges to wildlife managers in the state and uses various options including habitat manipulation, public education and regulated hunting and trapping as tools in the management of these renewable resources in the Commonwealth. A combination of techniques is used to:

1. Control problem animals
2. Regulate wildlife populations
3. Reduce habitat degradation
4. Reduce crop and property damage
5. Aid in the recovery of endangered species
6. Allow a sustainable harvest of renewable furbearer resources

In addition, these activities provide recreational and economic opportunity for citizens and households in the state. During the past fiscal year citizens spent more than 2,111 days afield harvesting and viewing furbearer resources. A total of 2,981 furbearers was harvested in the 2004-2005 season. The breakout by species was 564 beaver, 51 bobcat, 190 coyote, 339 fisher, 95 river otter, 42 red fox, 37 gray fox, 403 raccoon, 33 mink, 111 skunk, 53 opossum, and 1063 muskrat.

Regulated trapping is an important component of Massachusetts' wildlife management programs. It is the most feasible and effective method to control wildlife population growth. Regulated trapping conducted by trained, licensed members of the public is used by wildlife biologists to regulate wildlife populations and thus reduce negative reactions associated with high wildlife populations. Residents of the state also derive financial benefits as a result of decreased amounts of property damage caused by furbearers, and enjoy a diminished need to pay animal damage control agents.

The Massachusetts Division of Fisheries and Wildlife heavily regulates the harvest of furbearing animals. Complex laws and regulations govern the process of trapping. They include:

1. Mandatory licensing of trappers
2. Mandatory trapper training
3. Restrictions on the size of traps
4. Restrictions on types of traps
5. Restricted seasons for trapping
6. Restricted areas for trapping
7. Mandatory regular checking of traps
8. Mandatory tagging of traps to identify the owner.

Management and Research Efforts

Pelt sealing: Pelt sealing is used to gather information on the harvest and distribution of beaver, otter, red fox, gray fox, bobcat, coyote, mink, and fisher statewide. During the 2004-2005 harvest season, the Division sealed 1351 pelts.

Wetland/beaver management: Beavers are prolific rodents that occasionally cause problems to public and private property.

A consequence of the trapping restrictions established in 1996 has been decreased harvest of beaver during the regulated trapping season and a concomitant increase in the statewide population and the resulting complaints about flooding and property damage. Typical complaints included: flooded septic systems, wells, roads, driveways and railroad tracks. In July 2000 the Massachusetts Legislature passed, and the Governor signed, a law that modified the restrictions on beaver and muskrat traps to provide relief for people suffering from flooding impacts caused by beaver or muskrat. An emergency permitting system was created at the town level with certain non-emergency permits for specific traps to be available from the Division of Fisheries and Wildlife.

A survey was mailed to municipal Boards of Health, Conservation Commissions, and Departments of Public Works to determine the extent and trends in the local emergency permitting response to beaver-related problems. Data from this survey has been collected and is being analyzed.

Division management goals for beaver include managing beaver for their wetland values, regulating beaver populations within available habitat, and minimizing economic damage to public and private property by beaver. Public education, regulated harvest, and the installation of flow devices are major components of this program.

Beaver Ecology Study in Massachusetts: Dr. Stephen DeStefano, Leader of the Massachusetts Cooperative Fish & Wildlife Research Unit, oversees this program which is designed to study population ecology (i.e. growth and density), habitat occupancy of wetland areas and survival in suburban and rural Massachusetts. To date, Unit staff have collected 5 years of telemetry data on over 100 beaver in three study areas across Massachusetts. They have recorded the beavers' movements, survival, and habitat information as population density increases

Table 1. The 2004 White-tailed deer harvest by season and sex/age class.

Season	Adult Male	Female	Male Fawn	Unknown sex	Total	% Harvest
Paraplegic	1	3	4	0	8	0 %
Archery	1728	1020	262	6	3016	25%
Shotgun	3183	2828	663	8	6682	55%
Muzzleloader	757	1145	241	4	2147	18%
Nantucket – Special	43	152	51	0	246	2%
Subtotal	5712	5148	1221	18	12099	
Quabbin	69	77	21	0	167	
Total	**5781**	**5225**	**1242**	**18**	**12266**	

and mortality decreases due to the trapping restrictions emplaced in 1996.

Wildlife Depredation and Damage: Division personnel responded to complaints concerning the loss of domestic livestock and pets to eastern coyotes, red foxes and gray foxes. Community informational meetings and site visits were conducted and technical advice provided in an attempt to eliminate or alleviate public concerns and damage situations. Coyotes currently occur in all communities in Massachusetts with the exception of communities on Martha's Vineyard and Nantucket. Complaints regarding eastern coyotes have come from more than 340 separate towns in the Commonwealth since 1990. Complaints range from coyotes killing livestock and poultry, to harassing pet dogs and cats, to coyotes on airport runways threatening the arrival and takeoff of aircraft.

White-tailed Deer Program

Harvest and Population

The 2004 harvest of 12,099 deer is the second highest harvest reported in Massachusetts, and includes a record muzzleloader harvest of 2,147 (Table 1). The 2004 white-tailed deer harvest by sex/age and the number of antlerless deer permits allocated and issued by wildlife management zone for Massachusetts is presented in Table 2. Overall, there was a 3% increase in harvest from the 2003 hunting season, with an increase of 15% in muzzleloader season and slight decreases in the archery (1%) and shotgun (2%) seasons. The 2004 deer harvest, broken out by season and wildlife management zone, are presented in Table 3.

In response to a request from the town of Nantucket, the Fisheries and Wildlife Board voted to allow a one week deer hunting season on Nantucket beginning February 7, 2005. This special hunt is part of a long-term management strategy designed to reduce high deer density (40-60 deer/mile^2) and reduce deer ticks, thereby reducing the incidence of tick-borne diseases. There were 958 permits issued and a resulting harvest of 246 deer. Deer harvest rate on Nantucket for 2004 was over 20 deer/mile^2 of deer range.

As the deer harvest in Massachusetts continues to increase, there has been a shift in the distribution of the harvest across the WMZs. Over the past 20 years, the deer harvest has shifted from the five western WMZs to the six eastern WMZs. In 1984, 63% of the total deer harvest was in WMZs 1-4 and 18% was in WMZs 9-14. At the present time WMZs 1-4N and 4S (same land area as 1984) account for only 8% of the total harvest, while WMZs 9-14 account for over 69% of the total harvest.

This was the third year since the antlerless deer permit system was changed to require a hunter to have an antlerless deer permit in order to harvest an antlerless deer in any deer season. This requirement has increased hunter opportunity statewide while regulating deer harvest across all WMZs. Overall, we have been able to increase deer densities in three zones (WMZs 2, 4S and 4N), maintain deer densities in four zones (WMZs 1, 5, 6 and 12) and decrease deer densities in 8 zones (WMZs 3, 7, 8, 9, 10, 11, 13 and 14). Currently, the deer population statewide is estimated to be between 85,000 and 95,000. Densities range from 10-12 deer/mile^2 in western Massachusetts to over 50 deer/sq.mile in eastern Massachusetts and on Nantucket.

Antlerless deer permit (ADP) allocation for 2004 was 45,100 permits, a 3% increase from 2003, In fact 40,210 permits (89%) were actually issued. Nearly 39% of the issued permits were sold over the counter as additional antlerless deer permits in those zones where allocation exceeded demand.

Research

We are continuing to determine cause specific mortality for deer in three study areas (eastern, western and north-central Massachusetts) by monitoring collared deer and adding a few new collars in the north-central study area. Currently, there are 40 deer that have been radio-collared in Massachusetts, with 17 in the west, 10 in the north-central, and 13 in the east. Non-harvest mortality continues to exceed harvest mortality in all three study areas.

Chronic Wasting Disease

In accordance with the USDA-APHIS guidelines for Chronic Wasting Disease (CWD) surveillance, the states of Massachusetts, Connecticut and Rhode Island have regionalized the tri-state area into one "Southern New England" region with respect to deer distribution, uniformity and the relatively small size of this region. Heads were collected from each deer management zone to obtain the samples required to generate a statistically valid stratified sample for the Southern New England region. During the 2004 deer seasons Massachusetts biologists collected 301 samples. CWD was not detected. We will increase surveillance efforts in the 2005 season with funding provided by the USDA-APHIS, especially in those WMZ's that border New York State and/or have captive deer facilities.

Table 2. White-tailed deer harvest by deer sex/age and the number of antlerless deer permits allocated and issued by wildlife management zone for Massachusetts, 2004.

WMZ	Adult Male	Female	Male Fawn	Unknown sex	Total Harvest	ADP Allocation	ADP Issued
1	107	85	17	0	209	1000	952
2	244	20	5	0	269	100	95
3	411	406	81	0	898	4100	4038
4N	233	67	7	0	307	350	341
4S	173	33	7	1	217	400	385
5	362	211	38	2	613	1700	1655
6	119	68	14	0	201	650	625
7	381	309	62	0	752	2850	2744
8	621	457	86	2	1166	4550	4458
9	544	480	137	2	1163	4950	4806
10	873	1023	224	5	2125	8550	8323
11	1026	1094	267	4	2391	9650	8522
12	122	102	20	0	244	1050	980
13	232	348	106	2	688	2600	1217
14	237	442	144	0	823	2600	1069
Unknown	27	3	6	0	36		
Statewide	**5712**	**5148**	**1221**	**18**	**12,099**	**45,100**	**40,210**

Table 3. The 2004 deer harvest by deer management zone and season.

WMZ	Paraplegic	Archery	Shotgun	Muzzleloader	Nantucket Winter	Unknown sex	Total
1	0	33	136	40		0	209
2	0	62	176	31		0	269
3	3	167	550	178		0	898
4N	0	50	214	43		0	307
4S	0	50	129	35		0	214
5	0	85	394	134		0	613
6	1	32	130	38		0	201
7	0	156	460	136		0	752
8	0	221	723	222		0	1166
9	4	307	606	246		0	1163
10	0	761	891	473		0	2125
11	0	769	1257	365		0	2391
12	0	35	166	43		0	244
13	0	127	448	113		0	688
14	0	153	384	40	246	0	823
Unknown	0	8	18	10		0	36
Statewide	8	3016	6682	2147	246	0	12099

Moose

Traditionally, the Division of Fisheries and Wildlife has collected data concerning moose sightings from the public, moose found dead, and moose vehicle accidents (MVA). These indices are used for determining population trends and for estimating the moose population in Massachusetts. There have been 1,048 reports submitted to the Division concerning moose since 1924. In 2004 the MDFW received 100 reports of moose including 52 MVA, 24 sightings, seven euthanizations, six dead moose, two illegal kills, and nine relocations of problem moose. The trend in moose sightings reported to the MDFW has been decreasing, while the number of MVAs has reached an all-time record.

Figure 1 represents the increasing trend of moose vehicle accidents per month from 1980 through 2004. Moose vehicle accidents include all moose that were stuck and killed on Massachusetts highways, plus all moose that were struck by vehicles but walked away from the accident. There have been 217 MVA in Massachusetts from 1980 to 2004 (Table 4). The MVA rate for 2004 was 4.33 moose per month; a 57% increase from 2003 (Figure 1).

Currently the moose population in Massachusetts is estimated to be between 700 and 800 animals. We use a basic population model that incorporates sighting rates from the deer hunter survey and available moose habitat in the 12 wildlife management zones within potential moose range (Table 5). Cape Cod and the Islands are not included in this estimate. Currently, the sighting rate across the Commonwealth is 0.27 moose/100 hours of deer hunting. This is an increase from the 0.22 moose/100 hours of deer hunting in 2003.

Moose Research

During the year, seven moose (two male and five female) were radio-collared in Massachusetts. These animals were immobilized and relocated from problem situations throughout the Commonwealth between April and December. Five of the moose were moved to the same location in an effort to determine the effects of relocation on problem animals. The animals were monitored bi-weekly to determine their survival and movement. Currently, all of the animals are still alive and the dispersal from the relocation area has varied in distance. One yearling female traveled to Old Lyme, Connecticut in just over a month. Connecticut DEP moved her to a State Forest in the northwest portion of the state near the Massachusetts line and she is currently in that region moving between Massachusetts and Connecticut.

We will continue to radio-collar moose in the future to improve our understanding of movement patterns, survival rates and causes of mortality on the increasing moose population in Massachusetts. We hope to use GPS collars in the future to help evaluate movement and habit use at a finer scale.

Table 4. Moose mortality in Massachusetts from 1980 to 2004.

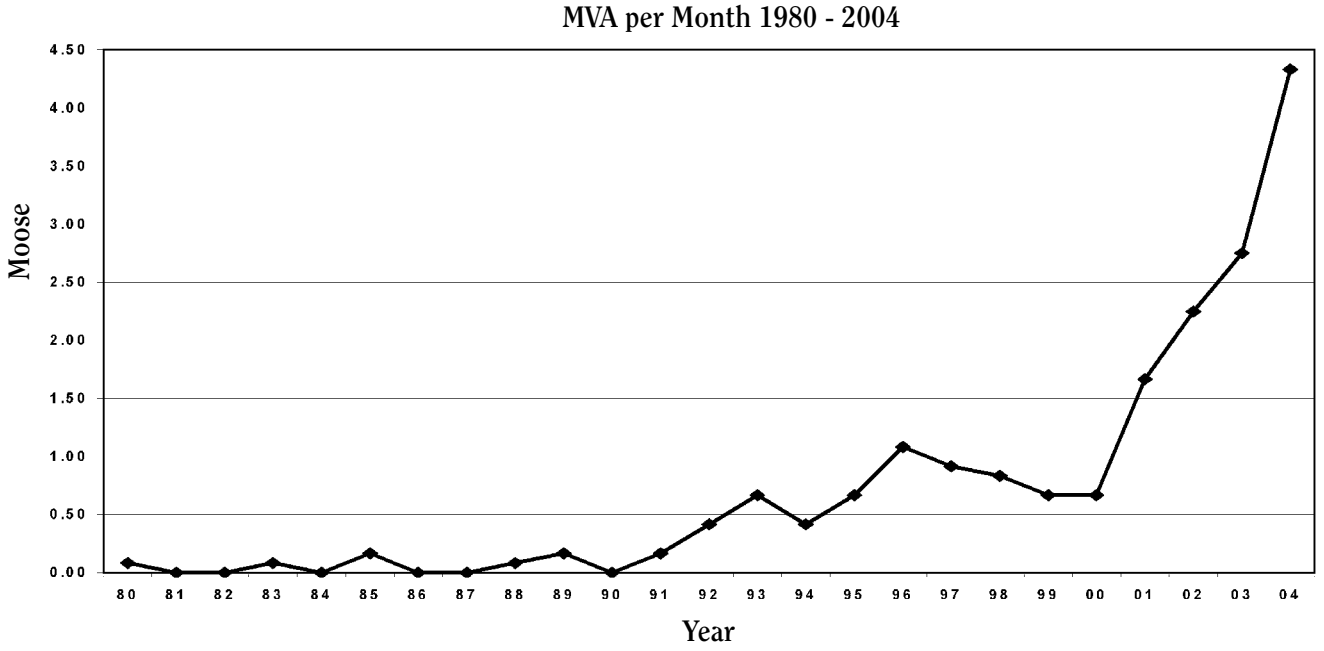
Total Moose Vehicle Accidents (MVA) is the sum of roadkill and collisions while total mortality is the sum of total MVA and other mortality.

Year	Roadkill	Collisions	Total MVA	Other Mortality	Total Mortality
1980	1	0	*1*	0	1
1981	0	0	*0*	0	0
1982	0	0	*0*	0	0
1983	1	0	*1*	0	1
1984	0	0	*0*	0	0
1985	2	0	*2*	0	2
1986	0	0	*0*	3	3
1987	0	0	*0*	0	0
1988	1	0	*1*	1	2
1989	2	0	*2*	2	4
1990	0	0	*0*	0	0
1991	2	0	*2*	4	6
1992	5	0	*5*	5	10
1993	8	0	*8*	4	12
1994	5	0	*5*	3	8
1995	8	0	*8*	4	12
1996	12	1	*13*	5	18
1997	11	0	*11*	4	15
1998	6	4	*10*	8	18
1999	8	0	*8*	9	17
2000	8	0	*8*	7	15
2001	18	2	*20*	9	29
2002	22	5	*27*	12	39
2003	28	5	*33*	7	40
2004	43	9	*52*	15	67
Total	**191**	**26**	*217*	**102**	**319**

Table 5. Moose sighting rates per 100 hours of deer hunting, and moose vehicle accidents by Wildlife Management Zone (WMZ) in 2004.

WMZ	Sighting Rate (100 hrs/hunting)	Moose Vehicle Accidents
1	0.22	0
2	0.77	6
3	0.14	1
4N	0.47	7
4S	0.79	5
5	0.79	20
6	2.70	3
7	0.10	1
8	0.35	5
9	0.15	3
10	0.08	1
11	0.01	0
Statewide	0.27	52

Figure 1. The number of moose vehicle accidents in Massachusetts per month from 1980 to December 2004.



Forestry Program

The Forestry Program is a component of the the Massachusetts Division of Fisheries & Wildlife (MDFW) Biodiversity Initiative, which seeks to maintain and restore the native diversity of flora and fauna through active land management. The Forestry Program focuses on creating a distribution of successional stages from young forest habitat (early-seral) to biologically mature (late-seral) forest habitat in a landscape context that will maintain biological diversity.

The forestry program's objectives are:

1) Build a forest inventory data base, prepare GIS-based landcover maps, and establish property boundary lines in the field for each wildlife management area (WMA).
2) Use inventory data to design and carry out both commercial forest cutting operations and non-commercial management activities that maintain biological diversity using ecological regions (ecoregions) as the fundamental planning units for management.
3) Conduct pre- and post-treatment biological monitoring to determine the response of wildlife populations to forest cutting operations.

The Forestry Program leader and two full-time foresters design, administer and supervise commercial cutting operations in compliance with Division forest management guidelines. The guidelines provide a sequential checklist of steps for each sale to insure that landscape conditions are assessed, and that management activities reflect landscape conditions. Prior to any cutting operation, Division foresters consult with District staff to address local access and aesthetic issues, and with personnel from the Division's Natural Heritage & Endangered Species Program to conserve state-listed species and priority natural communities on WMAs. All forest management activities receive permits from the Department of Conservation and Recreation under the Massachusetts Forest Cutting Practices Act.

Forest Certification

Lands held by the MDFW continue to operate as certified, sustainably managed, forestlands under the international Forest Stewardship Council (FSC) criteria for sustainable forestry (see www.mass.gov/envir/forest/ and www.fscus.org/newsletters/FSCNews_jun_2004.pdf). This independent, third-party certification assures the general public that all forest cutting practices employed by the MDFW are sustainable on an ecological, economic, and social basis.

One major requirement of certification is that the MDFW complete management planning for all of its properties over the next five years. In FY05, in cooperation with forest managers from the Massachusetts Department of Conservation & Recreation, the MDFW helped to complete two detailed ecoregion assessments, one for the five ecoregions within the Berkshire area of western Massachusetts, and the other for the Connecticut River Valley ecoregion of Massachusetts. These assessments identify a series of forest management issues and opportunities that impact both public and private forestlands. MDFW foresters also completed an initial draft plan for the MDFW's Berkshire Highlands Forest Management Zone (FMZ). FMZ plans describe current forest conditions, establish a desired future condition, and describe active and passive management practices intended to achieve the desired condition on MDFW lands. Lastly, in cooperation with forest managers from the Massachusetts Department

of Conservation & Recreation, and with forest policy specialists from the Massachusetts Executive Office of Environmental Affairs, MDFW foresters continued a science-based process that identified eight potential forest reserve sites representing seven different forest ecosystem types within relatively unfragmented forest areas of Massachusetts.

Forest Inventory & Analysis

MDFW foresters and contracted vendors completed a total of 275 forest inventory points representing 11,000 acres in FY05. Overall, 400 sample points representing 16,000 acres have been completed (275 points in FY04, plus 125 sample points in FY05). The forest inventory provides a comprehensive assessment of wood products, as well as shrub and herbaceous cover on MDFW lands.

A total of 50 potential vernal pool sites were visited in the spring of 2005. Forty of these pools were determined to be functional vernal pools. During the course of this work, two new pools were found and mapped that had not previously been identified. To date, a total of 393 functional vernal pools have been confirmed on MDFW lands (179 in FY03, and 172 in FY04, and 42 in FY05). Knowledge of functional vernal pool locations is essential for planning forest management activities since functional pools receive mitigation during forest cutting operations including a 50% restriction on basal area removal and heavy machinery exclusion within 50 feet of the pool.

Forest Cutting Operations & Management Activities

MDFW foresters initiated two timber sales on the grounds of the Reed Hatchery in Palmer, MA, one timber sale on the Hiram Fox WMA in Chesterfield, MA, and two timber sales on the Chalet WMA in Dalton, MA. Sale preparation includes marking of trees to be cut, marking of trees to be retained, location of wetland resource areas, rare species habitat and priority natural communities, layout of temporary access roads, and preparation of Chapter 132 Forest Cutting Plans. This sale is being prepared in compliance with the Division's Forest Management Guidelines, which seek to create a distribution of forest successional stages (from early-seral to late-seral forest) in a landscape context that will maintain biological diversity. Intensity of cutting varies from moderate (group shelterwoods) to high (Aggregate Retention Cuts - ARC's), but groups of mature trees are retained on all sites. Planned harvests are designed to regenerate mixed stands of white pine, red and white oak, and high quality northern hardwoods including black cherry and white ash.

A portion of the monetary value for all sales is realized in the form of "in-kind" services on the WMAs. Services often include grading, liming, fertilizing and seeding of landing areas, improvement and subsequent stabilization of existing woods roads using Massachusetts Best Management Practices (BMPs), and felling and slash reduction of non-merchantable trees to encourage

regeneration of desired tree species and to enhance early-successional wildlife habitat. All income from a timber sale is generally not received in the same fiscal year the sale is marked. When a sale is awarded through the public bid process, the qualified vendor submitting the highest bid is awarded the contract. Ten percent of the high bid is due at the time the contract is awarded, and the balance (90%) is due prior to the start of cutting. Vendors are given up to two years to begin cutting so that they can take advantage of market conditions.

Following a review of these five forest cutting plans by the Natural Heritage and Endangered Species Program, no rare species concerns were identified, and no restrictions on timing or intensity of harvesting were imposed. The two operations at the Reed Hatchery covered 49 acres and harvested 173,000 board feet of timber plus 23 cords of firewood. These operations were the second harvest of a modified two-cut shelterwood system to release established regeneration of white pine, white oak, and red oak that had been established after the first shelterwood cuts were applied to these sites in 1998.

The cutting operation on the Hiram Fox WMA covered 31 acres and harvested 196,000 board feet of timber plus 32 cords of firewood. This operation was the second harvest of a modified two-cut shelterwood system to release established regeneration of white pine, red oak, black cherry, and white ash that had been established after the first shelterwood cut was applied to this site in 1992-1998.

The two operations on the Chalet WMA covered 112 acres and harvested 216,000 board feet of timber and 75 cords of firewood. MDFW foresters located skid roads; determined placement of water bars; marked mast producing trees including black cherry, American beech, and red oak for retention to enhance wildlife habitat after the cut; supervised logging activities (e.g., insured that small diameter, un-merchantable stems were cut to facilitate regeneration of quality hardwoods, and that logging slash was reduced throughout the cut to facilitate public access) and secured erosion control measures at the conclusion of the operation.

A total of 1.5 miles of skid road were established or maintained on the two operations at the Roger Reed Hatchery with >35 water bars, three stream crossings and zero wetland crossings. Two of the stream crossings at the Reed Hatchery were made using temporary bridges, and one crossing was an existing culvert. A total of 1.25 miles of skid road were established or maintained on the operation at the Hiram Fox WMA with >30 water bars, one stream crossing and no wetland crossings. The stream crossing at Hiram Fox was made using an existing culvert. A total of 1.75 miles of skid road were established or maintained on the two operations at the Chalet WMA under the direction of MDFW foresters with >50 water bars, six stream crossings and no wetland crossings. One of the stream crossings at Chalet was made using a temporary bridge, two crossings were made using existing culverts, two crossings were made using poled fords, and one lightly used crossing across a stony bottom was made with a straight ford.

Biological Monitoring

Breeding bird surveys were conducted on portions of the Hiram Fox WMA in Chester, and the Peru WMA in Peru in June, 2005. Data analysis indicated that a diverse and relatively stable breeding bird community occurs at the Hiram Fox site, and that native forest stands of red spruce on the Peru WMA offer the same, unique breeding bird habitat found in a plantation of exotic Norway spruce on the WMA. In addition, a cooperative research project with the U.S. Forest Service Northeastern Research Station and the Massachusetts Audubon Society investigating breeding bird diversity as well as bird nesting success continued at a previously harvested site on the Fox Den WMA.

A new initiative to locate, sample, and map priority natural communities of rich mesic forest was initiated on MDFW properties in the Berkshire area. Of all priority natural communities in Massachusetts tracked by the Natural Heritage and Endangered Species Program, rich mesic forest is most likely to be impacted by timber harvest operations because this community can potentially support high quality/high value northern hardwood timber products (e.g., white ash, sugar maple). For example, non-native invasive plants may be carried into, and become established within, these communities during harvesting, and invasive plants can displace rare native herbs associated with rich mesic forest. More directly, a change in light levels or moisture regimes may negatively impact rare native plant assemblages. Even timber harvests that occur outside of a rich mesic community can impact these unique sites if water and nutrient flow into the community is disrupted by rutting up slope of the community. The occurrence of rich mesic woodlands and other priority natural communities are documented during forest inventory activities and mapped with GPS techniques. Accordingly, the MDFW recently began a comprehensive effort to identify and map all rich mesic woodlands sites on state wildlife lands in the Berkshire Highlands FMZ so that the unique attributes of these sites can be conserved during timber harvest operations.

Existing NHESP records document 20 polygon occurrences of rich mesic forest totaling 597.9 acres on DFW lands in the Berkshire Highlands FMZ (NHESP Unpublished Data). During the winter of 2004-2005, the DFW Forestry Program worked cooperatively with the University of Massachusetts Cooperative Extension Service in Amherst, and with NHESP to identify additional, potential rich mesic forest sites on DFW lands. Knowledge of existing rich mesic sites was coupled with attributes such as slope, aspect, landform, bedrock geology, and documented occurrences of rare plant species associated with this community (e.g. Goldie's

Fern (*Dryopteris goldiana*), Hairy Wood-mint (*Blephilia hirsuta*), Broad Waterleaf (*Hydrophyllum canadense*), Woodland Millet (*Milium effusum*), and Hitchcock's Sedge (*Carex hitchcockiana*).

A total of 64 polygons representing 3091.5 acres of potential rich mesic forest were identified on MDFW lands in the Berkshire Highlands. Of these 64 polygons, six were located on land where the MDFW holds only a conservation restriction, and these six polygons were not visited. The 58 remaining polygons represent 2802.9 acres. During the spring of 2005, 44 (69%) of these polygons were visited by field staff, and 24 (55%) were found to support at least some rich mesic forest. Additional GIS analysis is underway on MDFW lands in the Berkshire Highlands to estimate the number of acres delineated by this field effort. During the process of this field work, 16 additional rich mesic sites were identified outside of the potential rich mesic forest polygons.

A complete floristic inventory was conducted at each of these sites using a modified Natural Heritage "Form3" area (typically a 15 x 15 m sample plot). Herbaceous and woody plant species typically observed at these newly documented rich mesic forest sites include Sugar Maple (*Acer saccharum*), Basswood (*Tilia americana*), Hophornbeam (*Ostrya virginiana*), Wild Leek (*Allium tricoccum*), Broad-leaved Toothwort (*Dentaria diphylla*), Maidenhair fern (*Adiantum pedatum)*, Blue Cohosh (*Caulophyllum thalictroides*), Glade Fern (*Diplazium pycnocarpon*), and Plantain-leaf Sedge (Carex plantaginea), among many other plant species. Observations included new element occurrences of rare plants. Any forest harvesting operations that may occur near documented rich mesic forest sites will be designed to conserve these communities.

The Upland Habitat Management Program

The Upland Habitat Management Program (Upland Program) is a component of the Biodiversity Initiative established under the 1996 Open Space Bond Act to maintain and restore native diversity of flora and fauna through active land management. The Upland Program focuses on reclaiming abandoned field and other early-successional habitats, which have been declining steadily for the past 75 years.

The specific goals of the Upland Program are to:

1) Foster and apply the best available science to identify appropriate sites for management of declining upland habitats, (including early-successional, post-agricultural herb/shrub plant communities, aspen forest stands, and abandoned orchard sites) while maintaining extensive, unfragmented forest lands.
2) Implement strategies and techniques to manage and restore declining upland habitats to ensure they continue to support native flora and fauna.
3) Scientifically monitor the effects of upland habitat management on plant and animal communities to ensure that managed ecosystems continue to support the native biodiversity of Massachusetts.
4) Identify ecosystems and natural areas where Upland Program objectives are complementary with Ecological Restoration Program objectives and pursue joint endeavors with that program.

Upland Habitat Reclamation Projects

Stafford Hill WMA

Reclamation of abandoned pastures was completed under Phase 1 of a multi-year project. In February 2005, a Brontosaurus mower, tree shear, and whole-tree chipper were used to clear four units totaling 66 acres that were previously treated to control invasive exotic plants. Additional clearing beyond these 66 acres is scheduled as part of Phase 2 operations in FY07.

Peru WMA

The project included reclamation of a 14-acre abandoned orchard and regeneration of a 1-acre aspen stand. During summer 2005, the orchard and aspen were cleared using a Brontosaurus mower and tree shear. After salvage of merchantable firewood, non-merchantable materials were lopped and formed into piles. Piles were reduced in size by a stump shear and were then left in place for wildlife habitat enhancement.

Native Seed Collection

Southern New England ecotypes of native upland grasses and forbs are generally unavailable as seed from commercial nurseries and growers. On upland habitat reclamation projects, the MDFW is currently forced to use seed of Pennsylvania origin, or from even farther away. To address the issue of dilution of our native gene pool through introduction of non-native ecotypes, MDFW and the Massachusetts Audubon Society cooperated to make 96 accessions of 20 species of upland grasses and forbs from sites across Massachusetts. Seed was delivered to the Natural Resources Conservation Service, which will oversee the process of making the seed available to consumers engaged in upland habitat reclamation, including the MDFW.

Invasive Plant Control Projects

Cass Meadows of the Millers River WMA

Invasive exotic plants (e.g. glossy buckthorn) on 25.3 acres were selectively treated with a foliar herbicide application by Massachusetts-licensed pesticide applicators during summer 2005. Resprouting of exotic plants following clearing (scheduled for FY06) can thus be contained.

Biological Monitoring

Site Monitoring

To determine the effects of habitat treatments over time, a long-term monitoring program of birds, butterflies, and vegetation was implemented during the summer of 1999 on Upland Program sites across the state. Survey data is used to assess the status of native species on Upland Program sites and guide future habitat

management actions. During June of 2005, vegetation and breeding bird surveys were conducted on 40 acres under lease to the MDFW for habitat management at the U.S. Army Corps of Engineers' West Hill Dam Project in Northbridge/Uxbridge. These surveys will provide baseline data to assess the success of the West Hill Dam reclamation project scheduled for FY06.

Management of Monitoring Data

The Upland Program possesses a very complicated dataset from seven years of vegetation, bird, and butterfly surveys. To adequately use these data to assess the success of management efforts and to guide future management actions requires a sophisticated database. The design of a Microsoft Access database to specifically manage and analyze Upland Program monitoring and related data was contracted in FY05. That database is now fully operational.

Monitoring Nesting Success

Upland Program bird monitoring results to date indicate that management efforts are highly successful at increasing relative frequencies and abundances of early-successional bird species. The Upland Program, the U.S. Forest Service Northeast Research Station, and the Massachusetts Audubon Society began a cooperative project which monitors, in addition to relative frequencies and abundances of early-successional birds, nesting success on Upland Program project sites and on clearcuts, so MDFW can assess whether Upland Program sites function as "source" sites, where birds successfully reproduce and add to the population, or as "sinks," where birds are attracted to a site, only to experience reproductive failure due to predation or other causes. The cooperative project will also distinguish differences, if any, in the bird communities between Upland Program sites and clearcuts. Preliminary data from FY05 indicate that Upland Program sites do function as "sources" that contribute to bird populations, and subtle, but distinct, differences separate the bird communities characteristic of Upland Program sites and clearcuts. The research project will continue in FY06.

Coverts Program

The Upland Program provided $12,000 to fund the Coverts Program, a habitat conservation workshop for community leaders responsible for the stewardship and management of forestland in Massachusetts. Dr. David Kittredge, the Cooperative Extension forester, organizes the three-day forestry and wildlife habitat conservation workshop for individuals serving on their community Conservation Commission, a local land trust, or within one of their town's conservation offices. Participants learn about topics including Massachusetts land use history, the Forest Cutting Practices Act, elements of wildlife habitat, habitat management techniques, and habitat types (including early-successional habitats).

Wildlife Section Staff

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James Cardoza, *Black Bear/Turkey Project Leader*
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Thomas Early, *Wildlife Biologist*
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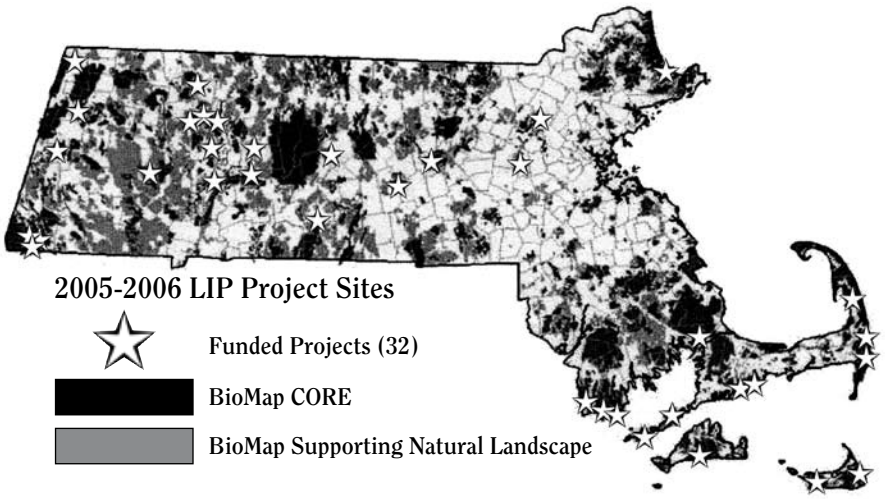
Trina Moruzzi, *Wildlife Biologist*
John Scanlon, *Forestry Project Leader*
William Woytek, *Deer/Moose Project Leader*

Landowner Incentive Program

Ken MacKenzie
Coordinator

The Massachusetts Landowner Incentive Program (LIP) is a resource for landowners that addresses the conservation and restoration of fish and wildlife habitat on private lands. Funding was allocated by Congress for a nation-wide Landowner Incentive Program (LIP). These funds were placed under the control of the U.S. Fish and Wildlife Service (USFWS) to support State fish and wildlife agencies. Massachusetts was the recipient of a competitive grant to aid landowners with technical and financial assistance to create and restore wildlife habitat.

Figure 1. 2005-2006 Landowner Incentive Program (LIP) Projects



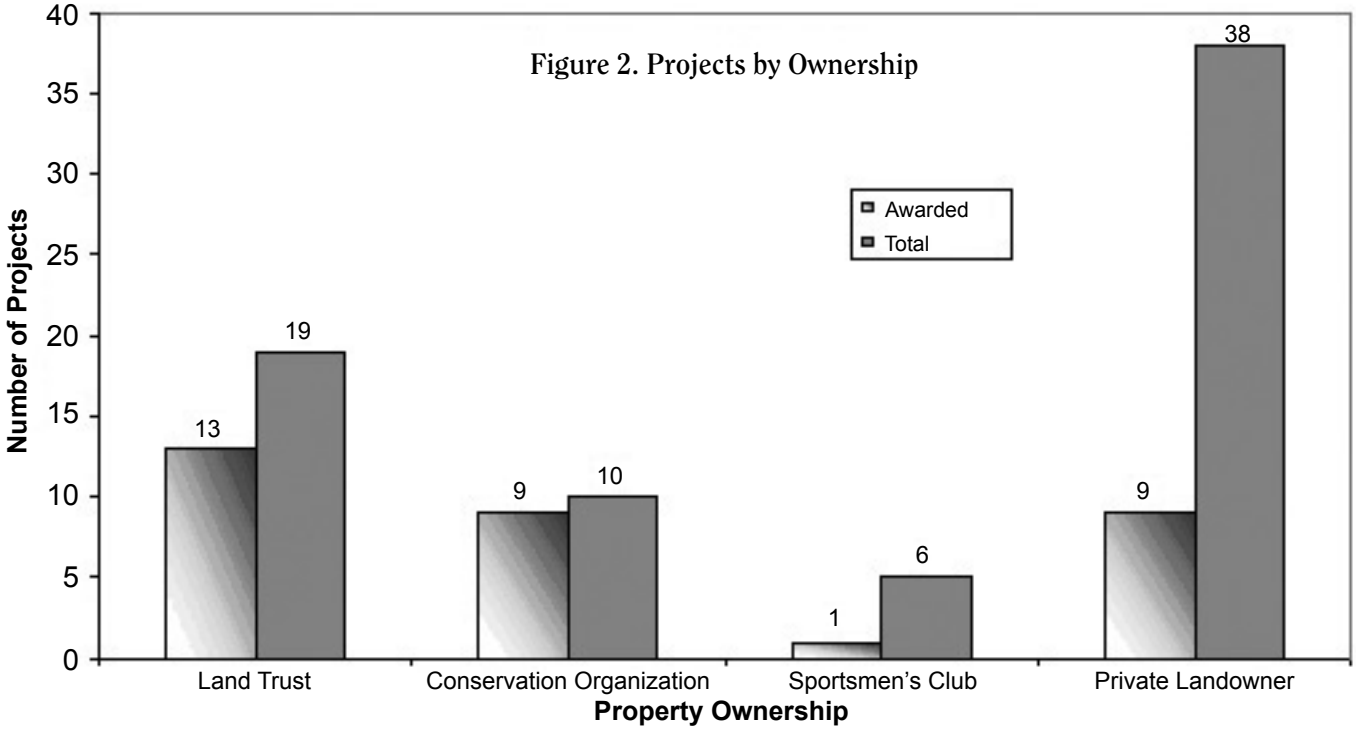
LIP recognizes that private landowner participation is fundamental to the successful conservation of fish and wildlife and to meet the challenges associated with habitat management. The LIP Program establishes a partnership between state biologists and the landowners to work to meet the landownersí ecological goals. Partnerships promote and educate landowners in the management of lands and techniques that increase the biodiversity of Massachusetts through wildlife stewardship.

LIP provides landowners interested in restoring and maintaining wildlife habitat on their property with financial and technical assistance. This cost-share program aids landowners with funding to resourcefully and responsibly manage wildlife habitat, conserving natural communities and species-at-risk as a viable means of protecting our natural heritage. Currently the goals of the program are to:

1. Identify and reclaim appropriate sites for management of declining habitats (especially open land: old field and early-successional forest, wetlands, coastal habitat and pine barrens).
2. Manage and control exotic and invasive plants.
3. Enhance wildlife habitat for species-at-risk.
4. Provide technical and financial assistance and guidance for landowners to manage their property for wildlife.

During its first year of implementation, LIP received **72** applications for Species-at-risk habitat improvement/restoration on about 3600-acres of private lands. Of these 72 applications, **32** were selected for funding in FY06 (Figure 1). Five of the 32 projects selected will require a LIP Covenant that will be filed with the deed for 10 years. The Massachusetts Division of Fisheries &

A 21-acre coastal grassland restoration project on Cape Cod



Wildlife will be partnering with these private landowners on 2756-acres funding projects for $565,494.

- Of the 32 projects awarded they were distributed as follows: 13 *land trusts*, 9 *conservation organizations*, one *sportsmen's club* and 9 *private landowners* (Figure 2).
- Of the 32 projects awarded: 1167 acres are in *coastal habitats*, 865.5 acres are in *early successional upland*, 58.5 acres are in *early successional wetlands*, 325.5 acres are in *grasslands* and 314.5 acres are in *Pitch pine-Scrub oak forest* (Figure 3).
- Of the projects awarded: 78% of the projects had *permanent protection*, 9% were enrolled in *Chapter 61* and 13% had *no conservation protection*. The projects without land protection were required to sign a land covenant for 10 years requiring the landowner to keep the project area as wildlife habitat.
- Of the projects awarded: 94% applied for manual restoration, 72% applied for invasive/exotic plant removal, 16% applied for a prescribed burn and 25% applied for the seeding or planting in their project area.

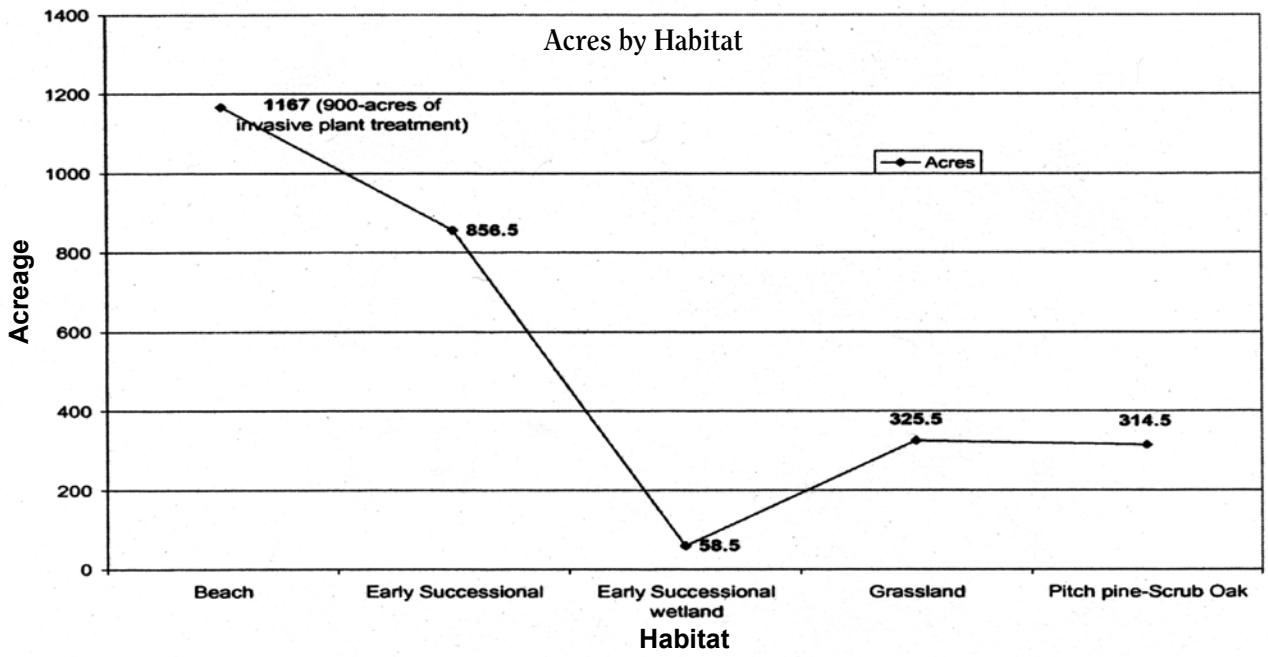


Figure 3. The Landowner Incentive Program focuses on upland habitats in decline in Massachusetts. Specifically LIP is working with landowners on restoring grasslands, old fields, pitch-pine, scrub oak and beach habitat and early successional habitat. Additionally, controlling invasive plants such as buckthorn, multiflora rose and bittersweet are among the priorities of LIP.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

Thomas W. French, Ph.D.
Assistant Director for Natural Heritage and Endangered Species

Town Core Habitat Maps and Reports

During FY05, the Natural Heritage & Endangered Species Program published and officially released ***Town Core Habitat Reports***. Core Habitats were identified as critical sites for the long-term survival of Massachusetts' biodiversity in the BioMap and Living Waters reports produced in 2001 and 2003 by the Program.

For each of the 336 towns containing Core Habitats, the new Town Core Habitat Report synthesizes BioMap and Living Waters Core Habitat information, including a summary of the rare species, natural communities, and freshwater habitats for that town. These town-specific reports, along with a large color town map, were sent to Conservation Commissions, town Planning Boards, Community Preservation Act committees, Community Development Plan committees, and town-based Land Trusts in December 2004. Town Core Habitat Reports are available for download on the Natural Heritage website: (www.mass.gov/dfwele/dfw/nhesp/nhconsmap.htm) and the accompanying large color Town Core Habitat Map can be ordered for a small fee.

Rare Species Habitat Mapping

The Natural Heritage Program's database of rare species observations houses more than 7000 current observations (observed within the last 25 years) of a wide variety of state-listed plants and animals, from Blanding's Turtle to Showy Lady Slipper. The vast majority of these documented observations are single point observations. This lack of spatial habitat information hinders conservation planning activities for Massachusetts' rare species. Presently it is difficult to answer seemingly simple questions such as "How much rare plant habitat is protected in Massachusetts?" or "What is the current quality of Marbled Salamander habitat in the state?"

To address this gap, the Natural Heritage Program began an ambitious project in FY05 to delineate the rare species habitat footprint associated with each rare species point observation for all 7000 current observations of 448 rare plant and animal species. This multiyear project was made possible with special bond funding from the Executive Office of Environmental Affairs and through funding by State Wildlife Grants from the U.S. Fish & Wildlife Service.

Natural Heritage biologists have been working on the initial phase of the project by developing and documenting biologically sound mapping guidelines for extrapolating habitat footprints on a species-by-species basis. Natural Heritage GIS and data staff created a framework for storing these new habitat mapping guidelines and ultimately the habitat footprints. Biologists have begun to apply the habitat mapping guidelines to digitally delineate habitat footprints in GIS based on aerial photographs, topographic maps, and other GIS data such as roads, land use, hydrology, and bedrock type.

When completed, these habitat footprints will provide a powerful new foundation for much of the Program's conservation and regulatory activities. Their first application will be to form the basis for new Priority and Estimated Habitats, the regulatory areas that are used to screen potential development activities for rare species impacts under the Massachusetts Endangered Species Act and the Wetlands Protection Act. These new Priority and Estimated Habitats, scheduled for completion at the end of FY06, will be biologically rigorous and easier to update as rare species sites become historic or new rare species sites are located.

2004 Field Season Summary

Birds

Bald Eagle: During the summer of 2004 there were 16 known territorial pairs of Bald Eagles in Massachusetts. Of these, 15 pair laid eggs and 12 pair successfully fledged 16 chicks. A new territorial pair in Rochester began adding sticks to an Osprey nest in the early spring, but were evicted when the Osprey pair returned for the season. They later constructed a small nest-start nearby. This was the 15TH year that Bald Eagles have raised young in Massachusetts since their restoration. During these 15 years a total of 170 chicks are known to have fledged from wild nests.

Immature Bald Eagle

The mid-winter eagle survey was conducted on January 9, 2004. A total of 77 Bald Eagles, including 40 adults and 37 juveniles, and 1 juvenile Golden Eagle were recorded. Results included 40 at Quabbin Reservoir, 14 on the Connecticut River, 10 on the Mer-

rimack River, 6 at Assawmapscott Pond, 3 on Silver Lake, Plympton; 2 on Webster Lake, Webster; and one each at Cobble Mountain Reservoir, Blandford and Plymouth Ponds, Plymouth.

Peregrine Falcon: The number of pairs of Peregrine Falcons increased from 9 in 2003 to 11 in 2004. Of these, 9 pairs fledged 27 chicks. Three of these chicks, one at Mount Sugarloaf and two at Logan International Airport, fledged before they could be banded. At Mount Sugarloaf, the first clutch of four eggs was found abandoned, apparently having been soaked by rain. When the nest was checked again on June 8TH there were signs that at least one chick had already fledged. Later, a single chick was seen flying with the adults. The pair at Logan was believed to be nesting on the control tower, but the nest was not located. Two chicks were seen at the airport with the adults on June 15TH. In 2004 nesting occurred at the Customs House, Boston; Christian Science Church Administration Building, Boston; Ideal Box Company in a renovated mill building, Lawrence; an abandoned mill building behind the Tsongas Arena, Lowell; the Flagship Bank Building,, Worcester; Monarch Place Building, Springfield; the library tower on the University of Massachusetts campus, Amherst; and on Mt. Sugarloaf, Deerfield.

Common Loon: In 2004, a network of cooperators continued to monitor territorial and nesting Common Loons (*Gavis immer*) in Massachusetts. Loon numbers continue to increase in the state, with 28 territorial pairs observed on 12 waterbodies, compared to 24 pairs on ten waterbodies in 2003. Nineteen pairs of loons nested (*vs.* 14 pairs in 2003) at eight waterbodies (*vs.* six in 2003), including Paradise Pond in Princeton, where they nested for the second time in two years. Fourteen chicks were presumed to have fledged, resulting in a productivity estimate of 0.73 fledglings per nesting pair (0.5 fledglings per territorial pair).

Terns, Laughing Gulls, Black Skimmers: Cooperators in Massachusetts surveyed 120 coastal sites in 2004 for the presence of breeding terns, Laughing Gulls (*Larus atricilla*), and Black Skimmers (*Rhynchops niger*); 76 sites were occupied by nesting birds of one or more of these species. Roseate Tern (*Sterna dougallii*) declined 11.7% to 1,524 pairs. Common Tern (*Sterna hirundo*) numbers edged upwards to 16,372 pairs, a 1.8% increase, topping last year's recent historical high. Following two years of declines, Least Terns (*Sterna antillarum*) increased 7.8% to 2,691 pairs (roughly the same level as in the early to mid-1990s, but much lower than the ca. 3,300 pairs in the period 1997-2001). Predation appears to be the major factor limiting reproductive performance for this species. Laughing Gulls increased 10.1% to 1,322 pairs this year. Numbers of Arctic Terns (*Sterna paradisaea*) and Black Skimmers remained stable, with six pairs of each nesting in Massachusetts in 2004.

American Oystercatcher.

Piping Plover: A coast-wide network of cooperators reported breeding Piping Plovers at 101 sites in Massachusetts in 2004. An additional 69 potential nesting sites were censused, but no breeding pairs were detected. The total breeding population for the state was estimated at 490 pairs, a 4% decrease from the 2003 count of 511 pairs. Largest numbers of pairs were at South Beach in Chatham (35 pairs), Sandy Neck, Barnstable (34), Crane Beach, Ipswich (33), and South Monomoy Island, Chatham (24). Overall reproductive success for Massachusetts Piping Plovers was estimated at 1.3 chicks fledged per pair.

American Oystercatcher: Observers reported a total of 416 adults and 189 pairs of American Oystercatchers at 65 sites in Massachusetts in 2004. The discrepancy between number of adults and number of pairs is due to reports of several groups of adults observed during the census period for which pairing status could not be determined. No oystercatchers were detected at an additional 109 sites that were censured. Individual sites with the largest numbers of pairs were the Coskata-Coatue area of Nantucket (26 pairs), South Monomoy Island, Chatham (15), North Monomoy Island, Chatham (11) and South Beach, Chatham (10). Statewide, at least 98 chicks were reported to have fledged from 165 pairs for which productivity data were available, for an overall productivity of 0.59 chicks fledged per pair.

Reptiles and Amphibians

Redbelly Cooter (formerly known as the Plymouth Red-bellied Turtle): In 2004, nesting was underway from May 29th through July 16th. A total of 54 nests were located by contractor John Crane. These nests contained 776 eggs (average = 14.4 eggs/nest), of which 603 hatched (11.6/nest). Of these, 151 were kept for headstarting and 452 were released directly into the wild at the locations where they hatched. In addition, three nests were found predated (an all-time low number), 12 unprotected nests were found after the young had emerged, and three hatchlings were found heading toward water. It is encouraging to see that this many nests that had not been screened from predators are successfully producing young turtles.

Plants

Rare Plant Tracking: Several changes to the *Massachusetts List of Endangered, Threatened, and Special*

Concern species were published in June. In light of herbarium research and field inventory four aquatic plant species were added to the list: *Potamogeton diversifolius* (E), *Potamogeton strictifolius* (E), *Potamogeton confervoides* (T), and *Utricularia resupinata* (T). In addition, the rank of *Myriophyllum alterniflorum* was shifted from Threatened to Endangered. Other, non-aquatic additions to the list included *Liparis liliifolia*, *Desmodium cuspidatum*, *Agastache scrophulariifolia*, and *Chenopodium foggii*. Eighteen changes to plant nomenclature were made to the list to reflect recently published taxonomic changes.

Rare Plant Inventory: NHESP botanical staff continued the on-going inventory and monitoring of our many rare plant species. Seven new discoveries of state-listed species were made, including new records of straight-leaved pondweed (*Potamogeton strictifolius*, E), Algae-like Pondweed (*Potamogeton confervoides*, T), Vasey's Pondweed (*Potamogeton vaseyi*, E), Tiny Cow Lily (*Nuphar microphylla*, E), and American Waterwort (*Elatine americana*, E). Two rediscoveries of historic records greater than 100 years old were made for Estuary Arrowhead (*Sagittaria montevidensis* ssp. *spongiosa,* E, 1898) and Algae-like Pondweed (*Potamogeton confervoides*, T, 1902). In addition, a 1932 station of Eatons's Beggar's Ticks (*Bidens eatonii*, E, G2) was rediscovered, representing only the third current record of this species in Massachusetts. Seven new occurrences of Watch-Listed species were also found, including new records for *Megalodonta beckii*, *Sparganium angustifolium*, *Heteranthera dubia*, *Utricularia minor*, and *Cardamine bulbosa*.

As part of a biological survey of the Army National Guard's Camp Curtis Guild, located in the towns of Lynnfield, Wakefield, Reading and North Reading, botanical surveys begun in 2003 by NHESP staff were completed by subcontractors. The bryophyte survey resulted in 146 species being identified from the base. Among them were 26 new county records. These bryophyte records will contribute to a Bryophyte Atlas of Massachusetts project which has been partially funded by NHESP.

Federally listed species: Sandplain Gerardia (*Agalinis acuta*): State and federally listed as Endangered. The number of plants of the endangered Sandplain Gerardia (*Agalinis acuta*) has increased dramatically in Massachusetts over the past 24 years, from about 100 known plants in 1980 to more than 250,000 today. These dramatic increases are largely the result of the cooperative efforts of many organizations including: MDFW, U.S. Fish and Wildlife Service, Department of Conservation and Recreation, New England Wildflower Society (NEWFS), Massachusetts Audubon Society, Trustees of Reservations (TTOR), The Nature Conservancy, Sheriffs Meadow Foundation, many volunteers and a number of land managers and contractors.

From New England's rediscovery of the Sandplain Gerardia in 1980 and 1981 at two small Cape Cod sites with a total of little more than 100 plants and in 1994 at a Martha's Vineyard site with less than 400 plants, management and restoration efforts have resulted in thriving populations now growing at seven Massachusetts' locations on Cape Cod and Martha's Vineyard. At the time of the Vineyard discovery in 1994, the known Massachusetts population had increased to about 3200 plants, representing about a 32 fold increase. With efforts to establish new subpopulations over the past decade, the numbers increased another 30 fold by 2003 when the overall Massachusetts population was estimated at approximately 90,000 plants. New data for 2004 raise the total estimate even more—to roughly 256,000 plants. Despite these very high numbers, it is important to be aware that:1) about 227,600 of these plants occur at one site; 2) the populations occupy an exceedingly small amount of acreage (probably 2-3 acres if all combined); and 3) they need active management on an annual basis to sustain their healthy sizes. Population crashes could result from such things as weevil outbreaks (they feed on seed in ripe capsules), storms that erode coastal habitat or kill plants before their seed ripens, animal browsing, invasive species competition, and plant diseases. All represent potential threats that could reverse the rosy picture we see today.

Over the past decade we have learned a lot about the species from the management and biological research conducted by the collaborating organizations and individuals. We know that it can be better established at sites using pretreatments of burning, mowing or removal of litter. We know that survival of seedlings is better in sandy loam soil than in loamy sands. We have learned that its seed can survive in the seedbank for up to four years. Thanks to the published research of Dr. Maile Neel, we know that *Agalinis acuta* is capable of self pollination but typically has its flowers cross-pollinated, utilizing the latter more as a safety feature when crossing fails to occur. While the Massachusetts populations of the species are much better off than they were in 1980, the species is not yet secure in the Commonwealth and long term active management at each of the recovery sites will be required.

Small Whorled Pogonia (*Isotria medeoloides*): State listed as Endangered and Federally listed as Threatened. A Conservation Restriction to be held by the Division of Fisheries and Wildlife was completed for the largest population of this species, a forested site located in Leominster. This population, while only partially monitored this year, appeared to have lower numbers than recorded during the past ten years of careful monitoring. Monitoring and management actions were undertaken by NEWFS and TTOR on a pair of smaller *Isotria medeoloides* sites in Essex County where canopy thinning and deer exclosures are being utilized. This remains one of the Commonwealth's rarest and most vulnerable plant species.

Common Reed, Phragmites australis.

Invasive Species: The State Botanist continued to work with the Massachusetts Invasive Plant Advisory Group throughout the year. Products at the end of 2004 were the completion of a second round of species evaluations. Forty-seven species were evaluated during this phase, with six being recognized as "Invasive," 18 as "Likely Invasive," four as "Potentially Invasive," and 19 as "Do Not List at this Time." In combination with the results of Round I evaluations for 38 species completed in 2003, the totals are now: 32 Invasive, 30 Likely Invasive, and four Potentially Invasive species, for a total of 66 recognized species of concern for Massachusetts. A final draft of an annotated list of 85 species evaluated thus far was completed, as was the final draft of the Committee's "*Strategic Recommendations for Managing Invasive Plants in Massachusetts*."

Watch List Plant Database: In an on-going effort to revise the NHESP Plant Watch List, a database of Watch List plant records and a corresponding locational GIS datalayer are being developed. The database now includes 3,516 records. This database will be updated regularly as new records and updates to existing records are received. The database stores a condensed version of the conservation information stored in the separate Natural Heritage and Endangered Species database for listed species. As such, the database allows staff to quickly access information on the numbers of occurrences, numbers of individuals, distribution, threats, and management needs of taxa of potential conservation concern. Approximately 40-50% of these records have also been mapped into a GIS datalayer by NHESP database staff.

Small Research Contracts

Small Research Contracts - $5300.00. The Program was unable to fund new Small Research Projects this fiscal year due to a shortage of funds. The $5300.00 represents the completion of committed projects from FY04.

Environmental Review

The following table summarized the environmental reviews conducted during FY05.

Review Type	Count
Conservation and Management Permits	17
MA Environmental Policy Act reviews	63
Forest Cutting Plans	143
Massachusetts Endangered Species Act (reviews and information requests)	318
Notices of Intent (Wetlands Protection Act)	1,138
Water Management Act reviews	3
Total	**1,682**
Vernal Pools Certified	205

Data Management and Data Products

	New Records	Updates to Existing Records
Vertebrates	179	637
Invertebrates	205	247
Plants	90	630
Total	**474**	**1514**

Natural Communities

With funding from the Massachusetts Army National Guard, a biological survey was conducted of Camp Curtis Guild in the towns of North Reading, Reading, Lynnfield, and Wakefield. The Program's Natural Community Ecologist was responsible for coordinating this work. This camp was established in 1916. It includes 683 acres and now serves as a training and staging facility for the National Guard. The adjacent and nearby wetlands make Camp Curtis Guild part of a large (1467 acre) continuous block of mostly unfragmented conservation land surrounded by dense development.

Teams of biologists focused on natural communities, vascular plants, bryophytes, selected invertebrates (moth, butterflies, dragonflies and tiger beetles), birds, reptiles and amphibians, and vernal pools. Five state-listed species and including one moth, two salamanders, one turtle and one species of crustacean were documented on the property. All of these species are listed as Species of Special Concern. Thirty-nine vernal pools were identified and will be reviewed for certification. Natural Communities of interest included Atlantic White Cedar Swamp, the large Red Maple Swamp, shrub dominated areas of successional vegetation, and "primary forest" areas that were probably never tilled, making them centers of biodiversity in this otherwise highly developed area of the state.

Land Protection, Fiscal Year 2005

In the fiscal year 2005, MassWildlife spent a little over $6 million to protect approximately 3,070 acres of land across the state, bringing the agency's total land holdings to more than 158,000 acres. Several of this year's acquisitions were of particular relevance to the protection of rare species and exemplary natural communities, as noted below.

Western District

In Otis, protection of 512 acres connected DFW's Farmington River WMA with the Otis State Forest. Included in this large project was protection of an exemplary **Level Bog**, home to **two rare plants.**

Connecticut River Valley District

In Westfield, a conservation restriction on 14 acres was added to the Honey Pot Wetlands Wildlife Management Area, home to **four rare reptiles and amphibians and two globally uncommon clam shrimp species.**

Two acquisitions in Holyoke, totaling 106 acres, added to protection of East Mountain, home to **Threatened Marbled Salamanders and Orange Sallow Moths** and at least nine other rare species inhabiting this basalt ridge.

Central District

An exemplary **Inland Atlantic White Cedar Swamp** and adjacent **Level Bog** were protected with the acquisition of 52.5 acres in Uxbridge. This wetland complex is one of only two known sites for the rare **Smooth Branched Sponge** in Massachusetts.

Southeast District

In Plymouth, 188 acres of Town Forest, home to the **federally protected Northern Red-bellied Cooter, four rare species of Coastal Plain Pond dragonflies and damselflies, and four rare Coastal Plain Pond plants**, was protected with a conservation restriction. Shorelines along four Coastal Plain Ponds are included in this acreage.

Northeast District

A conservation restriction on 127 acres in Groton protected important uplands and wetlands for the **threatened Blanding's Turtle**, in one of the fastest growing areas of the state.

Natural Heritage and Endangered Species Advisory Committee

Full members are: Kathleen Anderson (Chair), Marilyn Flor, Joseph S. Larson, Mark Mello, Stephen M. Meyer, Thomas Rawinski and Jonathan A. Shaw.

Associate members are: William Brumback, Brian Cassie, Timothy Flanagan, Glen Motzkin, Blair Nikula, Wayne Petersen, Mark Pokras

During FY05 the Committee held nine scheduled meetings. August has been a traditional vacation month for the Committee. All of these meetings were held at the Westborough Field Headquarters.

Business of the Committee included:

• The committee voted to approve the NHESP 2004 Annual Report.

• At a joint meeting on May 12TH of the Fisheries and Wildlife Board and the NHESAC, Board Chair, George Darey, presented the Governor Francis W. Sargent Award to Committee member Dr. Stephen M. Meyer.

• In addition to programmed agenda items such as the review of proposed changes to the Massachusetts Endangered, Threatened and Special Concern Species List, Committee members continued to work with the Department of Environmental Protection in proposing wildlife habitat protection guidelines for use with the Wetlands Protection Act regulations, and with the Massachusetts Invasive Plant Committee. The Committee heard presentations from agency staff on beaver issues at the Phillips Wildlife Sanctuary in Boxford, on the Sandplain Gerardia restoration project, and the new Landowner Incentive Program.

• Chairman Anderson welcomed William Brumback and Timothy Flanagan as new Associate Members of the NHES Advisory Committee. Brumback is Conservation Director of the New England Wild Flower Society and Flanagan is a Professor of Environmental Sciences at Berkshire Community College.

• Karsten Hartel of Harvard's MCZ and a former member of the Committee reported for the Working Group on Listed Fish Species. The NHESAC voted to accept the report as presented.

• Joseph Larson reported for the Working Group on Listed Mammal Species indicating that no changes were needed and the listed mammals for MA should continue to include the Southern Bog Lemming, the Water Shrew, Rock (or Long-tailed) Shrew and the Eastern Small-footed Bat. The Committee voted to accept the report as presented.

• The salamander review committee, Joseph Larson, Al Richmond, Paul Seivert, Steve Tilley, Jon Regosin and Bryan Windmiller, met to discuss the Blue-Spotted Salamander and Jefferson Salamander. After discussion the consensus was to recommend having both of these species remain classified as "Species of Special Concern". In addition, Jon Regosin reminded the review committee that hybrids would be covered under Massachusetts' statutes.

• Joseph Larson reported that the Salamander Working Group recommended delisting the Spring Salamander but keeping the Four-toed Salamander as a Species of Special Concern.

• The Fisheries and Wildlife Board voted to approve the proposed MESA regulatory changes. The changes to the MESA regulations became effective July 1, 2005 after the fee schedule was approved by the Office for Administration and Finance.

Natural Heritage and Endangered Species Program Staff

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Henry Woolsey, *Program Manager*
Kim Ausmus, *Administrative Assistant*
Jeremy Brooks, *Tern Colony Manager*
Tara Boswell, *GIS Specialist*
Jeremy Buzzell, *Tern Colony Assistant*
Christopher Buelow, *Restoration Assistant*
Jenny Cunningham, *Tern Colony Assistant*
Adam DiNuovo, *Tern Colony Assistant*
Adam Doucette, *Tern Colony Intern*
Melissa Dow Cullina, *Botanist*
Lauren Flynn, *Tern Project Intern*
Heather Foley, *Conservation Data Assistant*
Marea Gabriel, *Vernal Pool Ecologist*
Jenna Garvey, *Environmental Review Assistant (part of year)*
Sergio Harding, *Data Manager*
Lynn Harper, *Habitat Protection Specialist*
Rachel Henderson, *Tern Colony Assistant*
Joy Michele Kuter, *Tern Colony Manager*
Jennifer Loose, *Invertebrate Zoologist*
Sarah Luecke, *Tern Colony Assistant*
Scott Melvin, Ph.D., *Senior Zoologist*
Carolyn Mostello, *Tern Project Manager*
Daniel Nein, *Endangered Species Project Analyst (part of year)*
Michael Nelson, *Invertebrate Zoologist*
Jami Nydam, *Tern Island Assistant*
Jessica Patalano, *Finance and Project Administrator*
Nancy Putnam, *Endangered Species Project Analyst*
Jonathan Regosin, Ph.D., *Senior Endangered Species Project Analyst*
Melanie Sabourin, *Tern Colony Manager*
Tim Simmons, *Restoration Ecologist*
Paul Somers, Ph.D., *Botanist*
Chloe Stuart, *Conservation Planning Projects Manager*
Patricia Swain, Ph.D., *Plant Community Ecologist*
David Szczebak, *GIS Manager*
Joanne Theriault, *Conservation Assistant/Environmental Review Assistant (part year)*
John Warzybok, *Tern Colony Manager*

INFORMATION & EDUCATION

Ellie Horwitz
Chief, Information and Education

The Information and Education Section has the responsibility and challenge of keeping sportsmen and other constituents apprised of regulations, laws and recreational opportunities related to wildlife. It provides news about wildlife and maintains a flow of information about wildlife related issues. In order to enhance public understanding of wildlife management and compliance with laws and regulations, the Section maintains an active program of educational outreach to develop a public which is aware of, and in tune with, wildlife issues.

Information and Outreach

MassWildlife News

There were 13 issues of the MassWildlife News issued via e-mail, fax and surface mail this year. By the end of the fiscal year 1,525 individuals were receiving the newsletter by surface mail, 2,623 by e-mail, and 44 by fax. A review and purge of the fax list cut the number of recipients in half. The many respondents dropped from the list opted for email notification. In FY05, 746 individuals self-subscribed or were added to the electronic mailing list. All Departmental employees and the Environmental Police continue to receive MassWildlife News.

Currently the electronic notification list breaks out as follows:

250 Town Clerks/Conservation Commissions/ Boards of Health
145 Media outlets/personnel from across the state
91 Sportsmen's clubs
58 Animal Control officers
46 Problem Animal Control agents
41 Bass Club contacts
33 Outdoor business contacts
28 Conservation organization contacts—Friends groups, lake and pond groups, etc.
25 Other state and federal agency contacts
24 MassAudubon contacts, including every sanctuary email contact
23 Organic land care specialists
20 Trustees of Reservations property contacts
16 Trout Unlimited contacts (most chapters)
16 Land trust contacts
14 Bird clubs
11 College/university contacts
22 Watershed organizations
6 Natural history museums

Media Services

At least 73 different representatives of the media contacted Massachusetts Division of Fisheries & Wildlife's (MDFW) Field Headquarters over the course of the year, most of them representing newspapers and some representing television stations. Major media interest centered on a perceived chipmunk invasion, unsubstantiated mountain lion reports in Acton and Beverly, the special deer hunt on Nantucket, and on moose/car collisions.

TV and Radio Interviews were set up for:

CBS Evening News: moose

Channel 4: salmon fry stocking, eagle restoration

Channel 5: Jack Harper interview on wildlife in the backyard

Channel 4: Jim Cardoza interview on mountain lion in Acton;

Numerous radio interviews on mountain lions: WBUR, Wire Radio Services, WBZ

Two news broadcast pieces on agency activities were produced in spring of 2005: Salmon Restoration with Caleb Slater, and Eagle Restoration with Bill Davis.

Channel 4 is interested in continuing this sort of coverage with a deer or moose piece as well as one on bears in the coming year.

Nine media advisories were issued to *MassWildlife* News subscribers alerting them to special events or time sensitive items:

August: Land Event on Raccoon Hill WMA, Barre, w/EOEA Secretary Herzfelder

September: Francis Sargeant Award to Nancy Begin, Salem

November: Landowner Incentive Program Event with Secretary Herzfelder and Congressman McGovern, Westboro

December: Nantucket Deer Hunt in February

January: Midwinter Eagle Survey, Statewide; Nantucket Hunt Permits On Sale

March: LIP Application Deadline Extended; Trout Stocking Allocations

April: Trout stocking event with Secretary, JDS Awards Ceremony and list of winners

May: Sargent Award Presented to Dr. Steven Meyer

June: Redbelly Cooter Marking & Release in Westboro and Lakeville; CWD Emergency Regulations

Following protocols established in FY 03, staff continues to limit their comments to technical information. Legislative and policy questions are referred to the Executive Office of Environmental Affairs.

News Clips

The Division continues to monitor public perception of the agency in the news. For print media it does so by gathering and evaluating news clips which relate to MDFW issues and actions. Many, but not all of them, relate to news items issued through the newsletter. Close to 2,500 clips were received. This is twice as many as in FY04.

Website

The website continues to be a useful source of information for many groups and individuals.

An ever increasing percentage of callers indicate that they have access to the Internet. In many cases, callers are now referred to the website regarding wildlife species and topic information they are seeking. Media contacts often mention they are using information from the agency website when they call for an interview.

New pages added to the website this year are:

Invasive Plants
Massachusetts' Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan)
Board Meetings, Public Hearing Notices
New WMA Maps
Nantucket Deer Hunt in February
Landowner Incentive Program
Bass Tournament Creel Survey Form

In addition to existing material and wildlife news, information sheets and publications were posted to the website as published.

Response to Public Inquiry

The agency prides itself on responding to all inquiries. This occurs in many different forms.

E-Mail – 6,243 agency email messages were processed this past year compared to **5,357** in FY04. Spring and fall are when the most emails are sent, due to fishing and hunting season related inquiries. This year, December and January were especially busy because of questions regarding the Nantucket Deer Hunt scheduled for February.

Phone calls – 1,288 telephone inquiries were received. This is essentially the same number as last year (1,254). Over 234 calls came from media representatives (up from 150 calls in FY 04); the remainder were wildlife concerns, nuisance calls, general wildlife questions, questions about laws, permits, education, hunting and fishing. The majority of inquiries about wildlife of concern or wildlife problems originated in the Northeast District (65) and the Central District (25).

Programs

Public Education Programs: Staff members of the Information & Education Section offered programs to civic, community, conservation and sportsmen's groups about a variety of wildlife issues. Outreach by the Education Coordinator focused on groups of educators, students and youth gatherings, but was also highlighted at other public events. Her presentations included public appearances at conferences (MA Association of Science Teachers and Science Supervisors, MA Nursery and Landscape), festivals (White Oak Winter Carnival, Sutton 300 dedication ceremony, the USFWS Plover & Wildlife Festival, and workshops. Through these presentations we continue to reach urban youth, scouts, students in grades pre-K-12, residents of a secure treatment facility, home schooled students, pre-service teachers, college students and other adult audiences. This year the education coordinator alone reached nearly 1,200 people through these presentations. As all Section staff members provided public programs, the number of people reached through special presentations was actually significantly higher.

Production of Annual Materials

Licenses and Abstracts

Production of licenses, abstracts and stamps ran smoothly with all materials arriving at Field Headquarters on schedule. In addition to the annual Abstracts of Fish and Wildlife Laws and Regulations, abstracts were prepared of the regulations pertaining to the hunting of migratory birds and regulations pertaining to the trapping of furbearers.

Waterfowl Stamps

Artwork for the 2005 waterfowl stamp was selected in a morning competition held at Peabody Essex Museum in Salem, MA in September of 2004. The five judges selected a painting of a long-tailed duck (formerly known as an oldsquaw) carved by I. Clarence Bailey of Kingston, MA and submitted by artist Donald Little of South Burlington, VT. Following the contest, the Peabody Essex Museum hosted a reception celebrating the waterfowl stamp program and honoring Mr. Little. The artwork remained on public display at the museum through the end of September and was much enjoyed by visitors to the museum.

Archery and Primitive Firearms Stamps

Design for the 2005 Archery and Primitive Firearms stamps was selected in open competition. The winner was Ryan Jacque of Brimfield, MA who provided a profile portrait of a 10 point buck.

Publications

The Division's most visible publication is *Massachusetts Wildlife*, a 40 page, full color quarterly which is sent to more than 23,000 paying subscribers, a rate which appears to be steady. The four issues produced this year, (Fall 2004 - Summer 2005), covered a wide variety of subjects, including resource management, education, habitat enhancement, rare and endangered species, history, general nature interest and "how to" articles for the hunter, fisherman and nature observer. Articles that promoted MDFW programs included a first person account of stocking salmon fry as a volunteer, and others on the Landowner Incentive Program, the Massachusetts Outdoor Exposition, the Lead Shot Initiative, and a special wildlife techniques weekend, taught by biologists from this agency and others, for wildlife students at the University of Massachusetts. There were also articles on the paleo-climate of Massachusetts, the Boston Harbor Islands, and an update on Canada goose research. We featured articles on several unique individuals including Roy Leyva (Master Angler of 2005), Peter Pekkala (the late Connecticut Valley District Wildlife Manager), and a local wildlife artist. There was also a first person account what happens when a hunting dog encounters a porcupine; and another on what it is like to bow hunt for deer. There were also several excellent "field guide" articles on how to identify such diverse things as medicinal mushrooms, the moths that gather around porch lights, and invasive aquatic plants. There was also an article on how to build your own wooden bass plugs.

Other Publications

The major publication efforts for this year were updating and publishing a new edition of Massachusetts' Outdoor Recreation Map, reprinting a supply of the ever popular track cards, and writing and editing portions of Massachusetts' Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan), a massive compilation of wildlife programs and projects underway in the Commonwealth which includes comprehensive identification of wildlife program needs. This plan is now in first draft form. It will be put forth for public comment and finalized during FY06. Once the plan has been approved by the USFWS it will serve as a guide for the agency's future programs and activities.

Over the course of this year we reprinted two of the most heavily used sheets in the "Living with Wildlife" Series (coyotes and foxes) and issued five new sheets: Living with Bobcats; Living with Canada Geese; Living with Bears; Living with Moose and Living with Wildlife in the Suburbs.

Other publications completed included a brochure on Chronic Wasting Disease; a manual for instructors in the Angler Education Program; a teacher's manual for the Junior Duck Stamp program; and printed materials in support of these and other educational programs. Smaller publications, including trout and pheasant stocking lists, Becoming an Outdoors-Women workshop flyers, lists of locations for the best bass fishing, and affidavits for the Sportfishing Awards Program, were also updated and re-issued.

Efforts on publications still in process involved generating draft options for a brochure for the Massachusetts Outdoor Heritage Foundation and a brochure for the Young Adult Pheasant Hunting program.

In addition to this, the Section printed a variety of signs for use on Wildlife Management Areas, agency mailing labels, certificates and labels for Project WILD, and the agency's annual report.

Exhibits

The agency had a presence in the form of a display or exhibit in the following venues:

August
- Animal Day, Sandwich – Thornton Burgess Society
- Waquoit Bay Block Party
- Marshfield Fair

September
- Tufts Veterinary School Open House, Grafton
- *Sterling Fair, Sterling
- Franklin County Fair, Greenfield – Conn. Valley
- Waterfowl Stamp Reception, Peabody Essex Museum, Salem
- *Big E – Springfield-Outdoor Recreation Opportunities (combined with DAR and DCR)

October
- *Sachem Rock Farm Fall Festival, East Bridgewater (materials only)
- Topsfield Fair
- Broadmeadow Brook Sanctuary – (beaver mount, pelts and booklets for talk)

January
- *North Quabbin Woods Outdoor Expo – featured outdoor recreation opportunities and skills sessions

February
- Sportsmens shows in E. Bridgewater, Worcester, Springfield
- Central Mass. Flower Show, Worcester (17,000 attendees), Living With Wildlife

March
- Mass. Association of Conservation Commissioners, Worcester (NHESP)
- Flyfishing Show, Wilmington

April
- *Earth Day Celebration, Worcester at the Ecotarium (1400 attendees), Giving Back to Wildlife
- Earth Day Celebration Springfield Science Museum – Angler Education

May
- *Rotary Club, Marshfield (Division Activities)
- New England Chapter of Safari Club, Boxborough (Becoming an Outdoorswoman)

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* Asterisk indicates first time participation at event or venue.

Photography

Staff photographer Bill Byrne continues to provide images in support of agency programs. In addition to shooting specifically for the magazine, the photographer has the important quarterly task of reviewing all available images, making certain that there is a sufficient supply of high quality images for the editor's selection process, assisting with final image selection for each issue, and providing images, as requested, to other individuals and organizations working for wildlife and protecting the lands and natural resources of the Commonwealth.

This year photo assignments included several Awards Presentations including photographing the 2004 Sport Fishing Awards ceremony, presentation of the Junior Duck Stamp Awards, Gov. Francis Sargent award presented to Dr. Stephen Meyer of Sudbury, and the graduation ceremony of the Massachusetts Junior Conservation Camp.

Massachusetts Wildlife photography assignments included a festival of fishing plug carvers, a related step-by-step plug building demonstration, invasive aquatic and terrestrial plants, and the Landowner Incentive Program. Other photography assignments included photographing a BOW ice fishing workshop in Brookfield, dedication of the Lubelczyk addition to Raccoon Hill WMA in Hardwick, and Bill was the Photography Instructor at an Outdoor Women's weekend workshop.

For these projects Bill used a combination of analog (film) and digital cameras. He also moved forward in learning the use of digital video equipment and editing. As part of this initiative he edited and produced a 40 minute video on black bear which was presented to Project WILD educators who participated in a weekend workshop on Black Bear.

Education Programs

Formal or School-based Education Programs

Pam Landry Coordinator

Project WILD: Twenty-one Project WILD Facilitators conducted 18 workshops (7 WILD, 1 Aquatic WILD, 10 combination WILD/Aquatic WILD) reaching a total of 243 educators from across the state. Audiences included scout leaders, formal & informal educators, pre-service teachers, SCA members, state park interpreters and graduate students.

A summer facilitator gathering was held at Buttonwood Park Zoo highlighting the "Berkshires to the Sea" exhibit as well as behind the scenes tours.

The Facilitator Annual Gathering was held at Norcross Wildlife Sanctuary with 23 facilitators enjoying a day of camaraderie, updates, recognition, fun and a presentation on *Furbearer Fundamentals*, an instructor's resource that focuses on furbearers found in the Northeastern United States.

A three day intensive *Black Bear Field Experience & Workshop* was held in partnership with CT Project WILD for twenty-four educators. Participants were actively engaged in relevant Project WILD activities as well as activities from other curricula. Black bear folklore, natural history, wildlife management, a field trip to a bear's den and human wildlife conflicts and resolutions made up the bulk of the workshop.

Junior Duck Stamp Program (JDS): Students in grades K-12 from across the Commonwealth submitted 593 pieces of artwork to this "conservation through the arts" program. Entries were received from 51 "schools" (K-12 home schooled, individuals, private art lessons, public & private schools). Judging by a panel of five wildlife artists took place at the Hitchcock Center for the Environment. The painting of a mallard by Debbie Cheng, Andover High School, was selected as Best of Show and represented MA at the National Competition. Combinations of the top 100 pieces of art were part of a statewide traveling JDS exhibit appearing in 12 different venues. Sponsors include MDFW, Massachusetts Waterfowlers, Inc., Boston Duck Tours, the U.S. Fish and Wildlife Service, the Massachusetts Wildlife Federation, and the Massachusetts Chapter of Ducks Unlimited.

Massachusetts Envirothon: The MDFW continues its involvement in this natural resource program for high school students by having staff offer teacher and student workshops, serving on the education committee, preparing the wildlife exam, attending monthly meetings, and administering the competition. The 2005 Envirothon was held at Essex Agricultural & Technical School in Hathorne. MDFW staff provided exam questions, served as resource professionals, and served as judges for the event.

Nuthatch.

Skills Programs

Hunter Education Program**

Susan Langlois, Coordinator

It is the mission of the Massachusetts Hunter Education Program to protect the lives and safety of the public, promote the wise management and ethical use of our wildlife resources, and encourage a greater appreciation of the environment through education. The Hunter Education Program is a public education effort providing instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. Funding is derived from the sale of hunting and sporting licenses, and from federal excise taxes on firearms and archery equipment. Massachusetts offered its first hunter safety course in 1954, and to date has graduated more than 157,000 students. The program is administered by the Massachusetts Division of Fisheries and Wildlife and courses are taught by trained volunteer instructors. All courses are free of charge.

Courses

Courses in five disciplines were offered across the state. A total of 2,935 students participated in the Hunter Education Program in FY 2005. Participation levels decreased 17% from FY2004 (3,546 students) and were lower than the five year average of 3,356 students. The following is a summary of course offerings and statistics on student participation.

A. Basic Hunter Education courses provide information on the safe handling and storage of hunting arms and ammunition, hunting laws and ethics, wildlife identification, wildlife management, care and handling of game, basic survival skills and first aid. Fifty three courses were offered. Courses were 12-21 hours in length. A total of 2,138 students participated, 1,957 completed the course successfully; two failed and 179 did not complete the course. Students are asked to volunteer information on age, gender and ethnic background on their registration forms. Four hundred fifty-eight (458) students were minors (10 –14 years old), 432 were 15 –17 year old minors, and 31 were minorities. Two Hundred and eighty six (286) women were identified.

B. Bow Hunter Education courses are designed for both the experienced and novice hunter. Course topics include the selection of equipment, safety, ethics, bowhunting methods, and care and handling of game. Students may bring their archery equipment to class to obtain advice on its use and care. This certificate is recognized in other states where Bow Hunter Education certificates are required. Eighteen courses were conducted. Course length ranged from 8-12 hours. A total of 459 students participated; 456 successfully completed the course; one failed and two did not complete the course. Seventy-one students were 10-14 years of age and 41 were 15 –17 years of age. Six minorities and 23 women were identified.

C. Trapper Education is mandatory for all first-time trappers. This course includes both classroom work and field training. Students learn the proper use of traps and how to set them, the identification of fur bearing animals and their habitat, trapping laws and ethics, and landowner relations. Three courses were offered with a total of 95 participants. Course length was 10-11 hours. Eighty-five successfully completed the course; six failed and four did not complete the course. Four women were identified. Six minorities, two minors (10 –14 years old) and one 15-17 year old minor attended.

D. Black Powder Education topics cover the selection of hunting equipment, state laws, the safe handling of muzzleloaders, and powder storage. *A Certificate of Completion from the Basic Hunter Education course is a pre-requisite for all students under 18 years of age.* Four courses were conducted. Course length was 10-14 hours. Twenty-nine students participated. Twenty-six successfully completed the course, 3 did not complete the course. One minority and two minors 15-17 years old participated. Three women were identified.

E. Map, Compass & Survival Program: This one-day course includes both classroom work and field training. Topics include instruction on wilderness survival, as well as the use of a compass and topographic map for land navigation. Due to the technical nature of the course, it is not recommended for participants under the age of 12. Nine courses were conducted (2 in Pittsfield, 7 in Westminster). Courses range from 8-10 hours in length. A total of 214 students participated; 210 passed and four were incomplete. Thirty-six minors 10 -14 years old and 10 minors 15-17 years old participated. Five minorities and 59 women were identified.

Shooting Range Development and Enhancement

It is our objective to provide access for the public to range facilities for hunter education and shooting sports purposes by assisting shooting club range development and improvement activities. A total of $50,000.00 was made available to clubs for Shooting Range Maintenance and Enhancement projects in FY2004. A total of four clubs responded with 17 project proposals. We funded nine individual project proposals from three clubs. The selected clubs were notified of the awards and began work on the projects once all contacts and supporting documentation was finalized. Paid invoices were submitted by the clubs and reimbursed for approved costs associated with the projects. Follow-up site visits are conducted by DFW staff.

** Because of its size and importance the Hunter Education Program stands alone in the organizational structure of the agency. It is included in this report because of its functional relationship to the agency's skills programs.

Young anglers get a good introduction to fishing at at the Massachusetts Outdoor Exposition.

Angler Education Program
Jim Lagacy, Coordinator

The Angler Education Program is the main component of Massachusetts' Aquatic Resource Education Program. It has several components designed to introduce people to fishing and to outdoor activities: Family Fishing Festivals, Basic Fresh-Water Fishing Classes, Fishing Clinics, and our own Fishing Tackle Loaner Program.

The Angler Education component is primarily volunteer-driven. Currently there are 75 volunteer instructors in eight workshop groups, of which approximately 65 were active during this fiscal year. Instructors are recruited at the various winter sportsmen's shows and by word of mouth. The program had a display booth at four sportsmen's shows during FY 05: the Worcester Sportsmen's Show, the Springfield Sportsmen's Show, the World Fly Fishing Exposition in Wilmington, and the Massachusetts Striped Bass Fishing Show in Plymouth. Instructors are trained by apprenticing trainees to an active workshop group. Four instructors are currently serving as apprentices.

Family Fishing Festivals and Derbies - There were eight family fishing festivals during the year. These festivals ranged in size from approximately 50 to 500 participants for a total of approximately 2,100 people. At these events the program makes rod and reel combinations available to individuals who want to try fishing. The program also provides terminal tackle and bait at no charge, and when the manpower allows, provides basic instruction in casting, fish identification, and knot tying. Volunteers also participated in five fishing derbies, including two for participants with special needs (Disabled American Veterans events) reaching approximately 1,050 participants. Total estimated participation for Festivals and Derbies for FY 05 was 3,150 people.

Four-Week Basic Fresh-Water Fishing Classes - There were 11 classes with approximately 200 participants. These classes were put on by four of the workshop groups — Berkshire, Nashoba Valley, Newton, and Shrewsbury.

Fishing Clinics and other short programs - These programs, while short in duration, seem to be our most popular. Clinics are generally two hours in duration, involving a short lecture on the basics of angling followed by casting instruction, and a healthy dose of fishing. Also included in this category are ice fishing programs, stocking programs, casting programs, and educational presentations (scout groups/etc.) Handouts are generally provided, and classes are small enough to allow the instructors to work with participants one on one. The program held 43 of these programs in various parts of our state in which 1,440 people (mostly children) participated.

Tackle Loaner Program - The Angler Education Program owns and maintains fishing equipment at the Westboro Field Headquarters for loan to various groups throughout the state. This equipment was loaned out on 28 separate occasions sending forth 662 rod and reel combinations. This equipment was loaned to various groups/agencies including the Department of Conservation and Recreation, town Park and Recreation Departments, U.S. Army Corp. properties, the U.S. Fish & Wildlife Service, sportsmen's clubs, and others.

Cooperative Programs - The Angler Education Program also contributed significantly to the Massachusetts Junior Conservation Camp, to Becoming An Outdoors-Women, and to the Massachusetts Envirothon.

Becoming an Outdoors-Woman
Ellie Horwitz, Coordinator

Becoming an Outdoors-Woman (B.O.W.) is a program designed for women ages 18 and up.

The program provides basic skills instruction to women who have expressed an interest in participating in outdoor activities and field sports. Because of cultural barriers and lack of suitable equipment, women have been, and are, under-represented among persons who enjoy and feel a commitment to the natural resources of the Commonwealth. To address this, MDFW offers a program coordinated by a staff member and conducted by volunteer instructors. This program provides a relaxed and comfortable venue for basic instruction in a variety of outdoor activities. Because this program is expected to be self-supporting, a good deal of the Coordinator's time was spent raising funds to underwrite the costs involved in presenting these workshops.

Over the course of FY05 the following workshops were offered:

Date	Topic	Number of participants
September	BOW on the Beach, Newbury	58 (full)
October	Shooting Sports, Hanson	18
November	Deer Hunting Seminar, Devens	5
December	Deer Hunt, Devens	14
January	Winter Festival, N. Brookfield	20
February	Tracking, Wendell	18
April	Shooting Sports Day, Springfield	40 (full)
April	Turkey Hunting Seminar	14
May	Turkey Hunt, Devens	10 (full)
June 10-12	10TH Anniversary Weekend, Lenox	75

Instruction was provided by specialists who volunteered their time and services in order to share their expertise and their passion for outdoor activities with newcomers. All sessions were evaluated by participants and productive feedback was used to enhance future programs.

During the year the electronic notification system for this program has grown significantly and it is now in use for many informational mailings. This Lyris based system is rapid and efficient and is replacing postal mailings which we now use only once a year.

During FY05 staff continued to explore ways to solidify a group of participants in the Springfield Area and to reach out to an increasing number of participants from minority communities. In addition, an active effort was made to reach out to potential participants with disabilities. To this end all workshop sites were reviewed for handicapped accessibility, workshops were advertised through "All Outdoors" (a program which reaches individuals with physical disabilities) and the program coordinator worked closely with the Board of Project INSPIRE, a collaborative of private venture, and of the Universal Access program within the Department of Conservation and Recreation.

As a result of the program's success in reaching inner city audiences and attracting participants from a variety of minority communities, the coordinator was invited to present a session on working with inner-city audiences to the International Conference of B.O.W. Coordinators held in July 2005.

Conservation Camp

In August 2004 the Mass. Junior Conservation Camp held its second session at the Chesterfield Boy Scout Reservation. As in the past, MDFW staff developed an instructional schedule, coordinated arrangements with instructors, conducted instruction in wildlife management, fisheries management and fish and game cooking skills, conducted an Information Quiz which serves as a tool to evaluate participants' learning of outdoor information and skills, and finally participated in the graduation ceremonies.

The new location is a great benefit for the camp, and staff from the Western MA Boy Scout Council, which owns the facility, has been extremely cooperative. The camp abuts MDFW's Fisk Meadows Wildlife Management Area which provides excellent sites for instruction. As the camp has signed a ten year lease agreement with the Scouts, and as both parties have a strong commitment to this relationship, camp and agency staff are reviewing the camp grounds to determine what changes in the physical plant would enhance the camp for both parties, and how we can assist the camp in making those adjustments.

Other Initiatives

In December 2004 the International Association of Fish and Wildlife Agencies assembled a summit of Conservation and Wildlife educators in Sheppardstown, VA with the charge of identifying those issues of greatest import to Fish and Wildlife agencies. The intent of this initial convocation is to develop a Conservation Education strategy applicable to all Fish and Wildlife agencies. This was a first in acknowledging the role of education as a key tool in the management of fish and wildlife. The summit established a national network of educators working to enhance the effectiveness of wildlife education, and set in motion a number of initiatives that will set the stage for a major education initiative. The program emerging from this summit will raise the profile of conservation education and will ensure that fish and wildlife agencies throughout the nation address key topics of importance to wildlife professionals and educators through their education programs. Additional efforts are underway to identify avenues to enhance funding for wildlife education

programs, to expand the dissemination of such programs, and to ensure that such programs coordinate with state educational frameworks and are in line with national standards of excellence.

Northeast Information & Education Technical Committee

Following up on the 13 state research project on Public Perception of Fish and Wildlife agencies developed in FY03 and conducted in FY04, the Section Chief worked with other members of this committee as they reviewed the findings and subsequently contracted with Responsive Management Inc. to prepare a summary of findings which will be published in 2006.

This group has also been charged by the Northeast Directors to address other issues of mutual concern. Among the topics that have been identified for interstate action is the development of a strategy to address the issue of CWD in wild ungulates in an effort to prevent the spread of this disease to the Massachusetts deer herd. This will be addressed in the coming year.

Secretary's Advisory Group on Environmental Education

(An advisory group which serves the Secretary of Environmental Affairs and the Commissioner of Education)

On behalf of SAGEE, the Chief advertised and hosted a session on Excellence in Non-Formal Environmental Education which was offered to educators in Massachusetts and surrounding states. The program, sponsored by SAGEE, was presented by Dr. Bora Simmons of the University of Southern Illinois. Dr. Simmons is the Chair of the Excellence in Environmental Education project for the North American Association for Environmental Education.

Agency Visibility

In an effort to increase public identification of MDFW staffers, t-shirts, polo shirts, dress shirts, caps and coveralls were issued to staffers.

Staffing

In March of 2005 Suzanne Fritze joined the Information & Education staff as Front Desk Receptionist and Section Clerk.

All staff members attended a First Aid/CPR Training course.

Information & Education Staff

Ellie Horwitz, *Chief*

Bill Byrne, *Senior Photographer*
Jill Durand, *Circulation Manager*
Suzanne Fritze, *Receptionist*
Jim Lagacy, *Coordinator, Aquatic Resources Education*
Pam Landry, *Education Coordinator*
Susan Langlois, *Coordinator, Hunter Education Program***
Marion Larson, *Outreach Coordinator*
Peter Mirick, *Publications Coordinator*

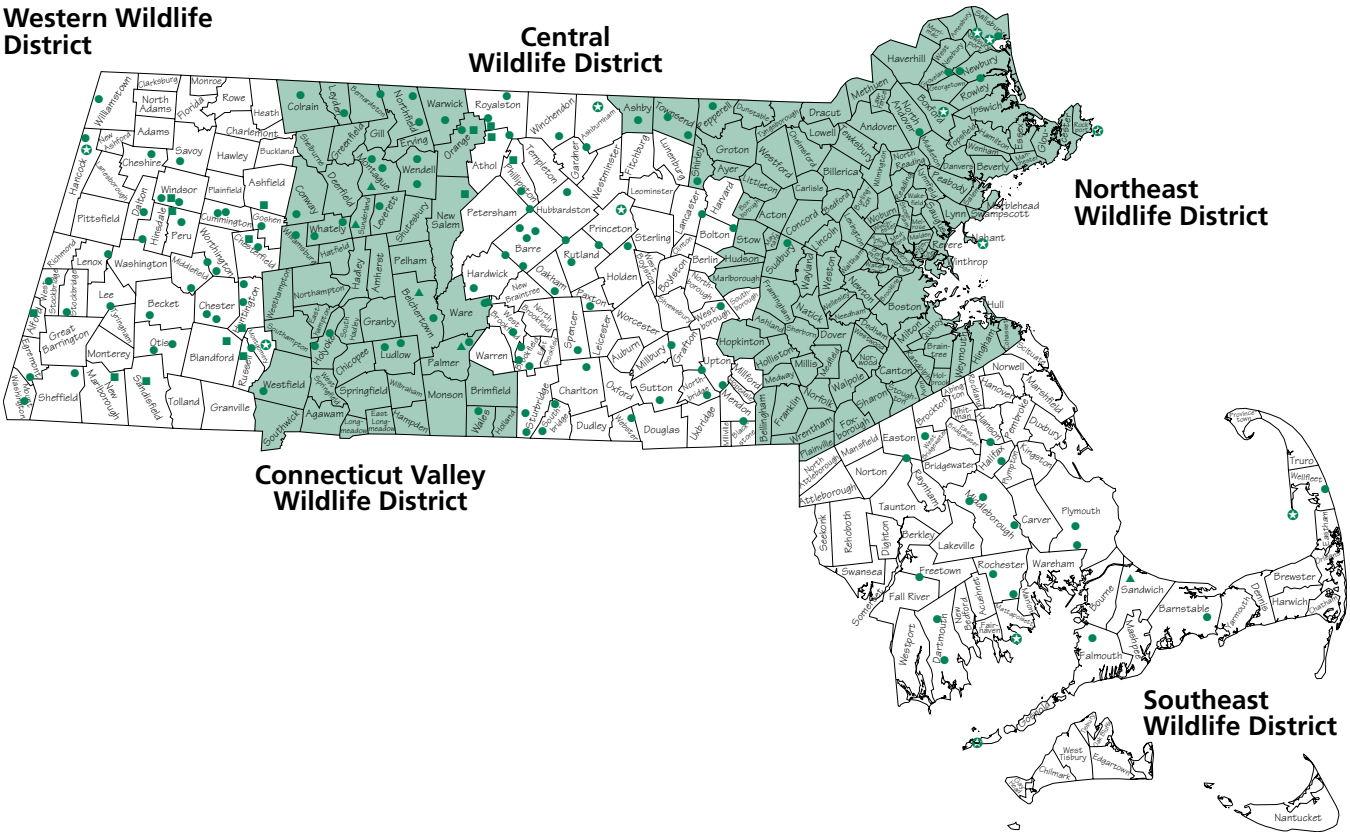
DISTRICT REPORTS

Northeast District, Patricia Huckery, *Supervisor*
Southeast District, Jason Zimmer, *Supervisor*
Central District, Bill Davis, *Supervisor*
Connecticut Valley District, Ralph Taylor, *Supervisor*
Western District, Tom Keefe, *Supervisor*

Most people who contact the Massachusetts Division of Fisheries and Wildlife (MDFW) do so through one of the state's five Wildlife Districts. The District offices are MDFW's field stations, administering wildlife lands, conducting on-site management, enhancing recreational opportunities and addressing the wildlife issues pertinent to their region. District personnel sell licenses, stamps and selected permits out of the field offices, and District staff distribute licenses, abstracts, stamps and other materials related to the sale of hunting, fishing, and trapping licenses to other vendors in each District. They assist officers from the Division of Law Enforcement to assure public adherence to wildlife laws and regulations, and they assist the staff of the Wildlife Lands Section in locating titles, landowners, and bounds – and making arrangements for the acquisition of lands for wildlife.

During the past year, staff from all of the Districts conducted administrative activities and participated in a wide variety of research programs initiated by MDFW's biological staff based at the Westborough Field Headquarters (see Section reports for the status of these projects.) Among the research/survey projects conducted by District staff are the annual mid-winter eagle survey; waterfowl inventory and banding/collaring; census of wild turkey, mourning doves, woodcock, ruffed grouse and quail. District staff members also monitor the water quality of lakes and streams prior to releasing fish into them.

District staff members enhance recreational opportunities throughout the state by stocking brown, brook and rainbow trout, northern pike, tiger muskies and broodstock salmon into waters scheduled to receive them. They also release pheasants on Wildlife Management Areas (WMAs) and in open covers. They monitor and maintain the Wildlife Management Areas in their region, cutting brush, mowing, trimming trails, designing forest cutting operations, planting shrubs and maintaining roads and parking areas. They emplace gates, erect signs and make other arrangements related to the protection and management of the agency's lands, buildings and vehicles. They also build and maintain



nesting boxes for wood ducks, bluebirds and bats, and establish cooperative agreements with farmers raising crops on MDFW's lands.

Throughout the state, District staff members serve the public by providing technical advice on the control of environmental problems — particularly on the handling of nuisance animals. In this context, District staff members deal with a large number of beaver complaints, deer damage complaints, questions about coyotes, and other issues dealing with the impact of wildlife on human activities and vice versa.

Districts deal with the public too, operating check stations where sportsmen register deer, bear, turkeys and furbearers taken during the designated hunting and trapping seasons; providing technical advice on dealing with wildlife matters; and providing programs for civic groups and schools within their respective regions. District Supervisors and Managers are the agency's "point persons," spending many hours with civic and conservation groups including sportsmen's clubs, and responding to inquiries from interested citizens.

In addition to the activities that are common to all of the Districts, there are certain projects that require the participation of staff from only certain Districts.

Northeast District

Personnel

In January 2005, Michael Huguenin and Rachel Nichols were hired to fill Wildlife Technician I positions vacated by Walt Tynan, who transferred to the Conn.Valley District, and Richard Cannata, who retired in 2001.

Research and Conservation Activities

Wildlife

District staff again tracked 15 radio-collared deer throughout the year as part of Bill Woytek's deer project. Waterfowl survey work was conducted in the Northeast, Central and Connecticut Valley Wildlife Districts were eight breeding plot surveys were checked, and banding was conducted from the airboat. We assisted with the Canada goose banding project in the Northeast, Central and Southeast Wildlife Districts. There were 10 waterfowl blinds set-up and maintained at Delaney WMA. Inclement weather hampered us, but we successfully ran one dove, two woodcock and five grouse survey routes.

During the winter months, biologists and technicians conducted beaver surveys within 12 quadrangles. About 400 wood duck boxes were checked, 40 new boxes were made, and one new nest box site was added at the Rt. 2 heronry in Acton/Boxborough. The District tagged 9 coyote, 154 beaver, 17 fisher, 5 gray fox, 4 red fox, 6 otter, 6 mink and one bobcat pelt.

Pheasant release at Martin Burns WMA.

The Youth Hunt pheasant seminar and Youth Hunt for pheasant at Martin Burns WMA were supervised by Patricia Huckery and Bob Desrosiers. We also checked turkey both spring and fall seasons.

Fisheries

Fisheries surveys were conducted within the Nashua River drainage. For the first time ever the NE District crew sampled the Mystic River drainage, covering 15 sites. Although we did not record anything extraordinary during the survey in terms of fish numbers or species, we did witness an oil spill clean-up in process on Sales Creek in Revere. High water hampered fish sampling at the Essex Dam fish lift in Lawrence.

On August 23, staff handled a fish kill response for an unnamed tributary of the Merrimack River in the town of Bradford. A massive fish kill was observed and the stream was devoid of life. Based on a strong smell of chlorine, the cause was determined to be due to the draining of a swimming pool into a storm drain leading to the unnamed stream. According to protocol, the Department of Environmental Protection (DEP) was notified, and fish were counted and samples were collected and submitted to DEP.

A total of 188 salmon, weighing from 3 lbs. up to the mid-teens, came in from the Nashua, Vermont and Palmer Hatcheries and were stocked in six ponds: Jamaica Pond, Boston (14), Sluice Pond, Lynn (14), Baddacook Pond, Groton (50), Horn Pond, Woburn (45), Forest Lake, Methuen (45), and Hopkinton Reservoir, Hopkinton (20). An additional 36 salmon from Roger Reed Hatchery were stocked on April 4 and 5 in Lake Cochituate, Natick (8), Hopkinton Reservoir (8), and Jamaica Pond, Boston (20). A total of 126,085 trout (10,250 fall 2004; 115,835 spring 2005) were stocked. Fish were stocked in 17 ponds and 2 rivers in fall 2003,

and in spring 2004 we stocked 47 ponds, 5 major rivers, and 68 brooks and minor rivers.

Natural Heritage& Endangered Species Program

The mid-winter Bald Eagle Survey on the Merrimack River was conducted by Dennis McNamara, Michael Huguenin, Bob Desrosiers and Pat Huckery. The survey effort started at the New Hampshire border and worked toward Newburyport, where the Merrimack River meets the ocean. Nine birds were seen. The entire river was open, unlike in past years when the upper reaches were iced over. District personnel were treated to an aerial display by three juveniles over Department of Conservation & Recreation's Maudsley State Park, Newbury/Newburyport.

A "natural" nesting platform was created on Carr Island Sanctuary with help from Connecticut Valley staffers Ralph Taylor and Dave Fuller. We hope that a pair of bald eagles will choose this secluded nest site sometime in the future.

After a 100 year nesting absence, bald eagles returned to nest in the District this year, selecting a site more than 600 feet off the Merrimack River in West Newbury. The nest was over 80 feet off the ground and well-hidden from the nearest road in a 2 1/2 foot diameter white pine located in a residential neighborhood! A neighbor kept an eye on the incubating adults and helped us estimate hatch time. Two 5-week old eaglets were successfully banded on June 8 with the very capable help of Bill Davis, Bridgett McAlice, Bob Chapin, and especially climber Kurt Palmateer from the McLaughlin Hatchery. The West Newbury nest is near the site of the first two nesting attempts made by this pair on the opposite bank of the Merrimack River in Haverhill. One of the eaglets ran into trouble and was taken to Tufts Veterinary Clinic to be hydrated and nourished for release two weeks later.

In coordination with the Natural Heritage & Endangered Species Program, a state-listed herpetological survey was conducted at Crane Pond WMA, which included deployment of turtle traps, as well as nesting surveys in June. Three new four-toed salamander (*Hemidactylium scutatum*) sites were recorded, two updates of blue-spotted salamander (*Ambystoma laterale*) sites were found, two new locations were identified for the Blanding's turtle (*Emydoidea blandingii*), and one new location was identified for spotted turtle (*Clemmys guttata*). The male spotted turtle was heard and seen in the forest by Steve Wright, who made a running catch of the "charging" turtle before it reached the safety of a vernal pool!

Staff of this District provided advice throughout the year on environmental review projects, MESA Conservation and Management Permits, and development of ranking criteria and polygon mapping for freshwater mussel Priority Habitats.

One piping plover site was checked during the breeding season.

Environmental Review

The District provided detailed comments on the Draft 2005-2009 Integrated Natural Resources Management Plan and Environmental Assessment for Fort Devens.

A Notice of Intent for the upgrade of Ash Street in Newbury was submitted, and Division staff attended a DEP site visit, and subsequently placed four turtle traps to gather herpetological information at the site, and provided technical guidance to local citizens and the town DPW. Ash Street is currently an unstable, gravel road that passes through part of the Crane Pond WMA.

The District reviewed, and subsequently denied, Acton's proposed trail plans on the Whittier Conservation Area. The parcel is currently utilized by hunters and use of a designated trail would have affected our ability to manage deer on this small parcel. Also, there were several potential vernal pools at the front of the property which would have been affected by the proposed removal of trees.

A presentation on the Mass. Endangered Species Act and BioMap was given before the Mass. Development Open Space and Recreation Committee to help them begin to understand the rare species constraints upon the site. We also provided input on the design of a rare species field assessment.

Information and Education

Talks, presentations and meetings were held with town representatives, legislators, conservation groups and citizens regarding coyote, beaver, fisher and bear complaints. District Manager Huckery conducted several workshops on the Mass. Endangered Species Act for the Mass. Association of Wetlands Scientists. Division personnel met with the town of Boxford State Representative and Senator, and interested town representatives, to discuss safe access at the John C. Phillips Wildlife Sanctuary. We reached a satisfactory solution that would not significantly impact current beaver activity and other wildlife uses of the sanctuary.

Division information was relayed to sportsmen through attendance at the Essex, Norfolk and Middlesex County League's monthly meetings. At these meetings, Todd Richard's Target Fish Community presentations were well-received, and Jim Cardoza briefed the Middlesex League members on the status of turkey in Massachusetts.

This District coordinated the agency's display at the Topsfield Fair. Collection of materials, scheduling and booth coverage were handled by District personnel, with assistance from the staff of MDFW's Field Headquarters and the Division of Marine Fisheries. District staff also worked at the Wilmington and Worcester Fishing Expositions.

In November 2004, a mountain lion was reported in Acton and staff worked with local police to assess the report and provide technical assistance. This report was

quickly followed by a report of a black widow spider on grocery store grapes, and we provided technical guidance and risk factors to Channel 4 reporters.

Wildlife Management Areas and Other District Activities

Staff of this District set-up and participated in the Paraplegic Sportsmen's deer hunt held at Devens; a controlled waterfowl hunt held at Delaney WMA; and the Young Adults' pheasant hunt held at the Martin Burns WMA.

Staff logged many hours conducting activities that are conducted by all five of the District crews: checking deer and collecting tissue samples to be tested for Chronic Wasting Disease; distributing administrative materials to the 122 towns in this region; stocking trout, salmon and pheasant; mowing fields; maintaining parking areas, trails and equipment; posting boundary signs; setting up waterfowl blinds; collecting trash illegally deposited on WMAs; and monitoring state and municipal boating ramps. Eagle Scouts helped post signs at the Nissitissit River WMA.

At **Crane Pond WMA** we conducted a herpetological field assessment (see above) which expanded existing knowledge of natural resources and highlighted problems with illegal beaver dam removal and illegal trash dumping and ATV use.

District staff assisted members of the Shirley Conservation Commission to apply for a federal WHIP grant to continue appropriately-timed mowing of an 18 acre field at **Hunting Hills WMA**.

Boundaries of the **Charles River WMA** and associated access have confused local hunters for many years. In an effort to address this problem we met with the Army Corps of Engineers (ACOE) from whom we lease the lands to establish a process for posting. The ACOE assigned two graduate students to find all stone bounds and drill holes according to deeds and assessors maps. They flagged them in the field and took GPS points, which will facilitate MDFW sign posting.

A concern was raised about hunting on the **Pantry Brook WMA** which is adjacent to Lincoln-Sudbury High School. District staff met with school representatives to resolve any issues, to provide information about hunting seasons, and to provide educational materials about Mass Wildlife. Posting the property boundary with the more visible WMA signs solved the problem.

A three-legged coyote caught the attention of the town of Stoneham. Pat Huckery joined Tom O'Shea in presenting a coyote forum in Stoneham where distressed citizens learned about coyotes and had an opportunity to express their concerns.

Southeast Wildlife District

Administrative and Personnel Activities

The Southeast Wildlife District was restored to full staffing levels in fiscal year 2005 with the hiring of James Pinheiro as a Wildlife Technician I and Jason Zimmer as the new District Manager. Steve Hurley, Southeast District Fisheries Manager, served as Acting District Manager from July 1, 2004 until Jason Zimmer was hired on January 24, 2005. Eddie Kraus, Wildlife Technician II, was on industrial accident leave from April 21 through June 15, 2005. District staff continued to excel in the maintenance and care of our equipment and facilities, as well as to cooperate with Department of Conservation and Recreation staff at Myles Standish State Forest to complete more technical repairs to vehicles and equipment. District personnel also conducted a detailed inventory of all our equipment and evaluated the condition of various items to be disposed of or replaced. District personnel also assisted and/or cooperated with the Environmental Police to control illegal dumping and ATV use; to seize illegally owned piranhas; and to capture an illegally released alligator in the District.

Thanks to the cooperation and assistance of the Massachusetts Department of Conservation and Recreation's (DCR) Southeast Regional staff at the Myles Standish State Forest, the first week of antlerless deer permit sales was held at the State Forest's Nature Interpretive Center. This cooperation is a significant benefit to the District and results in a more effective and efficient use of staff time. After the initial week, sales resumed at the District office.

District personnel received training on aging deer, fish species identification, the Right-to-Know Law, First Aid & CPR, and basic climbing techniques. Further, Jason Zimmer and Dick Turner received Large Animal Response Team (LART) training; Steve Hurley received Environmental Management System training; and Jeff Breton attended a week-long wildlands firefighting course offered through The Nature Conservancy which will enable him to assist in conducting prescribed burns on our wildlife lands. Steve Hurley also attended a pesticide workshop in Boston to learn about various pesticides and their impacts on the environment. The District is currently working with two student interns from Framingham State College to provide them with valuable field experience.

Research and Conservation

District personnel conducted a wide range of surveys and management activities with regard to both warmwater and coldwater fisheries in the region. Under the guidance of Steve Hurley, the Southeast Fisheries Biologist, the staff conducted surveys of streams and ponds, primarily within the Taunton River watershed, to identify the habitat characteristics and fish species present within each system. These surveys include a combination of methods such as seine netting, gill netting, electro-shocking (both boat and backpack),

vegetation surveys, physical habitat/structure surveys, substrate investigations, and dissolved oxygen, temperature and conductivity monitoring. In addition, a number of potential wild brook trout streams were verified through field surveys. Steve Hurley investigated a number of fish kills in the District, with the majority of them identified as being caused by natural events such as disease outbreaks.

Southeast District personnel assisted in bald eagle, Canada goose and other waterfowl banding efforts, as well as surveys for breeding northern bobwhite, ruffed grouse, woodcock, mourning dove and waterfowl. The staff also assisted in the installation of signage, floats and predator guards at the two known bald eagle nests in the District. District personnel also built, maintained and monitored nest boxes for wood ducks, eastern bluebirds and American kestrels, and built and maintained several bat boxes. Dick Turner also assisted in the release of a rehabilitated red-throated loon and a common murre in the Cape Cod Canal.

The District assisted the Natural Heritage & Endangered Species Program by organizing and completing a number of rare species survey projects including vernal pool investigations and certifications, baited hoop-net trapping for rare turtles, and various field surveys for rare plants and animals. District personnel located new or confirmed existing populations of four-toed salamanders, spotted turtles, eastern box turtles, grasshopper sparrows, Plymouth gentian and sandplain gerardia, among other species. These projects are conducted to concurrently improve our knowledge of the natural resources on our lands and our ability to purchase and protect additional land and regional biodiversity. District personnel also assisted in the release of headstarted redbelly cooters (turtles).

Recreation Opportunities

The Southeast District had safe and successful fall and spring trout stocking seasons with 10,500 and 104,350 trout stocked in southeastern Massachusetts waters, respectively. In addition, a limited number of tiger musky and broodstock Atlantic salmon were stocked into select ponds in the District. The District also conducted several special stocking efforts for fishing events designed to educate and entertain young adults and children. The annual trout survey with Trout Unlimited volunteers on the Quashnet River was accomplished in September 2004. Stream temperatures were monitored in the Quashnet, Mashpee, Childs, Coonamesset and Santuit Rivers.

District personnel successfully completed fall pheasant and quail stocking in 2004 and have begun an effort to evaluate and improve game bird stocking and hunting experiences on our lands. Due to the ongoing federal litigation regarding the Cape Cod National Seashore and pheasant hunting, pheasants were not stocked on the Seashore in 2004. District personnel transported young pheasants to various sportsmen's clubs as a part of the Club Pheasant Program.

The Southeast District again organized and coordinated the fall 2004 and spring 2005 Camp Edwards/Otis Air Force Base white-tailed deer and wild turkey hunts, respectively. SEWD staff cooperated with the Air National Guard, the Senior Environment Corps, the Otis Fish and Game Club and the Environmental Police to preregister hunters, conduct daily check-in and check-out procedures, and staff biological check stations. The fall deer season provided eight days of hunting (2 archery, 2 shotgun, 3 primitive firearm) during which a total of 105 deer were harvested. The spring turkey season provided two full weeks of hunting (Monday-Friday) and a total of 440 hours of outdoor recreation; however, only one male turkey was harvested. The lack of harvested birds was due primarily to poor weather conditions.

The Southeast Wildlife District is responsible for the management and/or control of approximately 39,000 acres of land, including the 15,000 acres of the Massachusetts Military Reservation (MMR). The primary tasks associated with land management in the District include maintenance of access areas, roads and trails; operation and maintenance of many water control structures; vegetation control and manipulations to improve or restore habitat; control of illegal dumping and off-road motorized vehicle trespass; monitoring of terms of Conservation Restrictions; marking boundaries and maintaining signs; and the development of comprehensive management plans.

Specific projects and activities completed in Fiscal Year 2005 include the installation of gates to block illegal off-road vehicle access and limit illegal dumping in the Rocky Gutter WMA and the Quashnet River WMA; and mowing of fields and controlled burns in the Frances A. Crane WMA and Myles Standish State Forest Cooperative WMA. Other activities included creation of a parking area at the Rocky Gutter WMA; maintenance and manipulation of water control structures at the Rochester WMA, Burrage Pond WMA and West Meadows WMA; coordination with the Upland Habitat Restoration Program to manage open field habitat at the F.A. Crane WMA and development of a restoration plan for the Quail Area on the same property. District staff worked closely with the Air National Guard regarding plume contaminant clean-up at the F.A.Crane WMA. In addition, many hours were spent on the issuance and monitoring of several Cooperative Land Management Agreements and Special Use Permits for agricultural and other activities being conducted on MDFW lands.

Technical Advice

Southeast District personnel maintained our cooperative working relationship with the State Fish Hatchery in Sandwich in Fiscal Year 2005, assisting the Hatchery staff with both routine tasks and special activities throughout the year. Specific tasks that were completed with the Hatchery staff include the installation of a new aeration system, maintenance and improvement of computer systems and programs, trout spawning, unloading and storage of trout food, snow plowing and

facilities maintenance. Additionally, District personnel installed a new aeration system on our small stocking tank and have begun an effort to create aerial photo maps of ponds and trout stocking locations. We have also begun updating pond map narratives for southeastern Massachusetts using GIS.

Public Outreach

Southeast District personnel provided outreach, education and coordination for sportsmen and for members of the general public by attending meetings of the Barnstable, Bristol and Plymouth County Leagues of Sportsmen's Clubs, the Mashpee National Wildlife Refuge, the Southeastern Massachusetts Bioreserve Management Team, and the Assawompsett Pond Complex Management Team. Southeast District personnel prepared displays for the Marshfield Fair and staffed displays at the Waquoit Bay National Estuarine Research Reserve's Watershed Block Party, the Freetown State Forest's "Fun in the Forest" Day, the Massachusetts Beach Buggy Association's Annual Meeting, the Barnstable County Rabies Awareness Workshop and the Standish Sportsman's Show. Information was provided to two authors writing books on the region's freshwater fishing opportunities.

Technical Assistance

The Southeast District receives numerous calls from the public and from public and private organizations regarding fisheries and wildlife issues. In FY05, staff responded to a variety of information requests with the primary questions relating to hunting and fishing opportunities and licenses and to problem or nuisance wildlife. Raccoon rabies continued its spread toward the lower Cape and in February of 2005, and a Marston Mills woman was bitten by a rabid coyote. District personnel responded to the scene, conducted interviews and collected important biological and sociological information relative to the incident. Camie Marsh, the SEWD Clerk, continued to exhibit her extensive knowledge of nuisance wildlife issues and responded to many coyote and fox questions as a result of this incident. The Southeast District Manager and Wildlife Biologist continue to offer informational talks about these species to assist local communities in educating their residents about how to live with wildlife. District personnel responded to a wide variety of other fish and wildlife-related requests, provided the appropriate technical information, and conducted site investigations as needed.

A considerable amount of time was spent in providing technical assistance to the Air Force Center for Environmental Excellence and their contractors in relation to the MMR cleanup. Construction impacts on the Crane WMA from the treatment systems and investigational wells were monitored and recommendations were made for reducing impacts on flora, fauna and public use. The fisheries manager was actively involved in monitoring MMR cleanup plans as a member of the Plume Containment Team (PCT).

Central Wildlife District

Administration & Personnel

The vacant Land Agent contractual position was not funded by the Department of Fish and Game during the fiscal year.

Research and Conservation

In a unique initiative, the District established a 300 seedling chestnut orchard at the West Boylston District office in cooperation with the American Chestnut Foundation and DCR.

In a more traditional vein, District personnel assisted in the annual Midwinter Bald Eagle Survey. Eastern bluebird, American kestrel and songbird nesting boxes were constructed and erected on WMAs. Staff assisted in a radio telemetry survey of white-tailed deer, collaring and tracking multiple study animals. Several moose/vehicle collisions were documented and data was collected from those moose carcasses that could be salvaged. Bear damage was assessed and an electric fencing unit loaned to protect bee hives in Hardwick. Peregrine falcons nested successfully in downtown Worcester for the second consecutive year and four chicks were banded.

Nesting rafts for loons were floated at Quabbin and Wachusett Reservoirs. One loon attempted to nest at Paradise Pond in the Leominster State Forest. District staff protected this nest by posting signage invoking Massachusetts General Law Chapter 131, Section 86. A prospecting raft was deployed at Comet Pond in Hubbardston. The District compiled statewide loon nesting data.

A bald eagle nesting attempt at Quaboag Pond in Brookfield produced three chicks which were banded. Eagle nestings at Quabbin Reservoir were monitored in cooperation with the Connecticut Valley Wildlife District. Central District assisted both the Northeast and Southeast Districts with eagle banding efforts in eastern Massachusetts.

Central District staff surveyed the French and Quinebaug watersheds at 17 sites. Six additional fisheries surveys were conducted elsewhere in the District.

Angler creel surveys were conducted on Quaboag and South Ponds for the second consecutive winter. Northern pike were targeted as a follow-up to the December stocking of 16" pike as coordinated by the Spencer Fish and Game Club. Data collected included angler effort during January, February and March and the number and species of fish caught

Enhancement of Recreation

Scheduling and stocking of 12,842 ring-necked pheasant was completed and 7,000 seven week old pheasants were distributed to 21 sportsmen's clubs. Pheasants were released on 18 Wildlife Management Areas (WMAs), 13 town coverts and participating club properties. Bolton Flats was available for the winter pheasant hunting op-

portunity in Central District. No applications for winter pheasant hunting permits were received.

The District participated in the evaluation of shooting range grant applications submitted to the Hunter Education Program and assisted with a Trapper Education course.

Fourteen Wildlife Management Areas were maintained with efforts directed at roads, parking lots, gates, dumping and ATV deterrents. Six boat ramps were visited and trash removed. Sections of boundaries were identified, posted and GPS coordinates taken on several properties.

Hatchery raised trout were stocked in 35 ponds and lakes as well as 22 rivers and 34 streams in Central District. 10,200 trout were stocked in the fall of 2004 and 112,500 were stocked in the spring of 2005.

Broodstock salmon were stocked in 5 ponds and lakes. The salmon originated from the Roger Reed hatchery in Palmer, MA, the White River National Fish Hatchery in Bethel, VT and the Nashua National Fish Hatchery in Nashua, NH. In addition, five thousand tiger muskie fingerlings were stocked in Central District waters.

Technical Advice

Technical Assistance was provided to communities, organizations and members of the public as requested.

Public Outreach

District personnel set up and helped staff the Eastern Fishing and Outdoor Expo at the Worcester DCU Center. The District assisted with the Neighborhood Nature program at Elm Park in Worcester by providing mounted specimens of native wildlife. Staff also coordinated the efforts of local merchants and groups that sponsored the Tags and Trout program at three bodies of water.

The District Manager attended meetings and functions of the Worcester County League of Sportsman Clubs. The District Manager and District Biologists attended meetings with various federal, state and local agencies and private organizations including the Mass. Sportsmen's Council, Nipmuc Rod and Gun Club, Mass. Aquatic Conservation Society, Mass. Audubon Society, the American Chestnut Foundation, the Ecotarium, Bolton Conservation Commission, Sudbury Valley Trustees, Mid-State Trail Committee, Wachusett Greenways, Northboro Trails Committee and the Organization for the Assabet River. Presentations were given to various sporting and civic organizations.

Planning meetings were held with the Templeton Development Center to implement archery hunting on the property. Assistance was provided to the U.S. Army Corps of Engineers at Birch Hill Dam on habitat reclamation efforts. The District coordinated an agency response to DEP on a landfill issue with the potential to impact a WMA. Managers and Biologists attended various staff, planning, professional, training and informational meetings.

An event was held to recognize the addition of the Lubelczyk property to the Raccoon Hill WMA. Issues relating to land acquisition, boundaries, conflicts with abutters, ATV intrusions, mountain bikes, snowmobiles, equestrian activity, invasive plant control and research on WMAs were addressed.

Connecticut Valley District

Administration

The District Manager attended regular meetings of the Hampden County Sportsmen Council, the Hampshire County League of Sportsmen, and the Franklin County League of Sportsmen. The District Manager and the District Biologists participated in various meetings with federal, state and local agencies and land trusts, focusing primarily on land acquisition and management.

Research and Conservation

Valley District staff completed ruffed grouse drumming routes as assigned, assisted with both the resident Canada goose survey and a mute swan survey, and monitored lands in the District for the mid winter bald eagle survey and the wild turkey brood survey.

Black Bear Project

Staff monitored the survival and reproduction of 18 radio collared bears (17 females, 1 male) during the reporting period. One yearling bear slipped its collar and a two year-old bear was shot by a hunter. Nine females were checked in their den sites during February and March to determine reproductive success and first year cub survival. Four of these bears produced a total of 9 newborn cubs (4M:5F). Of the six females expected to have a total of 12 yearling cubs (4M:9F) only four had 10 yearling cubs (3M:8F) that survived the first year. Three barrel traps were set east of the Connecticut River in an attempt to capture a collared female and an ear tagged female.

Moose Project

Staff monitored three radio-collared moose (1 bull, 2 cows) during the reporting period. Staff captured and radio-collared a cow in an urban area and relocated it to a remote forested area. The District Wildlife Biologist investigated a radio-collared bull mortality and determined that the animal had expired from natural causes.

Waterfowl Banding

Staff banded 150 geese and placed neck collars on 29 of those birds at 10 sites. Staff also assisted in the airboat duck banding program.

Wood Duck Program

Staff maintained 180 wood duck nesting boxes at 48 sites. Bluebird and kestrel nesting boxes were maintained at several Wildlife Management Areas as well.

Water Quality Monitoring

District staff conducted stream surveys in the Deerfield River basin in conjunction with DEP and with projects originating at Field Headquarters.

Bald Eagles

The Valley District is now monitoring all breeding territories and banding all eaglets at the Quabbin Reservoir and west to the New York line. Staff checked 10 eagle nests and banded 14 eagle chicks. Staff also climbed to a nest at Quaboag Pond to band 3 chicks; and climbed a nest in Hinsdale, New Hampshire to band one chick. The District Wildlife Biologist assisted in the mid-winter eagle survey (aerial survey) at the Quabbin Reservoir and the Connecticut River, and assisted in compiling and summarizing statewide eagle data as well.

Ravens

Staff climbed and rapelled to band 30 raven chicks at eight sites throughout western Massachusetts.

Peregrines

Staff banded three chicks at the UMASS Library in Amherst and two chicks at Mt. Sugarloaf in Deerfield.

Loons

Three loon rafts were deployed and maintained at the Quabbin Reservoir.

Enhancement of Recreation

Staff stocked 10,000 pheasants on 45 town covers and 10 Wildlife Management Area covers during the six week pheasant hunting season. In addition to the birds released to Wildlife Management areas and to open covers, District staff distributed 1,544 seven-week-old pheasants to six sportsmen clubs within the District that participated in the Club Pheasant Rearing Program.

During the fall, District staff administered a controlled waterfowl hunt at the Ludlow WMA. Eight hunters applied and participated in the hunt.

District staff stocked a total of 126,000 eastern brook, brown, rainbow and tiger trout in fall 2004 and spring 2005. They also stocked 200+ surplus broodstock Atlantic salmon, dividing them among Lake Mattawa (Orange), Lake Metacomet (Belchertown), Fivemile Pond (Springfield) and Lake Congamond (Southwick).

Staff developed a new parking area at the Montague WMA along the Saw Mill River. A gate was installed at Montague WMA as well. Existing signs and access were maintained at all Wildlife Management Areas in the Valley District.

All or portions of boundaries were marked at East Mountain WMA, Honeypot Road WMA, Green River WMA, Satan's Kingdom WMA, Catamount WMA, Herman Covey WMA, Facing Rock WMA, Palmer WMA, and Williamsburg WMA. In a special and massive maintenance effort, staff gathered up 10 yards of household trash that had been dumped illegally over one weekend at the Herm Covey WMA. Dumped items, including appliances and furniture, were collected and disposed of as quickly as possible to discourage further illegal dumping. The area around the house on River Road was fenced to discourage trespassing, although this remains an ongoing problem.

Technical Assistance

District staff provided technical support, manpower and repair capability for the McLaughlin Trout Hatchery, Westboro Field Headquarters and District equipment as requested.

The District's Aquatic Biologist currently serves as Past President of the Southern New England Chapter of the American Fisheries Society and is a member of the Executive Committee of the Northeastern Division of AFS.

Public Outreach

District staff released fish for several fishing festivals, including the Fivemile Pond Festival (Springfield), Forest Lake Derby (Palmer), Heritage Pond Derby (East Longmeadow) and the USFWS Open House (Hadley).

District staffers took a leading role in representing the agency at both the Franklin County Fair and the Springfield Sportsmen's Show. In preparation for the Franklin County Fair, staffers gathered fish from local waters for display at the fair, updated display materials and spent four days working the MDFW booth where they met the public and responded to all manner of questions relating to wildlife.

Waterfowl banding.

In addition to these large events, District staff members represented the agency and offered presentations at a variety of more narrowly focused gatherings including County League meetings, meetings of the Kiwanis Club and the Northampton Wildlife Committee. They also provided instruction at a Project Wild Teacher Workshop and at Holyoke Community College.

Western Wildlife District

Administrative and Personnel

The District Supervisor monitored the Housatonic River PCB clean-up on site and reviewed all pertinent documents with EPA and DEP and their consultants. In May 2005, Wildlife Technician II Jerry Shampang left to pursue employment with the Massachusetts Environmental Police.

Research and Conservation

District staff conducted fisheries surveys as part of our annual monitoring efforts. Stream survey efforts were focused primarily on the Deerfield Watershed. Additional fish population information was gathered on district ponds. Water temperature monitoring was conducted using remote temperature probes as well as hand water meters. District staff also compiled and entered into a database many years of historical fisheries survey information.

All staff participated in gathering data through such projects as goose banding, beaver surveys and eagle surveys. Staff from this District also collected hooded merganser eggs for a DNA study. Staff members conducted censuses on woodcock, grouse and mourning doves. District personnel monitored radio collared deer.

The Wildlife Biologist participated in a Breeding Bird census on the Hy Fox WMA. This survey is comprised of 100 3-minute point count stations plotted throughout 1000 acres. He conducted a rare plant inventory for Small Yellow Lady's-slipper, *Cypripedium parviflorum* on one WMA and searched for state-listed reptiles on the Mount Tekoa WMA with MDFW Herpetologist Jon Regosin.

The Wildlife Biologist documented the occurrence of Rich Mesic Woods on the Chalet, Moran and Stafford Hill WMAs with the assistance of DFW Forester Brian Hawthorne. He also located populations of Red-striped sedge, *Carex trichocarpa*, Woodland-millet, *Milium effusum*, and Mourning Warbler, *Oporornis philadelphia*

Enhancement of Outdoor Recreation

District staff stocked hatchery trout into 26 lakes and ponds and 56 rivers and streams. Broodstock salmon from federal fish hatcheries in Nashua NH and White River Junction in VT, and from our own Roger Reed fish hatchery, were stocked into Windsor Pond, Onota Lake, Laurel Lake, Stockbridge Bowl, and Goose Pond. District personnel also stocked tiger muskie and northern pike in Pontoosuc Lake and Shaw Pond.

District personnel stocked 4,000 pheasants on management areas and local covers throughout the district. District staff collected biological data at deer and bear check stations throughout the district. Staff members participated in the paraplegic sportsmen's special deer hunt in northern Berkshire County.

The Western District Land Agent, Forester and other staff marked boundaries on management areas, conservation restrictions and conservation easements. Staffer Joe Kirvin coordinated the special deer hunt for paraplegic sportsmen in northern Berkshire county.

Technical Assistance

The District Aquatic Biologist investigated three fish kills and was deposed in a criminal investigation of illegal pond dewatering.

District staff issued a License Agreement to the Town of Chester for a bridge replacement project and conducted an Environmental Land Assessment of 512 acres in Otis prior to purchase of the same.

Staff set up two electric fences to protect beehives in Great Barrington, and an aviary (Otis) from predation by black bears. Staffers rescued a whitetail deer from below the Willow Mill Dam on the Housatonic River and another deer from inside Pittsfield High School.

The District Wildlife Biologist provided technical assistance and attended court hearings for a criminal investigation of illegal tree cutting on management area property.

District staff delivered an orphaned bobcat kitten to Tufts Veterinary Wildlife Unit for evaluation. They rescued several owls and hawks, including an injured peregrine falcon which was captured at a home in Hancock, and transported them to local raptor rehabilitator Tom Ricardi who provided rehabilitation and subsequent release. They also rescued an exhausted young moose from a snow-filled ditch and relocated it to a nearby WMA; and euthanized a sick moose at Savoy State Forest.

Public Outreach

The District Supervisor represented the Division at the monthly meetings of the Berkshire and Hampshire County Leagues and represented the Division at multiple Monterey Selectboard meetings regarding Lake Garfield access issues. He also worked with local legislators and with MDFW administrators as they addressed the issue of snowmobile access to WMAs.

The District Aquatic Biologist attended numerous meetings with groups including the following; interagency watershed teams on the Housatonic, Hoosic, Deerfield and Westfield Watersheds, Berkshire County League of Sportsmen, Army Corps of Engineers, pond associations, Riverways Program, Natural Resource Conservation Service, Department of Conservation and Recreation, and local government representatives. The District Wildlife Biologist served as a task force mem-

ber for the New England Plant Conservation Program (NEPCoP) and represented the agency at the NEPCoP's annual meeting in Framingham. He also worked with the Northeast Chapter of the Wildlife Society, participated in the Large Animal Response training in Belchertown, and represented the agency at an Old Growth Forest-Lichen workshop at Monroe State Forest.

District personnel staffed the *MDFW* booth at the Springfield Sportsman's show. Public presentations offered by District staff included programs for Trout Unlimited, Americorps/SCA, Big Pond Association annual meeting, Deerfield River Festival and Boy Scouts of America.

District Personnel

Northeast District

Patricia Huckery, *District Supervisor*
Dennis McNamara, *Land Agent*
Sue Ostertag, *Clerk*
Erik Amati, *Wildlife Manager*
John Sheedy, *Fisheries Manager*
Steve Wright, *Wildlife Technician*
Bob Derosiers, *Wildlife Technician*
Michael Huguenin, *Wildlife Technician*
Rachel Nichols, *Wildlife Technician*

Southeast District

Jason E. Zimmer, *Southeast District Supervisor*
Steve Hurley, *Fisheries Manager (acting District Supervisor 07/01/2004 – 01/21/2005)*
Dick Turner, *Wildlife Manager*
Ed Kraus, *Wildlife Technician*
Jeff Breton, *Wildlife Technician*
Daniel Fortier, *Wildlife Technician*
James Pinheiro, *Wildlife Technician*
Camie Marsh, *Secretary*
Joan Pierce, *Land Agent*

Central District

Bill Davis, *District Supervisor*
Mark Brideau, *Fisheries Manager*
Bob Chapin, *Wildlife Technician*
Paul Leboeuf, *Wildlife Technician*
Priscilla MacAdams, *Clerk*
Bridgett McAlice, *Wildlife Manager*
Scott Kemp, *Wildlife Technician*
Michael Morelly, *Wildlife Technician*
Vacant, *Land Agent*

Connecticut Valley District

Ralph Taylor, *District Supervisor*
David Fuller, *Wildlife Manager*
David Basler, *Fisheries Manager*
Barbara Bourque, *Clerk*
Gary Galas, *Wildlife Technician*
Kevin Pelowski, *Wildlife Technician*
Walter Tynan, *Wildlife Technician*
James Wright, *Wildlife Technician*
Will Steinmetz, *Land Agent*

Western District

Tom Keefe, *District Supervisor*
Anthony Gola, *Wildlife Manager*
Andrew Madden, *Fisheries Manager*
Dale Beals, *Wildlife Technician*
Elna Castonguay, *Clerk*
Joseph Kirvin, *Wildlife Technician*
Nancy Lamb, *Wildlife Technician*
Jerry Shampang, *Wildlife Technician*
Peter Milanesi, *Land Agent*

WILDLIFE LANDS

William J. Minior
Chief of Wildlife Lands

FY05 was a very interesting year for land acquisition. Although initial funding was moderately low, the agency was able to reap the benefits of year end slippage, Forest Legacy funds and environmental damage mitigation funding for a total land expenditure of nearly nine million dollars. This enabled the Massachusetts Division of Fisheries and Wildlife (MDFW) to protect approximately three thousand acres with a considerable amount of this land being located in the eastern part of the state. Twenty six acquisitions were completed statewide with three to seven projects closed in each district. (Figures in this report are for 8/3/04 through 8/4/05)

Individual acquisitions varied in size from a 0.5 acre Conservation Restriction (CR) for access on Agawam Mill Pond in Wareham to the 512 acre Assemblies of God purchase in Otis. Thirteen projects were in excess of 100 acres in size including five Conservation Easements (CE), the largest being the 255 acre Pepperell Springs property. Other large CEs of note include 186 acres in Hinsdale and Windsor, 102 acres in Dalton, 127 acres in Groton, and 188 acres in Plymouth. The Division of Capital Asset Management transferred the care and control of two tracts including 117 acres along the Canoe River in Norton.

Once again non-profit environmental organizations played a key role in the MDFW's acquisition efforts. The Trust for Public Lands was instrumental in acquisition and protection of the Pepperell Springs property, and protection of the Fusini and Holiday Farms properties in Hinsdale and Windsor would not have occurred without assistance from the Berkshire Natural Resources Council, Inc. The East Quabbin Land Trust provided the major thrust in the protection of the long running Zander project, while the Franklin Land Trust assisted in the protection of the Jackoski parcel in Sunderland. Other protection and conveyances were made in the Southeast by the Massachusetts Land Conservation Trust and the Wareham Land Trust, Inc. Additional assistance and support in the MDFW's FY05 land protection effort was provided by other land trusts and groups.

Four relatively large projects were utilized for federal reimbursement purposes with the U.S. Fish & Wildlife Service. Funds remaining in the Plymouth Challenge were allocated in a land protection effort which placed a Conservation Easement on 188 acres with the promise of an additional 1,000+/- acres of CE in FY06. All considered, FY05 was a fairly successful land protection year with nearly 3,000 acres protected. The MDFW currently has care and control/management of over 157,000 acres statewide.

Fiscal Year 2005

Western District	
Expended	$2,221,896.00
Acreage	1,361.5
Cost/acre	$1,631.95
Valley District	
Expended	$ 745,750.00
Acreage	155.4
Cost/acre	$4,798.91
Central District	
Expended	$543,625.00
Acreage	420.3
Cost/acre	$1,293.42
Northeast District	
Expended	$3,088,000.00
Acreage	513.6
Cost/acre	$6,012.46
Southeast District	
Expended	$2,203,400.00
Acreage	505.3
Cost/acre	$4,360.58
TOTAL EXPENDED:	$8,802,671.00
TOTAL ACREAGE ACQUIRED:	2956.1
AVERAGE COST PER ACRE:	$2,977.81

Above figures include departmental acquisitions. It should be noted that the acreage figures and costs of those properties acquired with FY05 funds and RECORDED for FY05 between 8/3/04 and 8/4/05 are included herein. Ancillary costs are not included.

Western District

Five acquisitions were completed in the Western District on five different areas. The largest project was acquisition of the fee interest in the 512 acre Assemblies of God property in Otis which added significantly to the Farmington River WMA. The 428 acre Sena property in Worthington provided a substantial woodland boost to the Fox Den WMA. The 134 acre Munson acquisition in Chester is a major link in connecting the Hi Fox and Fox Den WMAs and providing protection and access to the Middle Branch of the Westfield River. Two Conservation Easements were completed including the new 102 acre Housatonic River access in Dalton and Hinsdale acquired from Crane and Co. Inc., and the 186 acre addition to the Dalton Fire District WCE acquired from the Berkshire Natural Resources Council, Inc.

Approximately 1,362 acres in six towns were protected by the MDFW in FY05 at a cost of about 2.2 million dollars. Land protection costs have increased dramatically in recent years and the Western District is no exception.

Valley District

One hundred and fifty five acres were protected in the Connecticut Valley District in FY05 through five separate land protection projects. Two projects combined to add about 126 acres to our East Mountain Wildlife Management Area (WMA) which is a high priority area for our Natural Heritage program. Other resource rich acquisitions include the 14 acre addition to the Honey Pot Road Natural Heritage Area in Westfield and the seven acre Mount Toby acquisition in Sunderland. The Honey Pot Road acquisition is the last phase of a multi year project with a local landowner and will prevent extensive development in this area which is especially rich in herpetological resources. The Franklin Land Trust assisted in the protection of the wooded Mount Toby parcel which is another piece of this acquisition puzzle. Twenty-eight acres abutting the Palmer WMA will provide additional woodland habitat, access and recreational opportunity.

Central District

Six acquisition projects protecting over 420 acres in five towns were completed in FY05. Parcels ranged in size from the 3.8 acre Mass Highway transfer abutting the Quaboag WMA in Brookfield to the 172 acre addition to the Muddy Brook WMA in Hardwick. The Hardwick project was completed after a multi-year effort by the East Quabbin Land Trust on our behalf. Norcross Wildlife Foundation, Inc. conveyed a 105 acre parcel which also abuts our Muddy Brook WMA, increasing this WMA to nearly 1200 acres. A two parcel 70 acre addition to the Mine Brook WMA provides additional habitat protection and recreational opportunity in this vast woodland area, while a 17 acre addition to the Oakham WMA provides closure to a long standing acquisition effort. The new 52 acre Chockalog Swamp NHA was acquired in the Town of Uxbridge.

Northeast District

The Northeast District completed three acquisitions, each exceeding 125 acres and one exceeding 250 acres. These are relatively large tracts for the NE, where development is extensive and land prices extremely high. Protection of the 255 acre Pepperell Spring property was a joint effort with TPL purchasing the property and conveying a CE to the MDFW and the fee interest to the Town of Pepperell. A 1.38 million dollar Forest Legacy grant made this project possible. The district was also the beneficiary of 1.2 million in environmental damage mitigation funding which allowed for the acquisition of the new 132 acre Dunstable Brook WMA located in Dunstable and Tyngsborough. The new 127 acre Groton WCE enhances existing protected open space and provides valuable herp habitat and recreational opportunity. The district was the beneficiary of over two and a half million dollars of outside funding in 05 which enabled the district to protect approximately 514 acres of open space.

Southeast District

Seven projects ranging in size from the half acre Agawam Mill Pond access to the 188 acre Plymouth Pine Hills CE were completed in the Southeast District in 05. Acquisitions took place in seven different towns and represented seven different areas, protecting over five hundred acres. The City of Plymouth conveyed a CE on the 188 acre Plymouth Pine Hills property with a promise to convey CEs to the MDFW and DCR on approximately 1,000 additional acres in FY06 as closure of the Plymouth Challenge opportunity. This should help to insure the lasting protection of considerable rare and endangered species habitat in the City of Plymouth. The new 163 acre Church Homestead WMA in the Town of Rochester was acquired after years of negotiating effort by the SE district land agent. This large tract contains extensive frontage on the Mattapoisett River and public ownership will help to insure habitat protection and recreational opportunity as well as provide aquifer protection. The Division of Capital Asset Management transferred care and control of approximately 117 acres of Mass Highway land along the Canoe River in Norton to the MDFW for habitat protection and access purposes. Other access projects included a CE on the 5.2 acre Bread and Cheese Brook property in Westport, courtesy of the MA Land Conservation Trust, Inc., the 0.5 acre CE conveyed by the Wareham Land Trust, Inc. as access to the Agawam Mill Pond in Wareham, and the 1+/- acre Robbins Pond parcel in East Bridgewater. Thirty one acres of wooded backland were also added to the Haskell Swamp WMA.

Land Agents

Peter Milanesi, *Western District*
Bill Steinmetz, *Connecticut Valley District*
Phil Truesdell, *Central District, Acting*
Dennis McNamara, *Northeast District*
Joan Pierce, *Southeast District*

WESTERN DISTRICT

Wildlife Management Areas: 29	Acres	Tract #
Agawam Lake	779.8	254
Becket	239.6	60
Chalet	7,071.5	86
Cummington	194.0	240
Day Mountain	332.4	264
Eugene Moran	1,559.0	91
Farmington River	1,760.3	211
Fisk Meadows	1120.8	88
Fox Den	4,419.1	100
Green River	489.2	125
Hancock	204.0	123
Hinsdale Flats	1,544.5	89
Hiram H. Fox (formerly Canada Hill)	3,084.8	48
Hop Brook	424.8	112
Housatonic Valley	817.9	67

John J. Kelly	267.0	85
Jug End*	1,233.8	191
Knightville	721.0	244
Lilly Pond	349.7	255
Maple Hill	345.1	148
Mount Tekoa	1,361.0	231
Otis	83.5	124
Peru (Includes Tracy Pond)	5,106.9	30 & 113
Powell Brook	224.0	115
Savoy	1,282.8	64
Stafford Hill	1,591.6	56
Taconic Mountain	157.3	232
Three Mile Pond	1,095.5	181
Walnut Hill	812.0	190
	38,672.1 acres	

*Jointly owned and managed with DCR

Wildlife Conservation Easements: 11

Alford Spring	640	269-1
Ashfield	101	247-1
Blanford	986	249-1,2&3
Chesterfield	491	248-1&2
Dalton Fire District	2,754	253-1
Huntington	78	250-1
Mount Plantain	1,337.4	241
New Marlborough	239	246-1
Sandisfield	692	245-1,2&3
Tyringham	678	252-1
Wright/Mica Mill	1782	243
	9,735.4	

River Access: 4

Hoosic River	5.9	213Hoosic
River	5.9	213Hoosic
River	5.9	213Hoosic
River	5.9	213
Housatonic River	129.5	103
Konkopot River	8.8	114
Westfield River (W)	373.0	94
	517.2	

Wildlife Sanctuaries: 2

E. Howe Forbush	268.0	16
Grace A. Robson	69.5	24
	337.5 acres	

Wildlife District: 1

District Headquarters	2.1	13

Natural Heritage Areas: 8

Bullock Ledge	15.5	212
Dolomite Ledges	198.3	227
Fairfield Brook	203.3	226
Hawley	138.0	277
Jug End Fen	38.8	147
Kampoosa Fen	72.0	173
Lanesboro	88.6	233
Nordeen Marsh	22.9	102
	777.4	

TOTAL WESTERN DISTRICT 50,041.7 acres

VALLEY DISTRICT

Wildlife Management Areas: 29	**Acres**	**Tract #**
Catamount	413.0	119
Coy Hill(V)	201.6	221
East Mountain	347.9	202
Facing Rock	1,556.1	179
Herman Covey**	1,475.1	49
Honey Pot/Westfield	227.0	174
Lake Warner	94.8	180
Leadmine(V)	344.0	170
Leyden	359.0	200
Millers River(V)	65.84	A62
Montague	1,449.6	118
Montague Plains	1 ,493.0	234
Mount Toby	262.5	222
Orange	1,534.2	
229		
Palmer	1,045.3	178
Pauchaug Brook*	161.3	74
Poland Brook	618.7	70
Satan's Kingdom	1,867.9	107
Southampton	130.9	262
Tully Mountain	1,187.4	225
Tully River(V)	59.0	272
Wales	207.1	172
Warwick	172.0	126
Wendell	585.7	144
Whately	360.6	182
Whately Great Swamp	369.5	235
Williamsburg	88.0	127
	16,677.1 acres	

*WMA and Connecticut River Access

**Combination-Hatchery(McLaughlin), WMA and District Hdqtrs.

Wildlife Conservation Easements: 3

Amherst/Pelham ALA	36.9	274
Ludlow Reservoir	1750.0	271
North Quabbin CRs		257
New Salem	59.0	
Tully River	250.0	
	2,095.9	

Islands (Connecticut River): 2

Shepherd's Island	15.0	80
Sunderland Islands (2)	9.0	189
	24.0	

Fish Hatcheries: 4

Bitzer	150.6	7
McLaughlin (incl. in Herman Covey WMA)		
Reed	301.0	8
Sunderland	47.7	9
	499.3	

Game Farm: 1

Wilbraham*	137.2	4

*Turned over to Town in 1999. CR retained on 137.2 acres.

River Access: 9

Connecticut River	82.3	117
Deerfield River	20.5	201
Green River(V)	58.2	185
Mill River	23.0	239
Sawmill River	51.0	176
Sibley Brook	13.39	152
Tully Brook	77.0	177
Ware River(V)	14.0	A63
Westfield River(V)	76.8	111
	416.2	

Pond Access: 3		
Little Alum Pond	0.5	128
Lake Lorraine (PAB)	0.26	129
Lake Rohunta	2.52	209
	3.3	

Natural Heritage Areas: 5		
Rainbow Beach	30.9	142
Mt. Toby Highlands NHA	100.0	159
Mt. Tom	72.7	238
Darwin Scott Memorial	27.3	157
Honey Pot NHA	184.1	175
	415.0	

TOTAL VALLEY DISTRICT **20,268.0 acres**

CENTRAL DISTRICT

Wildlife Management Areas: 41	**Acres**	**Tract #**
Ashby	48.5	134
Bennett	281.2	A77
Birch Hill	3,753.0	50
Bolton Flats	1,127.3	90
Breakneck Brook	1,409.0	158
Coy Hill***	549.2	221
E. Kent Swift	200.5	84
Fish Brook	221.0	130
Four Chimneys	200.0	77
High Ridge*	2,326.8	98
Lackey Pond	150.5	165
Lawrence Brook	947.5	108
Leadmine(C)	296.0	170
Martha B. Deering	181.6	237
McKinstry Brook	348.3	184
Merrill Pond (System)	729.0	10
Millers River(C)	3,453.1	62
Mine Brook	780.5	258
Moose Brook	495.3	132
Moose Hill	567.1	59
Muddy Brook	1183.0	167
North Brookfield	80.0	278
Oakham	707.6	153
Palmer***	208.0	178
Phillipston	3,411.3	31
Popple Camp	1,161.0	A31
Poutwater Pond (formerly North Street)	378.0	133
Prince River	749.0	113
Quaboag River	1,677.4	55
Quacumquasit	179.9	131
Quisset	507.1	196
Raccoon Hill	628.0	151
Richardson	467.2	106
Savage Hill	1,109.7	150
Thayer Pond	131.0	171
Tully Mountain	119.5	225
Tully River(C)	9.0	272
Ware River(C)	291.4	63
Westboro****	894.6	35
Winimusett	651.1	61
Wolf Swamp	913.9	217
	33,523.0 acres	

*Management and control under DFW 1,673.7 ac
DFW owned in fee 282.0 ac

*** Listed and managed under Conn. Valley District

**** 467 acres added from a 97 DCAM transfer

Wildlife Conservation Easements: 7		
Burnshirt River	5.64	160
Carter Pond	280.0	155
Hunting Hills	53.7	183
North Quabbin CRs		257
Phillipston (Secret Lake)	212.0	
Tully River	6.6	
Quabbin	28.0	161
Stillwater River	29.0	162
	614.9	

Wildlife Sanctuaries: 2		
Susan B. Minns	140.0	20
Watatic Mountain	100.0	25
	240.0	

River Access Areas: 5		
Blackstone/West River	28.0	76
Five Mile River(inc 17 ac CR)	195.5	120
Natty Brook	95.2	220
Quinapoxet River	32.0	66
Seven Mile River	77.0	275
	427.7 acres	

Natural Heritage Areas: 4		
Chockalog Swamp	52.5	286
Clinton Bluff NHA	42.0	154
Podunk Marsh	15.0	104
Quag Pond Bog	31.0	197
	140.5	

Marshes: 1		
Quinsigamond Marsh	59.0	156

Pond Access: 6		
Cusky Pond	23.75	163
Fisherville Pond	1.6	166
Glen Echo Lake	1.0	149
Mossy Pond	16.1	267
South Meadow Pond	0.25	266
Sputtermill Pond	58.5	164
	101.2	

Forest: 2		
Hamilton	70.0	75
Northboro	88.8	51
	158.8	

TOTAL CENTRAL DISTRICT **35,265.1 acres**

NORTHEAST DISTRICT

Wildlife Management Areas: 11	**Acres**	**Tract #**
Ashby	1,020.0	134
Crane Pond	2,235.6	38
Dunstable Brook	131.6	283
Hunting Hills*	356.4	183
Martin H. Burns	1,554.5	37
Mulpus Brook	177.7	203
Nissitissit River	364.9	71
Pantry Brook	410.9	29
Salisbury Marsh	468.5	279
Squannacook River**	1,063.4	53
William Forward	2,122.5	36&82
	9,906.0	

*Includes 53.7 acre CR in CD

** 21 acres title vested in DEM

Wildlife Conservation Easement (WCE): 3		
Ashby	148.0	280
Groton	127.0	289
	530.0	
Wildlife Sanctuaries: 5		
Carr Island	110.5	18
Egg Rock	2.0	17
J.C. Phillips	391.0	15
Milk Island	29.0	19
Ram Island	20.0	23
	552.5	
Game Farm: 1		
Ayer	96.9	1
Wildlife District: 1		
District Headquarters	1.9	11
Pond System: 1		
Flint Pond	81.9	28
Forest: 2		
Acton	36.0	207
Townsend	60.0	33
	96.0	
Pond Access: 4		
Knops Pond	0.6	52
Mascopic Lake	0.3	65
Baddacook Pond	0.16	A52
Long Sought For Pond	1.0	143
	2.06	
Salt Marsh: 1		
North Shore	335.65	47 & 58
River Access: 6		
Concord River	23.6	97
Ipswich River	1.8	204
Nashua River	68.5	110
Trapfall Brook	45.4	109
Sudbury River*	139.1	121
Weymouth Back River**	16.4	135
	294.8	
Natural Heritage Areas: 4		
Boxboro Station	25.5	188
Eagle Island	5.0	199
Elbow Meadow	132.8	101
Hauk Swamp	55.0	206
	218.3	

TOTAL NORTHEAST DISTRICT 12,116.0 acres

*Held jointly with D.E.M.

**Departmental acquisition

SOUTHEAST DISTRICT

Wildlife Management Areas: 19	**Acres**	**Tract #**
Burrage Pond	1,638.0	265
Copicut	3,762.1	141
Church Homestead	163.0	287
Dartmoor Farms	473.0	236
Erwin Wilder	450.0	A83
Frances A. Crane	1,912.8	27
Gosnold	3.5	96
Haskell Swamp	2,818.7	218
Hockomock Swamp	4,453.7	83
Hyannis Ponds *	357.0	187
Meetinghouse Swamp	109.0	214
Noquochoke	204.6	208
Peterson Swamp	250.0	81
Purchade Brook	120.0	215
Red Brook	400.0	260
Rochester	70.0	57
Rocky Gutter	3,054.7	68
Taunton River	179.0	219
West Meadows	221.9	34
	20,641.0	
Wildlife Conservation Easements: 5		
Acushnet River	30.2	263
Angeline Brook	50.7	273
Camp Cachalot	789.0	223
Plymouth Pine Hills	188.0	288
Santuit Pond	293.0	268
	1,350.9	
Wildlife Sanctuaries: 4		
Billingsgate Island	0.5	14
Penikese Island	60.0	21
Ram Island	2.0	22
Tarpaulin Cove	4.5	93
	67.0	
Wildlife District: 1		
District Headquarters	23.8	12
Fish Hatcheries: 1		
Sandwich	60.0	5
Game Farm: 1		
Sandwich	133.0	3
Salt Marsh: 5		
Brayton Point	2.2	169
Chase Garden Creek	56.4	205
Eastham	7.4	136
English	191.5	146
Fox Island	82.5	192
South Shore	22.4	69
	362.4	
River Access: 7		
Bread & Cheese Brook	5.2	291
Canoe River	116.6	282
Childs River	0.2	193
Mashpee River	56.5	78
Nemasket River	0.5	122
Quashnet River**	426.0	32
Taunton River	8.9	219
	613.9	

* NHESP priority area-Departmental taking

** 360 acres of Quashnet held jointly with DEM

Pond/Coastal Access: 13		
Agawam Mill Pond	1.7	216
Bakers Pond	1.7	79
Bearse Pond	5.8	72
Clapps Pond	68.4	87
Cooks Pond	3.0	73

Dogfish Bar Beach (PAB)	2.4	210
Lake Snipatuit	0.5	92
Robbins Pond	1.0	284
Sandy Point	0.2	54
Scorton Creek	5.5	228
Spectacle Pond	0.3	224
Triangle Pond	81.9	256
Wakeby Pond	15.9	242
	188.3	
Military Lands: 7		
Dillingham Lot	37.0	
Fisk Forestdale Lot	117.0	46
Hog Pond Lot	26.2	42
Lawrence Pond lot	10.0	43
Mashpee Pond Lot	25.0	40
Poponesset Beach	2.0	41
Springhill Lot	7.0	44
	224.2	
Hatchery Land: 1		
No. Attleboro Hatchery	36.5	99
MA Military Reservation (MMR)	15,000.0	281
Fisheries & Wildlife Area: 3		
Muddy Pond	72.0	95
Provincetown Rte.6 Corridor	122.0	276
South Barrier Beach(Leland)	99.5	194
	293.5	
Natural Heritage Areas: 11		
Grassy Pond	59.4	168
Grassy Pond (Dennis)	7.2	230
Harlow/Cooks Pond	51.9	145
Head of the Plains	2.0	138
Katama Plains *	18.5	140
Mashpee Pine Barrens	193.2	105
Miacomet Heath	3.8	186
Olivers Pond	12.0	139
Sly Pond	192.0	137
South Triangle Pond	10.3	198
Thad Ellis	1.5	195
	556.7	
TOTAL SOUTHEAST DISTRICT	**39,550.7 acres**	

Total Acreage Area by Area Type
(Through FY05)

Wildlife Management Areas: 127	119,419.2 acres
Wildlife Sanctuaries: 13	1,197.0
Fish Hatcheries: 5	559.3
Game Farms: 3	367.1
River Access: 31	2,269.8
Salt Marsh: 7	698.0
Lake, Pond & Coastal Access: 26	295.4
Fisheries & Wildlife Areas: 3	293.5
NHESP Areas: 32	2,108.0
Conservation Restriction: 29 (Some CRs are included in WMAs)	14,327.1
MA Military Reservation: 1	15,000.0
Other*	855.6
GRAND TOTAL	157,390.0

**Includes: Pond Systems, Military Lands, Forest Areas, Wildlife Districts, Islands, Hatchery Land, MDC/F&W Areas and Marsh Management Areas.*

Above figures include departmental acquisitions.

Habitat management.

FEDERAL AID PROGRAM

Kristin McCarthy
Federal Aid Coordinator

Project Objectives: To implement the Division of Fisheries and Wildlife's Federal Aid program, acting through the Deputy Director, including overview of documentation, reporting, compliance with acts and regulations, and other requirements for administration of federal grants, as well as serving in liaison between the grantee and the Region 5 office of the U.S. Fish and Wildlife Service, grant administrator for the U.S. Department of the Interior.

Federal Aid in Wildlife Restoration
(Pittman-Robertson)

The Massachusetts Division of Fisheries and Wildlife (MDFW) apportionment of Federal Aid in Wildlife Restoration funds — $2,330,650.00 this year – increased compared to last year's apportionment. These funds are available for wildlife restoration projects and hunter education. Six projects were reimbursed with these funds including hunter education, wildlife population trends and harvest surveys, waterfowl research and management, wildlife habitat management, program coordination, and land acquisition.

Federal Aid in Sport Fish Restoration
(Dingell-Johnson and Wallop-Breaux):

The State's Federal Aid in Sport Fish Restoration Act apportionment of $2,946,913 is an increase compared to last year's apportionment. These funds were divided as follows: The Department of Fish and Game Public Access Board (PAB), which is responsible for constructing and maintaining motorboat access facilities, received $ 442,036.95 (15%). The balance of $2,504,876.05 was divided equally ($ 1,252,438.03 each) between the Division of Marine Fisheries and the Division of Fisheries and Wildlife (MDFW). Nine grants were reimbursed with the PAB and MDFW share of the D-J and W-B funds. The Public Access Board in cooperation with MDFW had five boat accommodations grants active in FY05. The MDFW had four projects reimbursed under the Sport Fish Restoration Program. The MDFW's fish restoration activities include aquatic resources education, program coordination, hatchery operations, hatchery maintenance, fish distribution, and anadromous fish coordination and technical assistance.

State Wildlife Grant Program (SWG)

The MDFW's FY05 State Wildlife Grant apportionment of $945,933.00 was increased from the previous year. SWG funds were obligated to five projects. Activities reimbursed under SWG funds include fish community research, anadromous fish restoration, biodiversity impact review, biodiversity inventory and research, biodiversity conservation mapping and planning, habitat evaluation, and four land acquisitions. SWG funds were also used in the development of our Comprehensive Wildlife Conservation Strategy (CWCS). In order to establish eligibility for continued SWG funding the MDFW must develop a CWCS and submit it to the USFWS by October 5, 2005. Our commitment to develop this CWCS under SWG was submitted and approved on April 10, 2002.

Over the past few years a group of MDFW employees has worked to develop the draft CWCS. John O'Leary, CWCS Project Leader, presented the draft to the Fisheries and Wildlife Board and the Natural Heritage & Endangered Species Advisory Committee in April and May of 2005. The draft CWCS was posted on the MDFW homepage for a six week public comment period beginning on May 20, 2005. Any comment received will be used to amend the CWCS.

The Endangered Species Act (Section 6)

The Division of Fisheries and Wildlife continues to receive minimal Endangered Species Section six funding. Our entire FY 2005 apportionment of $27,600.00 was used to reimburse a portion of two endangered species recovery projects (Piping Plover and Bald Eagle).

Landowner Incentive Program

The MDFW's FY 05 combined award of $655,000.00 under the competitive Land Owner Incentive Program represents a $425,000 decrease compared to previous awards. The FY05 award was divided into two tiers. Our FY 2005 Tier I funding of $180,000.00 will be used for project coordination. The remaining balance of $475,000.00 (Tier II) will be used to implement the Land Owner Incentive Program. Since July 2004, when MDFW hired the Land Owner Incentive Program Coordinator, a great deal of progress has been made in implementing the program. On the ground habitat improvement projects are scheduled to begin in July 2005. For more information relating to MDFW's FY05 activities under the Land Owner Incentive Program, please see the Landowner Incentive Program annual report elsewhere in this publication.

Chronic Wasting Disease Surveillance and Management

In FY04, through a grant provided by the US Department of Agriculture, Animal and Plant Health Inspection Service, the MDFW established Massachusetts' Chronic Wasting Disease Surveillance and Management Program. The FY05 CWD apportionment of $53,571.00 represents an increase over last year's apportionment of $44,648.00. The CWD funds are only used to fund the MDFW's CWD Surveillance and Management Program. For more information relating to MDFW's FY05 activities under the Chronic Wasting Disease Surveillance and Management Program please see the Wildlife Section (page 22).

Audits

Beginning in FY04, the MDFW contracted with the Auditor of the Commonwealth to conduct an audit of all Sport Fish and Wildlife Restoration grants administered by the agency for fiscal years 2001 and 2002. This state audit was concluded in FY05. In addition to the state audit, the US Department of Interior, Office of the Inspector General (OIG) initiated a federal audit of all Sport Fish and Wildlife Restoration grants administered by the MDFW for fiscal years 2003 and 2004. These federal audits are conducted once every five years. The OIG completed their field review in May of 2005 and the exit conference was held on May 24, 2005. The federal audit will be concluded in FY06 after the draft audit has been received and a Division response developed. The Federal Aid Coordinator and staff from the Boston Office spent considerable time facilitating both the federal and state audits by providing records, performing additional data analysis, conducting site visits, and coordinating audit efforts within the agency.

In June 2005, representatives from the U.S. Department of Interior and the US Fish and Wildlife Service Diversity and Civil Rights Department informed the Division that they would be conducting a Civil Rights Audit of the Division of Fisheries and Wildlife. These Civil Rights Audits are conducted periodically by the Department of Interior to monitor compliance of agencies participating in federal assistance programs with various Civil Rights Acts. The MDFW's previous Civil Rights audit was conducted in 1992. Even though the 2005 audit will not be conducted until FY06, the federal aid coordinator spent considerable time providing the auditors with requested documentation.

Other Matters

Additional Federal Aid Coordinator's duties include responding to requests for information, public inquiries, MDFW inventory management, overview of projects performance and financial reporting, project assistance (both field and office), field visits, and to serve as the liaison between U.S. Fish and Wildlife Federal Aid personnel and the MDFW.

Project Personnel

Kristin McCarthy, *Federal Aid Coordinator*

Jessica Lane, *Assistant to Federal Aid Coordinator*
Debbie McGrath, *Federal Aid Bookkeeper*
John O'Leary, *Grants Specialist and CWCS Development Coordinator*

MAINTENANCE & DEVELOPMENT

Gary Zima
Senior Planner

Massachusetts Division of Fisheries and Wildlife maintenance and development projects enable the agency to address numerous upgrades and improvements to our state-wide properties. Emphasis in FY05 was placed on the final phase of clean up on the High Ridge Wildlife Management Area (WMA). TMC Services of Bellingham, MA was hired to perform the remediation of the Gardner landfill. Operations there consisted of the excavation, transport and off-site disposal of landfill solid waste materials.

The Senior Planner is also responsible for purchasing related to the large equipment needs of the agency. During FY05 the Division underwrote the replacement of three trucks and one tractor within the Division fleet of vehicles. The three large trucks purchased were 2005 Chevrolet diesel flatbeds. These vehicles were for the Connecticut Valley, Southeast and Central Wildlife Districts. A Kubota diesel tractor with attached boom mower was purchased for the Northeast Wildlife District Office. To cover the growing copier needs of the expanding Westboro Field Headquarters staff, the final equipment upgrade involved replacing the main copy machine with a new Toshiba Digital high volume office copier.

Administrative Staff

Gary Zima, *Senior Planner*

Debbie McGrath,
Administrative Assistant and Clerical Supervisor

LEGISLATIVE REPORT

Jack Buckley
Deputy Director & Legislative Liaison

Chapter 289 0f the Acts of 2004 August 9, 2004

AN ACT AUTHORIZING THE DIVISION OF FISHERIES AND WILDLIFE TO TAKE OR ACQUIRE CONSERVATION RESTRICTIONS IN AND TO LANDS OF THE TOWN OF CLINTON.

Summary:

Authorized the Division of Fisheries and Wildlife to take a 17 acre parcel of land in the town of Clinton and subsequently convey the 17 acres to the town of Clinton in exchange for a conservation restriction on approximately 500 acres of land owned by the town of Clinton.

PERSONNEL REPORT

Peter Burke
Personnel Officer

New Hires

Name	Title	Date	Type of Position	Comment
MacKenzie, Kenneth	Scientist	07/11/04	Contract	
Simmons, Alecia	Receiving Teller I	08/01/04	Permanent	From Contract Position
Garvey, Jenna	Researcher	08/22/04	Contract	
Morelly, Michael	Wildlife Technician II	09/12/04	Permanent	
Nein, Daniel	Conservation Biologist II	10/03/04	Permanent	
Currier, Amber	Wildlife Technician I	11/01/04	Permanent	
Johnson, Jason	Wildlife Technician I	11/01/04	Permanent	
Wooley, Tara	Researcher	11/01/04	Contract	
Ostrowski, Andrew	Wildlife Technician I	11/08/04	Permanent	
Veinotte, Amanda	Researcher	11/28/04	Contract	
Theriault, Joanne	Researcher	12/26/04	Contract	
Huguenin, Michael	Wildlife Technician I	01/02/05	Permanent	
Nichols, Rachel	Wildlife Technician I	01/02/05	Permanent	
Pinheiro, James	Wildlife Technician I	01/02/05	Permanent	
Zimmer, Jason	Dist. Fish and Game Super.	01/23/05	Permanent	
Foley, Heather	Researcher	02/13/05	Contract	
Huguenin, Tara	Researcher	02/13/05	Contract	
Littman, Melanie	Researcher	02/13/05	Contract	
Bol, Leslie	Scientist	02/27/05	Contract	
Boswell, Tara	Planner	02/27/05	Contract	
Fritze, Suzanne	Clerk III	03/14/05	Permanent	
Ausmus, Kim	Administrative Assistant	03/20/05	Contract	
Canham, Sarah	Conservation Biologist I	03/20/05	Permanent	

Promotions

Davies, Adam	Fish Culturist I	08/08/04	Permanent	From Wildlife Technician I
Breton, Jeffrey	Wildlife Technician II	09/05/04	Permanent	From Wildlife Technician I

Transfers

Davis, William	Dist. Fish and Game Super.	08/05/04	Permanent	From Game Biologist III
Huckery, Patricia	Dist. Fish and Game Super.	08/09/04	Permanent	From Conservation Biologist III

Demotion

Wooley, Tara	Wildlife Technician I	03/20/05	Permanent	voluntary from Contract position

Reallocations

Buckley, John	Administrator VIII	07/01/04	Permanent	one grade increase
Deblinger, Robert	Aprogram Manager VIII	07/04/04	Permanent	one grade increase
Cookman, Lori	Fish & Game Mgmt Specialist	08/08/04	Permanent	7 Grade Increase

Terminations

Whitman, Megan	Researcher	07/23/04	Contract	Resigned
DiNuovo, Adam	Scientist	08/08/04	Contract	end of contract
Henry, Stephen	Fiscal Officer V (E.Q.)	08/08/04	Excess Quota	end of EQ position
Nydam, Jamie	Scientist	08/08/04	Contract	end of contract
Warzybok, John	Scientist	08/08/04	Contract	end of contract
Brooks, Jeremy	Scientist	08/14/04	Contract	end of contract
Luecke, Sarah	Scientist	08/14/04	Contract	end of contract
Rollins, Cathy	Wildlife Technician I	08/14/04	Permanent	Resigned
Flynn, Laura	Student Intern	08/31/04	Contract	end of contract
Fulham, Nancy	Clerk III	11/27/04	Permanent	Resigned
Harding, Sergio	Conservation Biologist I	12/30/04	Permanent	Resigned
Henner, Chrissie	Game Biologist III	12/31/04	Permanent	Resigned
Janak, Robert	Wildlife Technician II	02/25/05	Permanent	Retired

continues, next page

Leave of Absence

Bell, Charles	Fish Culturist II	01/13/05	Permanent	Industrial Accident on going
Guerin, Brian	Fish Culturist I	01/13/05	Permanent	Industrial Accident 6 Days
Durand,Jill	Clerk III	02/27/05	Permanent	Maternity Leave on going

Work Out of Grade

Stephen Hurley	paid as Dist. F&G Super.	07/11/04	Permanent	return to Aquatic Bio I 01/23/2005

FINANCIAL REPORT

Administrative Staff

Patricia Sheppard,
Assistant Director of Administration and Finance, Chief Fiscal Officer

Procurement and Payables

Yunus Khalifa, *Purchasing Coordinator*
Kerry Meagher, *Contract Coordinator*
Gail Gibson
Lillian Hew
Betty Sienczyk

Revenue

Robert Oliver, *Revenue Coordinator*
Mary Cavaliere
Carl Lui
Helen Yung

Permits

Robert Arini

Information Technology

Rick Kennedy
Robert Morley

How the Sportsmen's Dollar Was Spent

Inland Fish and Game Fund

July 1, 2004 to June 30, 2005

PROGRAMS/ASSESSMENTS	EXPENDITURES	PERCENTAGES
Administration:		
Administration	$1,314,227.12	
Information-Education	$601,574.04	18%
Total	**$1,915,801.16**	
Fisheries and Wildlife Programs:		
Hatcheries	$1,152,621.93	
Game Farm	$362,813.05	
Seasonals	$26,808.25	
Cooperative Units	$50,000.00	51%
Fisheries and Wildlife Management	$3,731,191.65	
Total	**$5,323,434.88**	
Other Programs:		
*Natural Heritage and Endangered Species Program		
Land Acquisitions	$1,385,063.68	
Waterfowl Management Program	$42,694.74	17%
Hunter Safety Program	$377,431.33	
Total	**$1,805,189.75**	
Other Assessments:		
**Pensions		
Group Insurance and Other Fringe Benefits	$1,374,000.00	
Operating Transfer		13%
Lease Costs 251 Causeway		
Total	**$1,374,000.00**	
TOTAL EXPENDITURES	**$10,418,425.79**	

*0% of total expenditures charged to the Inland Fish and Game Fund for FY05.
**Funding for Pensions and Transfer of Assets: In the FY04 GAA, the Legislature changed the funding mechanism for theCommonwealth's pension obligations, moving the funding "off " budget. The FY04 GAA funded the $832.3 million pension obligation using $687.3 million in cash from the General Fund and the transfer to the pension liability fund of the Commonwealth from the Massachusetts Convention Center Authority the Hynes Convention Center and the Boston Common Garage, valued at $145 million.

Summary
Revenues, Expenditures and Fund Equity
Natural Heritage & Endangered Species Fund
July 1, 2004 to June 30, 2005

REVENUES	
Natural Heritage and Endangered Species Tax Checkoff Donations	$198,243.36
Sales	$44,345.00
Federal Aid Reimbursements	$501,618.05
Direct Donations	$21,314.00
Interest	$6,904.97
TOTAL REVENUES:	***$772,425.38***
EXPENDITURES	
*Natural Heritage and Endangered Species Program	$647,916.83
Fringe Benefit Costs	$122,000.00
TOTAL EXPENDITURES:	***$769,916.83***
TOTAL FUND EQUITY:	***$152,255.76***

*100% of total expenditures charged to Natural Heritage Fund for FY05

Other Funds and Programs
Expenditures Division Wide
July 1, 2004 to June 30, 2005

TRUST FUNDS:	
Tern Restoration Trust	$123,377.04
TOTAL EXPENDITURES	***$123,377.04***
CAPITAL OUTLAY FUNDS:	
Land Protection	$85,000.00
Heritage Ecological Restoration	$197,821.51
Heritage Mapping for Biodiversity	$339,634.77
Forest Certification	$202,195.00
Upland Habitat Management	$223,075.40
TOTAL EXPENDITURES	***$1,047,726.68***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2004 to June 30, 2005

DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$5,089,839.06
Archery Stamps	$133,803.60
Primitive Firearm Stamps	$149,659.50
Trap Registrations	$1,090.00
Waterfowl Stamps, Administration	$11,742.60
Waterfowl Stamps, Ducks Unlimited	$11,817.60
Waterfowl Stamps, Other	$35,146.70
Wildlands Stamps	$933,760.00
Antlerless Deer Permits	$209,893.50
Bear Permits	$17,475.00
Turkey Permits	$69,140.00
Special Licenses,Tags and Posters	$60,663.45
Magazine Subscriptions	$105,058.56
Sales,Other	$55,374.15
Fines and Penalties	$3,150.00
Rents	$414,446.45
Prior Year Refunds	
Miscellaneous Income	$13,614.13
PAC	$3,355.00
NSF Charge	$950.00
Debt. Collection	
Total	**$7,319,979.30**
FEDERAL AID REIMBURSEMENTS:	
Dingell-Johnson (Fisheries)	$794,403.02
Pittman-Robertson (Wildlife)	$1,687,998.15
Indirect Cost Reimbursements	$882,954.35
Total	**$3,365,355.52**
TAXES:	
Gasoline Tax Apportionment	$900,955.73
OTHER FINANCIAL SOURCES:	
Reimbursement for Half-Price Licenses	$96,945.00
Investment Earnings	$18,533.52
Total	**$115,478.52**
TOTAL REVENUE	***$11,701,769.07***
FUND EQUITY AS OF JUNE 30, 2005	**$12,419,944.70**

License and Stamp Sales

July 1, 2004 to June 30, 2005

Type of License	Unit Cost	Quantity	Amount
Resident Citizen Fishing	22.50	115,698	2,603,205.00
Resident Citizen Minor Fishing	6.50	5,296	34,424.00
Resident Citizen Fishing (Age 65-69)	11.25	4,098	46,102.50
Resident Cit. Fishing (Over 70, etc.)	FREE	11,148	0.00
Non-Res. Citizen/Alien Fishing	32.50	7,147	232,277.50
Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,106	38,961.00
Resident Fishing (3 day)	7.50	879	6,592.50
Non-Resident (Citizen) Minor Fishing	8.50	304	2,584.00
Duplicate Fishing	2.50	387	967.50
Quabbin 1-Day Fishing	5.00	4,820	24,100.00
Resident Citizen Trapping	30.50	217	6,618.50
Resident Citizen Minor Trapping	6.50	5	32.50
Resident Citizen Trapping (Age 65-69)	15.25	21	320.25
Duplicate Trapping	2.50	12	30.00
Trap Registration	5.00	218	1,090.00
Resident Citizen Hunting	22.50	20,394	458,865.00
Resident Citizen Hunting (Age 65-69)	11.25	786	8,842.50
Resident Citizen Hunting (Paraplegics)	FREE	283	0.00
Resident Alien Hunting	22.50	58	1,305.00
Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,439	230,485.50
Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	780	47,190.00
Resident (Citizen) Minor Hunting	6.50	1,151	7,481.50
Duplicate Hunting	2.50	254	635.00
Resident Citizen Sporting	40.00	32,360	1,294,400.00
Resident Citizen Sporting (Age 65-69)	20.00	2,100	42,000.00
Resident Citizen Sporting (Over 70)	FREE	9,072	0.00
Duplicate Sporting	2.50	530	1,325.00
TOTAL LICENSE SALES (GROSS)		***222,563***	***5,089,834.75***
Type of Stamp			
Archery Stamps	5.10	26,236	133,803.60
Primitive Firearm Stamps	5.10	29,345	149,659.50
Wildlands Stamps	5.00	175,782	878,910.00
Non-Resident Wildlands Stamps	5.00	12,514	62,570.00
Waterfowl Stamps, Administration	5.00	6,250	31,250.00
Waterfowl Stamps, Ducks Unlimited	5.00	2,083	10,415.00
Waterfowl Stamps, Other	5.00	2,083	10,415.00
TOTAL STAMP SALES (GROSS)		***254,293***	***1,277,023.10***
Fees Retained by Clerks			(26,984.00)
Refunds			(807.99)
TOTAL			**(27,791.99)**
TOTAL LICENSE/STAMP SALES (NET)			***6,339,065.86***

APPENDIX I
FISHERIES SURVEY & INVENTORY PROTOCOL

Statewide Survey and Inventory Procedures

1. Introduction

Even for its relatively small size, Massachusetts has a wealth of aquatic resources. Previous aquatic survey projects have identified 2,027 named streams and 2,878 lakes, ponds, and impoundments within the Commonwealth's borders. There are a total of 28 named river basins ranging in size from the Shawsheen River basin, with only 77 square miles of drainage area in Massachusetts, to the Chicopee River basin, covering more than 721 square miles within Massachusetts.

The extensive and diverse fishery resources found in the Commonwealth are of enormous recreational and economic benefit. They provide employment, tourism, and wholesome, family-oriented recreational opportunities for hundreds of thousands of people and contribute millions of dollars to the state's economy. It is in the best interest of the Commonwealth to secure these benefits by protecting and restoring healthy fish populations and enhancing fishing opportunities. This initiative is imperative if we are to protect and restore fisheries habitat and to enhance access for fisheries uses for present and future generations.

The Division of Fisheries and Wildlife (DFW) is responsible for the protection, perpetuation, restoration, and management of Massachusetts' fauna and flora. Conservation of aquatic resources, including the fish, wildlife, and associated habitats is crucial if the DFW is to meet the terms of its mandate.

The simple presence of substantial aquatic habitat does not imply environmental health and integrity. According to Naiman et al. (1995), "over the past 50 to 200 years, the freshwaters of the United States have undergone the most significant transformation they have experienced in nearly 10,000 years." Virtually all watersheds, except some small headwater catchments, have been modified and degraded by human development (Williams et al. 1997).

The Environmental Protection Agency (EPA) estimates that of waters surveyed, only 60% of river miles, 55% of lake acres, and 61% of estuary mileage designated for aquatic life support, fully support such use. Nationwide, 70 to 90% of all natural riparian habitats have been extensively altered nationwide and over 80% of stream fish communities are adversely affected by environmental degradation (Judy et. al 1984). Some of the major causes of alteration are reduced flow (affecting 40% of perennial streams), siltation, bank erosion, and channelization (affecting 41% of perennial streams). Lastly, a conservative estimate of 2.6 million lake-acres are impaired by material carried by inflowing tributaries. This wide spread disturbance has lead to a loss of watershed products and function such as high quality water and productive soils. These products and functions are important for moderation of flood and drought conditions and maintenance of diverse plant and animal communities (Williams et al. , 1997).

Massachusetts, specifically, has suffered severe habitat alteration. Information from the Massachusetts Department of Environmental Protection (DEP) has determined that only 3% of assessed river miles and 4% of assessed lake acres fully support aquatic life as dictated by the language of the Clean Water Act. Loss of fish habitat has caused significant declines in fish populations and access to fishing opportunities throughout the Commonwealth. Channelization, eutrophication, installation of flood-control structures, erosion, sedimentation, excessive water flow diversion and consumption, destruction or modification of wetlands, and other physical impacts have degraded fish habitat. The degradation in Massachusetts has not been uniformly distributed. Urban Communities are disproportionately affected by aquatic habitat loss, loss of species diversity, invasion of exotic species, and lack of public access to waterways and fishing opportunities. Fish populations are often impacted by alteration and poor land and water use practices.

Information available on the condition of our waterways will allow society a better understanding of the consequences of extensive land and water use. This understanding translates into simple terms: goods, services, and values associated with terrestrial environments come from healthy watersheds. Increased public awareness leads to several immediate changes in the way we treat watersheds. These changes range from legislative - a willingness to accept more environmentally friendly regulations, to simple practices – like the use of native plants in restoration efforts (Williams et al., 1997). This better understanding will allow us to focus stakeholder efforts on initiatives that will protect the best remaining habitat and restore habitat that has been degraded. The key to implementing the Fisheries Section initiative is to fully involve watershed teams and volunteers that will form the backbone of the manpower and have a vested, localized interest in the resource. The products of the Fisheries Section Initiative will be, in part, the

identification of specific watershed restoration projects. Watershed teams will then have a voice in determining which projects are implemented. It is important for the Fisheries Section to work with watershed teams in a systematic, cooperative, and supportive fashion to ensure watershed restoration.

According to Williams et al. (1989), one third of North American fresh water fish species qualify for threatened, endangered, or some other sensitive status. Survey and inventory procedures developed by the Fisheries Section are designed to monitor resources and are crucial to the conservation of these aquatic resources. Recognizing the watershed-scale environment and the effects of disturbance to aquatic habitat are the first steps in restoration (Sean 1994 – from Williams et al., 1997). The proposed initiative is one designed to develop a community-based watershed restoration program that compliments the existing regulatory framework. The Division of Fisheries and Wildlife can protect and restore fisheries habitats through a watershed-based program by forming partnerships with local and regional stakeholders on a watershed by watershed basis.

The objectives for the Fisheries Section's Initiative are to focus resources on a watershed basis to:

1. assess the current status of fisheries resources;
2. create a comprehensive fisheries database;
3. develop watershed-based fisheries management plans;
4. conduct environmental review and assessment;
5. identify watershed lands that need to be protected as open space for protection and restoration of fisheries habitat and public access;
6. identify factors and activities causing adverse impacts to fisheries habitats and uses;
7. provide technical assistance and biological data to government agencies and private organizations involved in watershed management and protection; and
8. identify potential fisheries and habitat restoration projects for volunteers and watershed participant action plans.

The Statewide Watershed Initiative presents an opportunity to expand a model for data collection, database management, and watershed-based fisheries management planning that is being successfully implemented by the Fisheries Section state-wide. This project is designed to contribute to a watershed model that will incorporate hydrologic monitoring and habitat assessment in fisheries-based watershed management plan that will improve the health and integrity of the basin.

2. Methods

The methodologies used for the Statewide Watershed Plan are designed to provide historical and current information that will enable the Fisheries Section to accomplish the goals stated above.

2.1 Historical Information

An assessment of historical information will allow the Fisheries Section to identify information gaps and set sampling priorities. Background research will consist of three basic tasks. First, information will be gathered from a wide variety of historical sources. Second, this information will have to be interpreted to determine its validity and applicability. Finally, it will be computerized and referenced to be comparable to data collected during the course of the project.

Background information on each watershed will be located and consolidated from several sources. Fisheries Section field headquarters files contain the majority of all recent Fisheries Section-related sampling efforts and will be the initial source of historical data. The field headquarters files will be supplemented with information from our five district offices. Other potential source of information (Environmental Impact Reports, Diagnostic Feasibility Studies, etc.) will also be located and referenced

Historical Information will then be reviewed by biologists and managers to determine the extent to which it can be employed in the current assessment methodologies. Validation of sampling methodologies and species identification will be clarified and incorporated into metadata to document its validity. Databases will then be designed or modified to incorporate historical information where possible.

2.2 Fishery Assessment

The objective of the fishery assessment is to gather information about fish species diversity, relative abundance and length frequency distribution. Backpack, barge, and boat-operated electrofishing units will be the primary sampling mechanisms. Backpack shockers are best used in small shallow streams and are designed for headwater reaches. Barge electroshockers are designed to be used in wadeable streams with depth or current flow that make backpack shockers inefficient. Boat shockers will be used in lakes and rivers that are too deep to wade and where more power output is required.

Sampling locations will be selected based on available access, water conditions and habitat type. Fish sampling crews will conduct site visits to rivers and lakes to determine suitable access locations and sampling sites. Lotic habitat types (riffle, run, pool, etc.) and lentic habitat types (eutrophic, mesotrophic, oligotrophic) will be sub-sampled in proportion to their availability as determined by site visits. Data collection will take place from May 15 to September 15.

2.2.1 Stream and River Sampling

Crews of three to five people will conduct single pass electrofishing surveys through previously selected sites. The beginning and ending points will be marked on USGS 1:25,000 topographical maps. Sample sites will be include at least 100 meters of stream length. In situations where100 meter reaches are not practical or

possible, length of stream sampled will be measured by tape.

Crews will begin at the downstream end of a sampling site and shock to the upstream ending point. Crewmembers will use dipnets to capture fish that roll off the bottom or rise to the surface. All fish will be kept alive in five-gallon buckets, livecages positioned along the sample reach, or a livewell in the boat.

2.2.2 Lake and Pond Sampling

Crews of three to five people will sample shoreline areas by making a single pass with an electrofishing boat. The beginning and ending points for the sampling site will be marked on USGS 1:25,000 topographical maps. The crew will conduct at least three total-pickup collections of at least 15 minutes each. During this process, all fish will be collected and placed into the boat livewell. Other sampling methods (gillnet, seine) might also be employed to most effectively meet the sampling objective.

2.2.3 Data Collection

The first 100 fish of each species will be identified and measured to the nearest millimeter (except American eels and sea lampreys that will be measured to the nearest centimeter). The remaining fish in each species will be tallied by species with no length taken. No more than two percent and no less than two individuals (or one if only a single specimen is collected) of each species captured will be preserved in 10% formalin for confirmation of identification by laboratory analysis. Live fish that are not retained for preservation will be returned to the sample site.

2.3 Habitat Evaluation

Qualitative habitat assessments will be conducted in conjunction with fish sampling to evaluate the condition of the available habitat as it relates to fisheries resources. Stream width, canopy enclosure and species composition, channel morphology, and anthropogenic influences will be noted and assessed. Standardized habitat evaluation forms will also be used to assess habitat quality. Lake habitat will be characterized by morphology, local development and land use practices. Format and content of the information to be gathered concerning habitat measurements will follow established guidelines used by the Department of Environmental Protection (DEP) and the Fisheries Section.

2.4 Analysis

Information gathered during the course of the study will be entered into a database designed to be accessible to all parties involved with watershed management. Microsoft Access will be used as a standard format for data entry, storage, and manipulation. Initial summaries will be generated by statistical software to outline and highlight the information gathered during the sampling period. Summaries will include information about sampling locations (number of sites, towns sampled), sampling effort statistics (length of river sampled, types of gear used, estimates of efficiency), number and description of species encountered (relative abundance, common and scientific names, literature-documented tolerances) and habitat scores or descriptions for the sample sites. Further analyses relating habitat and fishery characteristics will be provided in final reports and will focus on delineating change in fishery characteristics with changes in available habitat.

2.5 Products

Several key products will result from this effort. This information will be used internally for several purposes. Habitat and fisheries assessments will be compiled in a database that will be used by the Fisheries Section for resource management, environmental review and assessment, land acquisition programs, and public access prioritization. The information will be made available to the public in an Internet accessible database that will aid in technical assistance roles. Completed watershed-based fisheries management plans will include summarized information from fisheries and habitat assessments and suggest options for improving habitat quality. These plans will provide guidance to watershed teams and volunteers concerning fish habitat restoration in their watershed. Examples of these projects include in-stream fish structures, riparian stabilization, maintenance of buffer strips, and public involvement and outreach.

3. Benefits

Results and reports from this research will be used in many decision-making processes within the Fisheries Section. Assessments of this nature, combined with habitat measurements and information gathered by other agencies and organizations will provide the necessary tools for developing watershed-based fisheries management plans, environmental reviews, and land-acquisition priorities. Enhancement efforts will take direction from these watershed-based fisheries management plans and will provide a mechanism for involving grass roots organizations and volunteers. The plans will use habitat, and fisheries information, combined with available hydrological information to identify projects that volunteers can participate in to restore habitat within the watershed. The Fisheries Section will provide technical and biological expertise to watershed groups and volunteers.

Resource assessment is a direct benefit of this project but it is only the first step. Determining the status of the resource, by assessing fish populations, available habitat and current conditions, allows agencies and organizations involved with watershed management to determine the most efficient path of watershed recovery. Once assessments have been completed, management and enhancement efforts can be effectively outlined.

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