Annual Report 2004

MassWildlife

Massachusetts Division of Fisheries & Wildlife

Wayne F. MacCallum
Director

Jack Buckley
Deputy Director
Administration

Rob Deblinger
Deputy Director
Field Operations

Table of Contents

MassWildlife

All photos by Bill Byrne unless otherwise credited.

Printed on Recycled Paper

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.

During this fiscal year the Board has been faced with the most difficult challenges in its history. The reorganization of state government, drastic changes in the state budget, and the elimination of the Inland Fish & Game Fund, combined with a significant loss of skilled and experienced personnel to early retirement, have impacted the agency to a degree never before encountered. The Board heard a detailed review of the staff vacancy situation in September, at which time the agency had 37 vacant positions (approximately 25% of agency staff), 16 of which were identified as core vacancies. The situation was so dire that the Board was forced to choose either to close two hatcheries (Sandwich and Montague), or allow many core positions to go unfilled. Either choice would obviously have enormous impacts to agency operations and our constituents. To be forced to make such a choice 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 was cause for great frustration. However, a decision had to be made, and the Board voted unanimously and with great sadness to close the hatcheries.

It was a great relief to the Board when, shortly after the vote was taken to close the hatcheries, the Inland Fish & Game Fund was restored through legislation. The Board then rescinded its original vote to close the hatcheries. We are extremely grateful for the outpouring of support from many sportsmen's and environmental organizations, as well as many individuals, without which the return of our funds would undoubtedly not have occurred. It is very gratifying to know that the sporting community as well as various organizations and nonprofits joined together across the Commonwealth in the grassroots effort to aid in the restoration of the Fund.

With the restoration of the Fund, closure of the hatcheries is no longer necessary, and we have moved quickly to fill vacant core positions through new hires and promotions. We commend all of the agency's staff for having worked so hard to get us through this very difficult period.

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 its annual presentation from Waterfowl Project Leader H Heusmann on the framework and proposed season dates, bag and possession limits for the 2003 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 concerning the listing and delisting of certain species to the list of endangered, threatened and special concern species. A public hearing was held in March to solicit public comment on the proposed changes, some of which were simply housekeeping items due to changes in the scientific names of some species. Only one comment was received, and it was in support of the proposed changes. Following discussion and consideration, the Board voted to accept the changes as presented.

Furbearer Trapping Regulations

The Board heard a proposal from Furbearer Biologist Chrissie Henner at its August meeting to eliminate the mandatory surrender of certain furbearer carcasses, a regulation that required fur trappers and hunters to do so in order to have their pelts legally tagged. Ms. Henner reported that there was no longer a compelling biological need for this regulation; freezer space was limited;

Board Chairman George Darey presents the 2004 Francis Sargent Award to Nancy Begin of Rowley.

and there were no longer any facilities to conduct necropsies. The Board remains concerned about the impact to the agency's research capabilities, but voted unanimously to support and endorse the proposed change.

Deer Management Regulations

After hearing a presentation from Deer Project Leader Bill Woytek covering the 2003 deer harvest, the Board voted unanimously to approve staff recommendations for antlerless deer permit allocations for the 2004 season.

Herring / Striped Bass Regulations

The Board heard a series of recommendations presented by Anadromous Fisheries Biologist Caleb Slater that primarily concern the rapidly developing Striped Bass sport fishery on the Connecticut River and certain housekeeping details of the baitfish regulations. The proposals were to (1) add herring to the allowable baitfish list (but only in the Connecticut and Merrimack rivers and other coastal rivers and streams; not in lakes or ponds); (2) clarify the baitfish regulations to allow only the use of the listed species, "live or dead"; (3) allow the sale of commercially produced preserved baitfish; (4) establish a Memorandum of Agreement with the Division of Marine Fisheries' that acknowledges that agency's authority to regulate the taking of anadromous river herring and striped bass in inland waters.

A public hearing was held on these proposals in August. No written comments were submitted and the Board voted unanimously to adopt all the recommendations.

Red Brook / Sea Run Trout Regulations

The Board heard a presentation during the previous fiscal year on four proposed regulatory changes from Fisheries Section staff. The first proposal was to (1) eliminate sea-run brown trout regulations on 8 coastal rivers and/or streams (Parker, Jones, Mashpee, Quashnet, Coonamessett, Childs, Scorton and Santuit); change the daily creel limit on the Jones, Mashpee, Coonamessett, Childs, Scorton and Santuit Rivers to 3 trout; and revise the Catch & Release (C&R) regulation on the Quashnet River. The second change would (2) make Red Brook in Plymouth and Wareham a C&R area, artificial lures only, along its entire 4-mile length to protect sea run brook trout. The other proposed regulatory changes were to (3) extend current C&R boundaries to encompass the entire length of the Quashnet River and (4) eliminate the C&R regulations on Higgins Pond in Brewster to allow a standard daily creel of 3 trout. A public hearing was held on these proposals in June, and one of the Board's first actions of the new fiscal year was to bring these recommendations to a vote. After considering the comments received, the Board voted unanimously to accept all the proposed changes.

Miscellaneous

The Board was asked by Dr. Rob Deblinger to endorse a pilot program that he has been working on developing in close cooperation with the Worcester County League of Sportsmen. The program would allow sportsmen to buy pheasants with their own funds, stock them on a specific WMA via a permit issued through the local District Office, and hunt them for one day during January, February and/or March. The Board voted unanimously to endorse the pilot program, which will provide an increased opportunity to hunt birds with dogs.

The Board was pleased to present the Governor Francis Sargent Award to former Board member Mrs. Nancy Begin this year to recognize the substantial contributions she has made to wildlife conservation. The Board was also pleased to be involved in the dedication of a small monument on agency property in Sutton to honor the late Worcester sportsman and conservationist Ray Gribbons. It was also the pleasure of the Board to re-name the Housatonic River WMA in honor of our long time Chairman without his knowledge or consent.

The George L. Darey Housatonic Valley Wildlife Management Area was dedicated at the May meeting of the Board with the help and support of EOEA Secretary Ellen Roy Herzfelder, USFWS Director Steve Williams, and various sporting groups and individuals.

After hearing a review of "Green Certification" for forestry, the Board commended the Secretary of Environmental Affairs for adopting an outside professional review of the management of all EOEA forest lands, and further voted unanimously to recommend that the Secretary use an outside professional review for the Office of Law Enforcement.

The Board was pleased to hear a report from Mr. Mark Begley, the MMR Environmental Specialist, about the work he has been overseeing at the Massachusetts Military Reservation. It was also pleased to hear a report from Mr. Arthur Neill on the Senior Environmental Corps whose 100 + members have been of inestimable help in to the agency over the past few years, particularly in regards to the Sandwich Hatchery and the controlled turkey and deer hunts at Camp Edwards.

The Board also voted to send a letter to the U.S. Fish & Wildlife Service requesting that the Service undertake a review of the potential impacts of proposed Berkshire ridge wind farms on bats and migratory birds. The Board also voted to resubmit a letter to Mass Environmental Trust to set up a meeting to discuss how the two agencies could work from the same set of priorities, at least in regards to endangered species.

The Board also voted to endorse the no age requirement for a hunter safety course certificate, as in other states.

FISHERIES

Mark S. Tisa, Ph.D.
Assistant Director

Fishing, hunting, and wildlife related recreation are important recreational activities for 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 estimated expenditures of $274,273,777 for freshwater recreational fishing in Massachusetts which generated over $26 million in sales tax revenue and created some 5,636 jobs in 1996.

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 involved several ongoing fisheries projects.

Fisheries Survey and Inventory Project

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, page 64). Of 125 sites sampled in FY04, the majority of the samples were taken from the Connecticut, Chicopee, Housatonic, Nashua, Cape Cod, Charles and Hudson (Hoosic) watersheds. Samples were also taken in the Boston Harbor, Buzzards Bay, Deerfield, and Merrimack Watersheds. The sampling resulted in the collection of 14,482 fish of 44 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 FY05 sampling in the Boston Harbor, Hudson, Deerfield, Housatonic, Connecticut, Chicopee, French, Quinebaug, Merrimack, and Taunton Watersheds. Planning for FY05 was geared toward identifying areas with poor historic information and toward developing a list of index stations in recently sampled watersheds.

Sampling this year was significantly hampered by extended periods of heavy rain in late July and August. Efforts to prolong the sampling period through September helped mitigate the impact of the poor weather conditions.

2. Target Fish Community Development

Efforts continued on the development of the Target Fish Community model based on Bain and Meixler (2000). The planning process for drafting target fish communities on the Charles River was continued, in coordination with the Charles River Watershed Association. Development of the Target Fish Community for the Housatonic was completed and presented at the 2004 Meeting of the Northeast Association of Environmental Biologists, the 2004 biennial meeting of the Instream Flow Council, and Water Policy and Management Instream Flow, Stormwater, and Aquatic Habitats Conference sponsored by the American Groundwater Trust.

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 our river fish communities are being impacted by water quality and quantity issues and habitat alteration. 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, Indices of Biotic Integrity, and MesoHabitat Mapping to set priorities for habitat protection and restoration statewide. Data and Target Fish Community Analyses were employed and published in Armstrong et al. (2004).

3. Coldwater Fisheries Resource Designation

A project to identify waters that MDFW considers to be Coldwater Fishery Resources (CFRs), initiated in FY01, was continued and updated based on the 211 fish samples collected in FY03.

This list of CFRs is useful as a screening tool to highlight sensitive environmental areas, not as a definitive list of all waters that are CFRs. Each year, as subsequent sampling results are recorded, the list of CFRs will be updated to reflect the most current information. By the end of FY03, 516 named streams were included in the Division's database of CFRs. This represents an addition of 31 coldwater streams to last year's total of 547.

Hatchery / Trout Program

The Division met its annual trout production goal of between 400,000 and 450,000 pounds in FY04. This production goal is based on the rearing capacity of each hatchery (determined mainly by a combination of the quantity and quality of the water supply and the amount of rearing space) and the limits imposed by the National Pollution Discharge Elimination System permit that each hatchery is issued by the Federal Environmental Protection Agency. The Division's four trout hatcheries produced a total of 412,165 pounds of trout, comprising a total of 546,246 brook, brown, rainbow and tiger trout in FY04 (fall of 2003 and spring of 2004). The annual production goal was met despite a record cold winter and a staff shortage (30% of the hatcheries normal 30 positions were vacant as of January 2004) brought on by early retirement incentives in both FY03 and FY04. Spring trout stocking got started later than normal in FY04 due to the abnormal cold and subsequent heavy ice cover on lakes, ponds, rivers and streams. Despite the late start, trout stocking was completed on time, thanks to the hard work and dedication of Division staff who are involved in the stocking program.

A total of 372,282 pounds of trout were stocked during the spring of 2004. The trout stocked during the spring included 274,382 rainbow trout that ranged between 9+ and 18+ inches long, 103,744 brook trout that ranged between 9+ and 18+ inches long, 113,169 brown trout that ranged between 6 and 18+ inches long and 4,696 tiger trout (Tables 1 and 2, page 6). The tiger trout from Sandwich Hatchery averaged 2.6 pounds each! A total of 39,883 pounds of trout were stocked in the fall. The fall-stocked trout included 36,200 rainbow trout that ranged between 9+ and 14+ inches long, 9,000 twelve inch brown trout, and 5,050 twelve inch brook trout.

Adult broodstock salmon were stocked in selected waters across the Commonwealth.

The Roger Reed Hatchery in Palmer continued its important roles in the Atlantic salmon restoration program and the landlocked salmon program for Quabbin Reservoir in FY04.

A total of 14,170 landlocked salmon smolts were produced and stocked into Quabbin Reservoir. A total of 1.65 million Atlantic salmon eggs were collected from broodstock held at the station and distributed among cooperating hatcheries in New England. A total of 1.05 million unfed Atlantic salmon fry were also produced and stocked into rivers and streams in the Connecticut River drainage basin within Massachusetts. In addition, 286 adult broodstock salmon held 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 in Table 3, page 7.

FY04 was a challenging year for the hatchery culture program because of the inability to fill vacant positions because of the agency's budget shortfall. In September 2003, the Fisheries and Wildlife Board reluctantly voted to close Montague and Sandwich Hatcheries effective January 2004 due to budget constraints and the severe staff shortage. However, in January the Fisheries and Wildlife Board was able to reverse its decision to close Sandwich and Montague Hatcheries following action taken by the legislature to restore funding to the Division and allow for filling vacancies created under the early retirement incentive program.

The early retirement incentive program in FY03 and FY04 resulted in the retirement of nine hatchery staff, of which six retired in on October 1, 2004. The staff that retired in FY04 included: Mike Masley, Manager at Roger Reed Hatchery; Alan Aittaniemi, Manager at Sandwich Hatchery; Ernest Green, Technician at Sandwich Hatchery; Frank Pietryka, Manager at Sunderland Hatchery; Lawrence Saczawa, Technician at Sunderland Hatchery; and Wayne Corey, Technician at Montague Hatchery. In addition, Peter Ho, Sandwich Hatchery Technician, resigned in August.

Fortunately, these vacancies were filled during the winter of 2004. The personnel selected to fill the vacant positions included: Daniel Marchant, Palmer Hatchery Manager; Charles Bell, Sunderland Hatchery Manager (transferred from the Northeast Wildlife District Supervisor); Brian Guerin, Sunderland Hatchery Assistant Manager (promoted from Wildlife Technician in Central District); Kevin Pelosky, Sunderland Hatchery Technician; Craig Lodowsky, Sandwich Hatchery Manager (promoted Assistant Manager of Sandwich

2004 Fish Production

Table 1. Summary of the number trout produced from each of the Division's four trout hatcheries in FY04.

(Fall stocking 2003 and Spring stocking 2004)

Species	Size Cat. (inches)	Number of fish				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	9+	21000	12890	0	0	33890
	12+	13720	20305	22346	18576	74947
	14+	0	192788	8856	0	201644
	18+	101	0	0	0	101
	Sub-total	**34821**	**225983**	**31202**	**18576**	**310582**
Brook Trout	9+	14900	17420	42021	5000	79341
	12+	0	5550	4478	19175	29203
	18+	0	0	0	250	250
	Sub-total	**14900**	**22970**	**46499**	**24425**	**108794**
Brown Trout	6 - 9	25550	0	0	0	25550
	12+	17885	0	25400	9605	52890
	18+	0	0	0	334	334
	Sub-total	**43435**	**0**	**63800**	**14939**	**122174**
Tiger Trout	14+	0	0	0	4696	4696
	Sub-total	**0**	**0**	**0**	**4696**	**4696**
	Total	**93156**	**248953**	**141501**	**62636**	**546246**

Table 2. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY04

(Fall 2003 and Spring 2004)

Species	Size Cat. (inches)	Weight of fish (lbs)				Total Wgt. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	9+	13347	7318	0	0	20665
	12+	13540	14915	16638	18334	63427
	14+	0	187697	10725	0	198422
	18+	530	0	0	0	530
	Sub-total	**27417**	**209930**	**27363**	**18334**	**283044**
Brook Trout	9+	5400	8491	11969	1608	27468
	12+	0	4015	4486	12228	20729
	18+	0	0	0	422	422
	Sub-total	**5400**	**12506**	**16455**	**14258**	**48619**
Brown Trout	6 - 9	7420	0	0	0	7420
	9+	0	0	10398	1427	11825
	12+	15314	0	24298	8102	47714
	18+	0	0	0	1353	1353
	Sub-total	**22734**	**0**	**34696**	**10882**	**68312**
Tiger Trout	14+	0	0	0	12190	12190
	Sub-total	**0**	**0**	**0**	**12190**	**12190**
	Total	**55551**	**222436**	**78514**	**55664**	**412165**

Table 3. Summary of landlocked salmon and Atlantic salmon produced at the Roger Reed Hatchery in FY04.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked salmon	smolts (8+)	14170	3205
	Total	**14170**	**3205**
Atlantic salmon	green eggs	1664506	
	unfed fry (1+)	1048911	393
	adults (15+)	286	2600
	Total	**2713703**	**2993**

Hatchery); Adam Davies, Sandwich Hatchery Technician (transferred from the Connecticut Valley District); Joseph Vasquez, Sandwich Hatchery Technician; Richard Gamlin, Montague Hatchery Technician (transferred from the Connecticut Valley District).

Warmwater Fisheries Investigations

Esocid Stocking Program (northern pike and tiger muskies)

The stocked esocid program continues to be refined based on our field studies. The Division relies entirely on spring and summer surpluses from other states for esocid stocking. In addition to these surpluses, the Pennsylvania Fish Commission holds up to 15,000 tiger muskies for us until early fall, allowing for the stocking of a larger fish (seven plus inches). Stocking studies have shown that esocids stocked at less than seven inches in total length 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 waters stocked annually with tiger muskies depending on total numbers available.

In the Northeast District, Lake Mascopic, Tyngsborough was stocked for 10 consecutive years with 7+ inch tiger muskies and, aside from anecdotal reports of a few sub legal tigers seen during annual ice fishing derbies, it has not produced the fishery expected. Beginning in 2003, effort will be concentrated on Massapoag Lake, Sharon. In the Southeast District, South Watuppa Pond, Fall River was stocked for five consecutive years and, as with Lake Mascopic, has failed to produce a fishery. Effort will now be focused on Lake Nippenicket, Bridgewater. In the Central District, the A-1 Site and Lake Chauncey, Westborough, and Flint Pond, Shrewsbury are being actively managed. One site in the Connecticut Valley District, Hampton Ponds, Westfield, has been stocked for over ten years and is now producing legal fish. Pontoosuc Lake, Pittsfield in the Western District, which has the most consistent stocking history in the state, continues to be the best producer. In fact, Pontoosuc Lake holds the world record for a tiger muskie caught on an ice fishing tip-up, at 27 pounds even.

Spring and summer surpluses of northern pike and tiger muskie from the states of New Jersey and Pennsylvania were made available once again for stocking waters of the Commonwealth. As a result of their generosity, 15,000 7+ inch tiger muskies were stocked into five waters: Flint Pond, Nippenicket Lake, Massapoag Lake, Pontoosuc Lake and Hampton Ponds. Additionally, just over 114,000 three inch tigers were stocked into Lake Chauncey and the A-1 Site. There were very few surplus northern pike available in 2003. 13,000 four inch summer surplus northerns from Pennsylvania were stocked into Flint Pond. In the fall of 2003, Quaboag Pond, Brookfield was the recipient of 1,000 18+ inch northern pike which were purchased from a private vendor by the Spencer Fish & Game Club. It is expected that these fish will provide an instant fishery (the grower's experience in NY is a legal fish in one growing season), and in fact, fish were reported caught within days of stocking. Personnel from the Central Wildlife Management District and the Field Headquarters conducted a winter creel survey on Quaboag Pond to monitor the catch of the newly stocked northerns. Although analysis is ongoing, an estimated 100 of the pike were caught and released during the first ice fishing season. The creel will continue to determine when the pike reach the legal fishery length of 28 inches.

Freshwater Sportfishing Awards Program

For over 30 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), 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 angler who weighs in the largest fish of the year for each of the categories receives a plaque and a gold pin at the Eastern Fishing and Outdoor Exposition held in February at the Worcester Centrum. For the first

year, we allowed the organizers of the annual spring shad fishing derby on the Connecticut River to use their certified scale to weigh fish for the program. As a result, we awarded nearly 100 pins for shad. Affidavits are still being received for 2004, so results from 2003 are presented here. 546 pins were awarded in all 22 categories for calendar year 2003.

Species	Total Pins	Gold Pin
Broodstock salmon	55	20 lb. 8 oz.
Brook trout	18	4 lb. 4 oz.
Brown trout	5	7 lb. 3 oz.
Bullhead	25	2 lb. 12 oz.
Carp	16	36 lb. 0 oz.
Chain pickerel	53	6 lb. 10 oz.
Channel catfish	15	12 lb. 8 oz.
Crappie	21	2 lb. 12 oz.
Lake trout	25	13 lb. 11 oz.
Landlocked salmon	1	5 lb. 6 oz.
Largemouth bass	17	9 lb. 10 oz.
Northern pike	11	23 lb. 3 oz.
Rainbow trout	30	7 lb. 6 oz.
Shad	95	11 lb. 3 oz.
Smallmouth bass	25	6 lb. 1 oz.
Sunfish	16	1 lb. 8 oz.
Tiger muskellunge	2	16 lb. 4 oz.
Tiger trout	3	5 lb. 4 oz.
Walleye	6	7 lb. 2 oz.
White catfish	15	6 lb. 0 oz.
White perch	44	2 lb. 8 oz.
Yellow perch	48	2 lb. 4 oz.

The annual Angler of the Year Award (presented to the angler who submits the highest number of eligible species) was presented to Scott Osmond of Lowell who weighed in qualifying fish of 15 different species. Two anglers submitted 15 species in 2003 and a tie breaking formula was used for the first time to determine the winner.

Bass Tournament Creel Analysis

The Fisheries Section 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 (mainly boat ramps) to hold a fishing event 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 were also recently made available on the Division's website. The completed creel sheets are mailed to the 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 room for the club to include comments. This information is entered into a database to allow the Division to detect long terms trends in the bass populations in some of the Commonwealth's most heavily fished waters. Creel sheets are still being received for the 2004 tournament season, so results from the 2003 season are presented here.

In 2003, a total of 212 usable creel sheets were sent in to the Field Headquarters (up 36 from last year). These 212 tournaments represented 68 different bass clubs fishing on 44 different waters. The average size of a tournament was 19 anglers with a high of 104 anglers. A total of 7,890 largemouth bass and 1,309 smallmouth bass were weighed in for a catch rate of approximately of 1 bass per 3 + angler hours. The average weight of a bass weighed in was 1 lb 14 oz. 82% of all anglers weighed at least one bass while 32% caught a limit (5 bass total of either species). 99% of all largemouth bass and 95% of all smallmouth bass were returned to the waterbody alive at the close of the tournaments. These indicators have not changed significantly since tracking began in 1996. For waters with more than four tournaments, Congamond Lake, Southwick produced the highest number of bass over 5 pounds (14) over 24 tournaments, while Otis Reservoir, Otis produced the highest percent of anglers weighing bass (98%) while Whitehall Reservoir Hopkinton produced the highest percent of anglers with limits (71%). Onota Lake, Pittsfield produced the highest average winning weight of bass (17 lbs.). A breakdown of the number of tournaments by waterbody revealed that most host only a few a year (less than 6) while the two highest occurrences took place on Congamond Lake and the Connecticut River which hosted 24 and 25 respectfully. Over time, this data will aid in detecting possible changes to the bass fishery

Fish Kill Investigations and Environmental Review

Fish Kill Investigations

Pursuant to the 1999 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 49 reports of dead fish. We were also made aware of a waste water treatment plant malfunction which did not result in dead fish. Of these 49 reports, eight required field investigations: two winter kills frozen in ice, one low water stranding, one post spawn-

ing American shad, two cause unknown with no sign of pollution (likely low dissolved oxygen), one no dead fish found and one possible pesticide kill which is being investigated by the Massachusetts Pesticide Bureau of the Department of Agricultural Resources.

Environmental Review

In 2003, 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 133 requests to review project proposals potentially affecting 127 different waters (98 rivers and streams and 29 ponds) statewide. Sixty five percent of the requests were received from environmental consulting contractors to fulfill DEP and MEPA filing requirements. The remainder of the requests came from state agencies such as EOEA, DCR and DEP (13%), federal agencies such as the Army Corp of Engineers and the Federal Energy Regulatory Commission (5%), utility companies (2%) and local entities such as conservation commissions, departments of public works, and lake associations (15%). Fisheries resources were partitioned as follows: warm water (19%), coldwater/stocked (42%), anadromous (14%), threatened or endangered (2%), marine (5%), unknown (14%) and no fisheries resources (3%). The majority of the projects were bridge replacements/rehabilitations over streams and road reconstruction (51%). Fish passage, drawdowns, aquatic vegetation control, dam repair, new construction and water management acts made up 43% of the projects. The remainder was divided between water releases, stream bank protection, NPDES permits, pipeline crossings, flood improvement and combined sewer overflows.

Anadromous Fish Investigations

General

In FY04, MassWildlife was, because of budget constraints, unable to hire any seasonal employees to conduct Atlantic salmon smolt production assessment work in Connecticut River tributaries. Therefore, no stream surveys were performed in summer 2003. Also because of budget constraints in spring 2004, the Division had no seasonal employees to stock salmon fry or to staff the fishways on the Connecticut, Westfield, and Merrimack Rivers. Federal monies directed to the CRASC for salmon restoration were used to hire three USFWS seasonal employees that were detailed to MA restoration efforts in spring/summer 2004. 2,003,825 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 in spring 2004.

Because 2004 fishway operations are ongoing at this time, this report will summarize 2003 fish passage activities. No major malfunctions were experienced any of the fishways on the Connecticut or Merrimack rivers in Massachusetts in 2003. An American eel upstream passage facility was installed at the DSI dam on the Westfield River in West Springfield during the summer of 2001 and ran for the entire elver passage season in 2003 (May-October).

Connecticut River

The project leader actively participated in the Connecticut River Atlantic Salmon Commission (CRASC), as a member of the CRASC Technical Committee and chair 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 relicensing of the Holyoke dam on the Connecticut River in Holyoke, MA; relicensing of the Woronoco hydroelectric project on the Westfield River in Russell, MA; 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 and on expanding 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 looking at, 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 summer 2004.

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 negations 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 2003. The Project Leader supervised their activities. The Holyoke Dam fishlift was operated for upriver fish passage from April 22 through July 17, 2003, except during periods of high water May 4-6. 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 decreased from 34 in 2002 to 28 in 2003. Four Atlantic salmon were radio-tagged and released at Holyoke as per agreement with HG&E.

The total number of shad lifted in 2003 (286,528) was 40% of the record high passage of 1992. 2003 passage was 104% of the previous five year average, and 108% of the previous ten year mean. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed this project on the 34th day of operation, May 25th. American shad were sampled for biological data on 15 days between May 7 and June 6. Fork length, weight, sex and scale samples were collected from 487 individu-

als. The weighted sex ratio of American shad lifted at the Holyoke facility in 2003 was 46% males and 54% females.

Fishlift personnel trapped a total of 1,850 shad in 2003 for out-of-basin restoration and 869 for within basin restoration efforts.

Blueback herring passage in 2003 was 2,665. This was 0.4% of the maximum passage of 1985, 35% of the previous five-year mean and 7% of the previous ten year mean.

Sea lamprey passage in 2003 (53,026) was 55% of the previous record passage of 97,000 in 1998 and was 102% of the previous five-year mean and 130% of the previous ten year mean.

Gizzard shad passage was 2% of the previous five-year mean and 5% of the previous 10 year mean.

Turners Falls

Spillway, Cabot, and Gatehouse facilities were operated during the andromous fish passage season in 2003 (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.

The videotapes of fish passage were never reviewed, so no direct count of the 2003 fish passage season exists. However, the PIT tag study of shad passage at the Turners Falls ladders continued in 2003- and the results are similar to 2002- the study reveals continued shad passage problems at both the Cabot and Gatehouse fishways.

Westfield River

In 2003 a fish ladder was operated for the seventh 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 agency was unable to hire seasonal employees because of the budget in 2003; therefore the fishway was staffed by volunteers from the Westfield River Watershed Association. The volunteers did a fantastic job, but were not able to keep the fishway open for more that a few hours in the morning and afternoon. The result of the limited time of operation was reduced passage- both shad and lamprey numbers were down dramatically.

The DSI fishway was operated for upriver passage during spring/summer (April 20 through July 15, and September 15 through October 31). Closures due to high water occurred on April 30-May 3. 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 May through fishway closure on October 31, 2003.

The Westfield fish passage facility operated for 80 days in the spring of 2003. During the spring/summer season six Atlantic salmon were trapped. All salmon were transported by personnel of the United States Fish & Wildlife Service to the Richard Cronin National Salmon Station, Sunderland, MA. No salmon were seen during the fall passage season. A total of 1,557 American shad; 404 sea lamprey; no striped bass; five blueback herring; and no gizzard shad were passed upstream in spring/summer 2003. The shad passage represents 33% of the record high of 4,720 in 2001. 313 juvenile eels (elvers) were also documented passing upstream at the project.

Atlantic Salmon Fry Stocking, Survival and Habitat Assessment

Between April 12 and May 5, 2004, 2,003,825 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 (three 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.

Index sites in river basins stocked in 2002 were not electroshocked to evaluate Atlantic salmon fry growth and survival because the Division had no funds to hire seasonal help in 2003.

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 2003 the project leader actively participated in Merrimack River Policy and Technical Committee meetings as well as several working group meetings. The absence of any seasonal assistance in 2003 meant that the project leader spent a significant amount of time at the fish passage facility in Lawrence during the season. In addition several requests from the public were received which required extensive written and oral responses. The project leader reviewed a proposed study, by Normandeau Associates, Inc., designed to evaluate the survival of migrating Atlantic salmon smolts through the Lowell hydro project turbines as well as the

downstream fish bypass. Fisheries staff worked with U.S. Fish and Wildlife Service personnel on several proposals including a radio telemetry study to track the movements of American shad between Lawrence and Lowell, and also a plan to gather baseline data on American eel populations in the Massachusetts reach of the Merrimack.

The two mainstem dams on the Merrimack River in Massachusetts were operated and monitored for anadromous fish passage during the spring/summer of 2003.

Essex Dam

The Essex Dam fish elevator operated for 77 days between April 29 and July 15, 2003. For the fall season the fishway was operated from September 23 through November 1, 2003. During the spring migration period the Essex Dam fish elevator was operated seven days per week. Hours of operation were generally 8:00 A.M.. to 4:00P.M.. throughout the season. During the fall four lifts per weekday were completed by personnel of CHI Energy Inc.

149 adult Atlantic salmon were counted at the Essex fishlift in 2003, 120 during the spring and 29 in the fall. 143 adult salmon 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.

The total number of shad lifted in 2003 (52,939) was 71% of the record high passage of 2001. 2003 passage was 111% of the previous five year mean and 152% of the previous ten year mean. Examining the cumulative percent of shad passed at Lawrence, 50% of fish passed this project on the 27TH day of operation, June 6TH. 3,946 shad were trapped and trucked to locations both in-basin and out-of-basin for restoration efforts in MA, NH and ME. 115 shad were sampled for biological information on 10 days between May 23 and June 28. From these data so gathered the sex ratio of shad passed at Lawrence was estimated at 58% female, 42% 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. This was 3% of the record high passage of 1991. 2003 passage was 179% of the previous five year mean and 65% of the previous ten year mean. In 2003 280 herring were trucked from the Essex fishlift to the Pine Island Pond in the upper Merrimack Watershed.

Total number of sea lamprey, striped bass, and gizzard shad passing through the Lawrence fishlift were 2,178; 979; and 50 respectively.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator began on May 12,one week after shad began to move through the Lawrence fishway, approximately 12 miles downstream, and concluded on July 3 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 few problems that inevitably occur were promptly corrected. The lift was not able to operate from May 29 to June 2 due to an equipment malfunction.

The estimated total number of anadromous fish passed at the Lowell facility is as follows: American shad, 6,582; river herring 194; sea lamprey 822; striped bass 51; American eel 47; gizzard shad 0. This represents 12% of the shad, 2% of the river herring, 38% of the sea lamprey, 5% of the striped bass, and 0% of the 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 for broodstock. However, a large number of domestic broodstock from the sport fishery in the mainstem Merrimack River in New Hampshire were seen in the vicinity of the Lowell fishlift. These can be legally harvested in the Massachusetts portion of the Merrimack and its tributaries upstream of the Essex Dam in Lawrence.

Fisheries Section Staff

Mark S. Tisa, Ph.D.
Assistant Director of Fisheries

Richard Hartley, M.S., *Warmwater Fisheries Project Leader*

Colleen Hubbard, *Secretary*

Todd Richards, M.S., *Stream Fisheries Project Leader*

Ken Simmons, Ph.D., *Chief Fish Culturist*

Caleb Slater, Ph.D., *Anadromous Fish Project Leader*

WILDLIFE

Tom O'Shea
Assistant Director

The Wildlife Section oversees research and management of all avian and mammalian species which are utilized in any way for meat, fur or sporting purposes. The wildlife section has a staff of eight wildlife biologists who conduct research and management projects throughout the state with assistance by District personnel and in cooperation with the U.S. Fish & Wildlife Service and the Massachusetts Cooperative Fish & Wildlife Research Unit (USGS).

Migratory Bird Census

Trina L. Moruzzi, Wildlife Biologist

Mourning Dove Census: The number of calling doves on 3 long-term survey routes increased 39% from 2003 to 2004. Counts on 7 comparable routes decreased 3% from 2003 to 2004.

Woodcock Census: Results of the fall 2003 hunting season as measured by the woodcock wing-collection survey indicated that the average bag per hunt and per season increased 5% and increased 12% respectively when compared to the previous season. Production of young, which is measured in a ratio of immature birds per adult female, decreased 37.5% when compared to the long-term average.

Seven randomized spring woodcock singing ground surveys were conducted in 2004. The total number of singing woodcock heard on comparable routes during the spring census in Massachusetts increased 35% from 2003 counts.

Waterfowl Research and Surveys

H Heusman, Wildlife Biologist

Division personnel continued to conduct nest box checks on 53 sites used by *MassWildlife* to monitor wood duck populations statewide. Summer checks revealed 380 wood duck nest starts in 622 available boxes, with 312 successful hatches (82%). In addition, there were 61 hooded merganser hatches from 76 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 by round ups during the summer molting period. A total of 1,138 Canada geese were banded at 65 sites in 64 towns in Massachusetts. This total included 575 goslings and 563 adult birds. One hundred fifty of the adult geese were banded with special bands to determine band reporting rates. An additional 201 previously banded geese were recaptured. We also placed satellite radio collars on two nesting females, and then broke up the nests to determine if the birds would then migrate from the area before undergoing their annual molt (molt migration) . One bird hatched off its brood before the nest could be destroyed. Neither goose molt migrated nor did most of the other geese radio-collared in the eastern part of the flyway. Geese with destroyed nests in the western reaches of the flyway did tend to molt migrate to Canada.

Despite good water conditions and an adequately operating airboat, 2003 was possibly the poorest airboating season on record. Low numbers of waterfowl were found on most sites with only 16 trips made because pre-trip scouting eliminated several sites where few or no ducks were seen. The average number of birds banded per night was 29 compared to 40+ in a normal year. On only five nights did we have near normal catches. A cold, wet spring likely resulted in delayed nesting and loss of early broods. The banding effort was further complicated when one of the banding crew injured his leg, missing the entire season. Since the other regular crew member had retired in 2001, the project leader ended up working with 15 different individuals on the airboat, some of whom had no previous airboating experience.

This year Division biologists banded only 466 birds with catches ranging from one to 133 birds. Among the 466 birds banded were 322 wood ducks, 97 mallards, and three American black ducks. We also participated a federal band reporting rate study involving reward banding a sample of wood ducks, black ducks, and adult mallards.

During September 2-25, Massachusetts conducted a resident Canada goose season with a five bird daily bag limit. The newly implemented Migratory Bird Hunter Harvest Information Program (H.I.P) of the U.S. Fish and Wildlife Service estimated a September season harvest of 3,800 geese. This compares to a harvest estimate of 2,900 last year.

Duck hunting seasons in the Atlantic Flyway continued with the liberal option of 60-day seasons and a six bird bag limit. The Canada goose season was 60 days 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 last Saturday in October in the Berkshire zone.

The annual Midwinter Waterfowl Survey was reduced due to lack of funding by the USFWS. A survey designed to cover 85% of the black ducks wintering range was

paid for by funding from the Black Duck Joint Venture. The portion in Massachusetts was flown on January 18 and 19, 2004 under windy conditions. The survey was flown by the U.S. Fish and Wildlife Service with a *MassWildlife* staff member as the second observer. Waterfowl counts were low, even accounting for the reduced coverage. Only 9,954 black ducks were counted which extrapolated to 11,447 for full coverage. This would have been 47% below the long term average. Mallard counts (3,307) were 6% higher than last year despite the reduced coverage and only 4% below the 10-year average. Counts for most other species were of little importance because of the abbreviated coverage.

During January 19 to February 14, 2004, Massachusetts held a late, resident Canada goose season in the Central waterfowl zone and that portion of the Coastal zone north of Cape Cod. The Coast zone late season had previously been restricted to that portion of the coast north of Duxbury. The USFWS estimated a harvest of 3,900 geese compared to 1,900 birds last year.

During April and May staff participated in the Northeastern states waterfowl breeding survey which is based on sampling randomly selected one kilometer square plots. Massachusetts checked 93 of the 1,482 plots used in the survey. Eleven states participated in the 2004 breeding pair survey for waterfowl. The population estimate for mallards was 388,399 pairs $\pm$ 50,344. The estimate for black ducks was 25,052 pairs $\pm$ 7,002; wood ducks, 172,845 pairs $\pm$ 33,672, and Canada geese, 395,450 pairs $\pm$ 56,340. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its seventh year of the new federal Migratory Bird Hunter Harvest Information Program (HIP). HIP is designed to replace the present survey which is based on collection of the names of individuals who bought duck stamps at post offices. The new survey will allow for more specialized surveys of various migratory bird species. Waterfowl and wood cock hunters are required to register each time they buy a new license by calling a 1-800 number. Hunters are now also able to register on line through the state's new internet registration system.

The project leader reviewed and scored a total of 69 North American Wetland Conservation Act large grant requests during the fall 2003 and spring 2004 application rounds. This work is done under the auspices of the Atlantic Coast Joint Venture project. He also attended technical section meetings of the Atlantic Flyway Council in Delaware and Georgia

Wild Turkey

James E. Cardoza, Wildlife Biologist

Wild Turkey Range and Harvest Evaluation: The 14TH modern-day fall either-sex turkey season was held from October 27 to November 1, 2003. The zone was revised to include Deer Zones 01 through 09 and 13. This includes all of Berkshire, Dukes, Franklin, Hampden, Hampshire and Worcester counties and a portion of western Middlesex county. A total of 111 turkeys was taken including 31 (28%) in Berkshire County, 29 (26%) in Franklin County, 20 (18%) in Worcester County, 16 (14%) in Hampshire County, 11 (10%) in Hampden County, 4 (4%) in Middlesex County, and none in Dukes County. In all 19 adult males, 27 immature males, two un-aged males, and 63 females were taken.

The 25th Massachusetts spring gobbler hunt was held in April-May 2004. The four-week open zone included Deer Zones 01 through 10 and 13. The two-week zone included Zones 11 and 12. A near-record total of 13,912 permit applications were received. A harvest of 2068 turkeys was attained (the 13th straight year over 1000 and the 6th over 2000). There were 316 hunters (2.3%) who took their second bird in the bag, as compared to 337 hunters (2.4%) in 2003. The overall estimated success rate for taking one turkey was 12.6% as compared to 13.5% in 2003. The Worcester County harvest was 613 (29.6%), followed by Berkshire (399, 19.3%), Franklin (312, 15.1%), Hampshire (222, 10.7%), Hampden (200, 9.7%), Middlesex (91, 4.4%), Essex (78, 3.8%), Plymouth (73, 3.5%), Norfolk (38, 1.8%), Bristol (32, 1.6%), Barnstable (10, 0.5%), and Dukes (0, 0.0%). Adult males comprised 1221 59(%) of the take, as compared to 1442 (65%) in 2003.

Black Bear

James E. Cardoza, Wildlife Biologist

Black Bear Distribution and Harvest Investigations: A record total of 3104 bear hunting permits were issued for the 2003 hunting season. A record total of 153 bears were taken during the 23-day split season, including 142 during the 23-day September segment and 11 during the six-day November segment. Eighty-seven females and 66 females were taken in Berkshire (n=66), Franklin (n=43), Hampden (n=20), Hampshire (n=23), and Worcester (n=1) counties. There were 25 non-hunting mortalities (23 in 2002-03) including 19 road kills, 4 depredation kills, 1 found dead, and 1 euthanized. A total of 117 problem bear complaints were received (114 in 2002-03) primarily including 39 residential complaints, and 19 trash and campground complaints. Additional un-tallied complaints were received by the Division of Law Enforcement and by local officials.

The black bear field study conducted by the University of Massachusetts (in cooperation with DFW) was shifted to DFW in 1999. Eleven radio-collared female bears were active in July 2003. Two of these sows lost their collars; one in July and another in October. During winter 2003, seven of the remaining nine bears were tracked to their winter dens. The remaining two were observed but not handled. Six of the nine sows had a total of 12 cubs (9♀, 3♂), two had a total of three yearlings (1♀, 2♂) and 1 was prepubescent. The female yearling was collared and the males ear-tagged. One injured 6-month-old cub was rehabilitated and released in October. One of the cub-producing sows became a

Four black bears were barrel trapped this year and ear tagged and/or radio collared for study.

road-kill in April 2004. Three male bears and 1 female bear were barrel-trapped in May and June 2004. The males were ear-tagged and the female was radio-collared. As of July 1, 2004 eleven collared bears were being monitored.

Furbearers

Chrissie Henner, Wildlife Biologist

The furbearer program is responsible for management and research on fourteen 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 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. 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. In this past fiscal year citizens spent more than 2,200 days afield harvesting and viewing furbearers. A total of 3,574 furbearers were harvested in the 2003-2004 season. The harvest by species was 647 beaver, 47 bobcat, 176 coyote, 215 fisher, 72 river otter, 40 red fox, 49 gray fox, 720 raccoon, 25 mink, 110 skunk, 54 opossum, and 1419 muskrat.

Regulated trapping is an important component of wildlife management programs. It is the most feasible and effective method to control wildlife population growth. Regulated trapping, conducted by trained and licensed members of the public, is used by wildlife professionals to regulate wildlife populations and thus reduce the negative responses associated with high wildlife populations. Residents of the state derive financial savings due to decreased amounts of property damage caused by furbearers, and by diminishing the need to pay control agents.

Massachusetts has complex laws and regulations that govern the activity of trapping. These regulations 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 gain information on the statewide harvest and distribution of beaver, otter, red fox, gray fox, bobcat, coyote, mink, and fisher. During the 2003-2004 season, the Division sealed 1271 pelts.

Wetland / Beaver Management: In November, 1996 a Ballot Referendum known as "The Wildlife Protection Act" or "Question One" was approved by voters in Massachusetts during the general election. This statute modified existing laws that regulated lawful traps for certain species of wildlife. Beavers are prolific rodents that occasionally cause problems to public and private property. A consequence of the trapping restrictions was decreased harvest of beaver during the regulated trapping season and a concomitant increase in the statewide population of beavers..

Between 1996 and 2000, the beaver population tripled and complaints about flooding increased. Typical complaints included: flooded septic systems, wells, roads, driveways and railroad tracks. In July 2000 the Massachusetts Legislature passed, and the Governor signed a new 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 available from the Division of Fisheries and Wildlife.

The Division has developed brochures that explain options to landowners discussing the positive and negative aspect of beaver activities, associated wetland values and overall management of beaver. The newest brochure is a "sister-document" to the "Beavers in Massachusetts" booklet which explains the use of water flow devices to address flooding problems caused by beaver. The new brochure has been distributed to libraries throughout the Commonwealth and is provided to the public free of charge. Public education, regulated harvest, and the installation of flow devices are major components of this program. 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.

Wildlife Depredation and Damage

Division personnel responded to complaints about eastern coyotes, red foxes and gray foxes concerning the loss of domestic livestock and pets. Site visits were conducted and technical advice given in an attempt to eliminate or alleviate damage situations. Coyotes currently occur in all communities in Massachusetts except 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, harassing pet dogs and cats, to coyotes on airport runways threatening the arrival and take-off of aircraft.

White-tailed Deer Program

William Woytek, Wildlife Biologist

Harvest and Population: The 2003 harvest of 12,053 deer is the second highest harvest reported in Massachusetts with record archery (3,045) and muzzleloader (1,869) harvests (Table 1). Overall, there was a 3% decrease in harvest from the 2002 hunting season with increases of 8% in archery and 38% in muzzleloader seasons. The shotgun season however saw a 16% decrease in total harvest. The 2003 deer harvest by Deer Management Zone (DMZ) and sex is presented in Table 2.

The statewide harvest of adult male deer (5,617) was down 7% from the record harvest of 6,023 in 2002. Of the total statewide adult male harvest, 26% were 3 +

Table 1. The 2003 White-tailed deer harvest by season and sex/age class.

Season	Adult Male	Female	Male Fawn	Unknown sex	Total	% Harvest
Paraplegic	3	2	2	0	7	0 %
Archery	1880	925	237	3	3045	26 %
Shotgun	3096	3002	718	8	6824	58 %
Muzzleloader	638	1037	190	4	1869	16 %
Subtotal	**5617**	**4966**	**1147**	**15**	**11747**	
Quabbin	50	211	45	0	306	
Total	**5667**	**5177**	**1192**	**15**	**12,053**	

Table 2. White-tailed deer harvest by deer sex/age and deer management zone for Massachusetts 2003.

Deer Mgt. Zone	Adult Male	Female	Male Fawn	Unknown sex	Total
1	160	145	23	1	329
2	255	24	1	0	280
3	442	498	99	0	1039
4N	318	75	11	0	404
4S	208	90	13	1	312
5	366	189	45	3	603
6	97	60	21	1	179
7	350	385	105	1	841
8	534	502	93	2	1131
9	518	481	116	1	1116
10	787	818	217	0	1822
11	1001	1032	212	3	2248
12	161	120	19	1	301
13	233	298	71	0	602
14	164	246	100	0	510
Unknown	23	3	1	3	30
Statewide	5617	4966	1147	17	11,747

years old or older. Deer Management Zones 11, 4S, 2, 6 and 1, in descending order, had 30% or more of the harvest in males aged 3 + years old or older.

As the deer harvest in Massachusetts continues to increase, there has been a shift in the distribution of the harvest from the different seasons. Only 58% of the total deer harvest came from the shotgun season while 10 years ago it was 75%. Over the same 10 year period, the proportion of the harvest from archery season has increased from 18% to 26%, and the muzzleloader season has more than doubled from 7% to 16%.

The shift in hunter effort and success required a change in the antlerless deer permit system. The changes have increased hunter opportunity statewide and have regulated the deer harvest across all DMZs. In some DMZs with high deer densities, the antlerless deer harvest has doubled after two years.

Permit allocation for 2003 was 44,000 permits with 39,648 permits (90%) actually being issued. Nearly 36% of the issued permits were sold over the counter as additional antlerless deer permits in those zones where allocation exceeded demand. The increase in permits resulted in a bag limit increase for those hunters who purchased the additional permits. The number of permits issued and sold over the counter increased slightly from the 2002 season.

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/mile^2 on Nantucket in eastern Massachusetts.

Research

We are continuing to determine cause specific mortality for deer in three study areas, western and north-central Massachusetts, by monitoring the existing radio collared deer and adding a few new collars in the north-central study area. There were 43 deer radio-marked in Massachusetts with 19 in the west, 8 in the north-central, and 16 in the east. Harvest mortality is low 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 regionalized the tri-state area into a "Southern New England" region with respect to deer distribution, uniformity and the relatively small size of this region. Deer heads were collected from each deer management zone/ county to obtain the required samples to generate a statistically stratified valid sample for the Southern New England region. During the 2003 deer seasons, Massachusetts collected 301 usable samples. CWD was not detected. We will continue surveillance efforts during the 2004 season with funding provided by the USDA-APHIS.

Moose

Traditionally, the Division of Fisheries and Wildlife (DFW) has collected data concerning moose sightings from the public, from moose found dead, and from moose vehicle accidents (MVA). These indices are used for determining population trends and for estimating the moose population in Massachusetts. There have been 948 reports submitted to DFW concerning moose since 1924. In 2003 there were 59 reports made to DFW

Table 3. Massachusetts deer harvest by deer management zone and season for 2003.

Deer Mgt. Zone	Paraplegic	Archery	Shotgun	Muzzleloader	Unknown sex	Total
1	3	60	206	60	0	329
2	0	55	180	45	0	280
3	1	205	630	203	0	1039
4N	0	78	243	83	0	404
4S	0	66	144	102	0	312
5	0	111	381	111	0	603
6	0	25	120	34	0	179
7	0	184	526	131	0	841
8	0	216	735	180	0	1131
9	3	276	665	172	0	1116
10	0	703	814	305	0	1822
11	0	808	1156	284	0	2248
12	0	43	209	49	0	301
13	0	111	423	68	0	602
14	0	97	377	36	0	510
Unknown	0	7	15	6	2	30
Statewide	**7**	**3045**	**6824**	**1869**	**2**	**11,747**

Table 4. Moose mortality in Massachusetts from 1980 to 2003.

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
Total	148	17	165	87	252

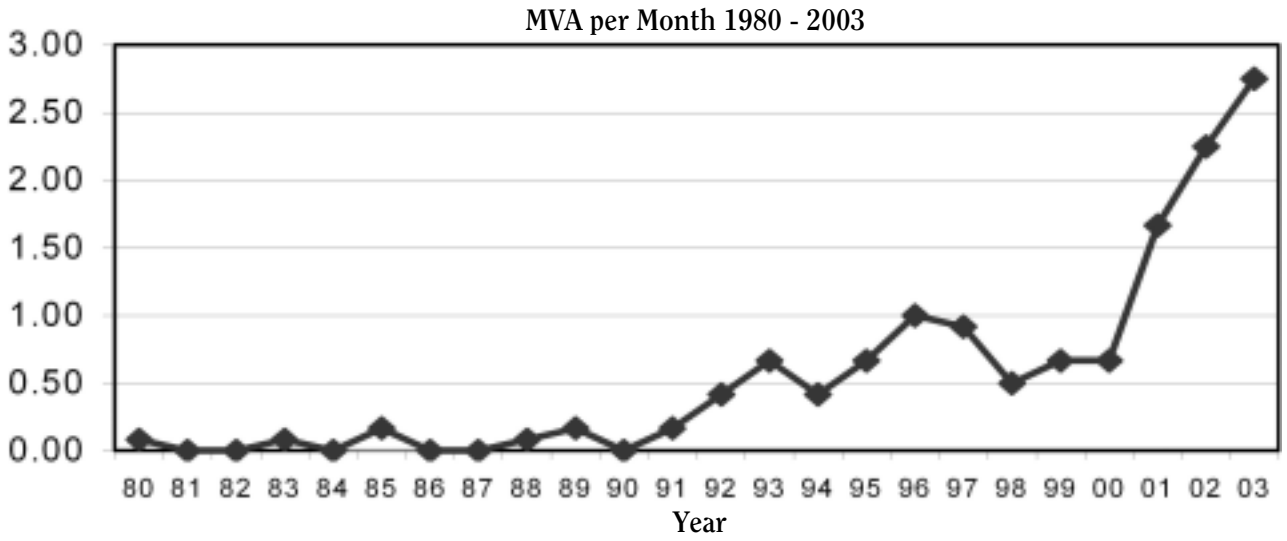
concerning moose which included 33 MVAs, 17 sightings, six dead moose, and three relocations of problem moose. The trend in moose sighting reports to DFW has been decreasing while the number of MVAs has reached an all time record.

Figure 1 shows the increasing trend of moose vehicle accidents per month from January 1980 through 2003. Moose vehicle accidents are all of the moose that were stuck and killed on Massachusetts roads plus all of the moose that were struck by vehicles but walked away from the accident. There have been 165 MVAs in Massachusetts between 1980 and 2003 (Table 4). The MVA rate for 2003 was 2.75 moose per month which is an increase of 25% over 2002 (Figure 1).

The current moose population in Massachusetts is estimated to be between 500 and 700 animals. We use a basic population model that incorporates sighting rates from the deer hunter survey and acreage of available moose habitat in the 12 Deer Management Zones that have the potential for occupation by moose. We do not include Cape Cod and the islands in this estimate. Currently, the sighting rate across the Commonwealth is 0. moose/100 hours of deer hunting which is a slight increase from the 0.25 moose/100 hours of deer hunting in 2002. In Deer Management Zone 6 in central Massachusetts, we have a sighting rate of 1.5 moose/100 hours of deer hunting.

During the year we had one radio-collared female moose in Massachusetts. This animal was immobilized and relocated from problem situations in February. The animal was monitored bi-weekly until she died in mid-June while giving birth to a calf. We will continue to radio-collar moose in the future to improve our understanding of movement patterns, survival rates and causes of mortality on Massachusetts' increasing moose population.

Figure 1. Moose vehicle accidents in Massachusetts per month from 1980 to December 2002.



Forestry Program

The Forestry Program is a component of MassWildlife's 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 early-seral to late-seral forest) in a landscape context that will maintain biological diversity.

The forestry program's objectives are to:

1) Build a forest inventory database, 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 conduct 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 WMA's. All forest management activities receive permits from the Department of Environmental Management under the Massachusetts Forest Cutting Practices Act.

Forest Certification

MassWildlfe lands were certified under the international Forest Stewardship Council (FSC) criteria for sustainable forestry in May of 2004 (see http://www.mass.gov/envir/forest/ and http://www.fscus.org/newsletters/FSCNews_jun_2004.pdf). This independent, third-party certification assures the general public that all forest cutting practices employed by MassWildlife are sustainable on an ecological, economic, and social basis. Achieving FSC certification is the culmination of a two-year effort by the Division's Forestry Program to document the sustainability of its forest management practices.

One requirement of forest certification is that DFW identify a system of forest reserves where timber harvesting will be excluded. This requirement is consistent with DFW's existing goal for late-successional forest habitat, and up to 15% of MassWildlife lands will likely be designated as reserves over the next several years. In FY04 a GIS mapping exercise was undertaken to identify potential reserves on DFW lands. This analysis identified sites where multiple, desirable attributes occurred, such as primary forest (sites that had not been converted to agricultural use), interior forest (sites that remain buffered from fragmentation caused by roads and development), and BioMap core habitat for rare species. In all, 268 sites totaling 10,800 acres (about 10% of DFW Forestlands) were identified. Sites averaged about 40 acres each, and ranged from <1 acre to about 850 acres. A second GIS analysis was initiated to identify a small number of extensive, or "matrix" reserves that would include various state lands, including Department of Conservation and Recreation (DCR) lands and Division of Fisheries & Wildlife (DFW) lands. This analysis is expected to be completed by December, 2004.

Landcover Mapping

DFW foresters and contractors completed field visits to 1,899 forested polygons across 86,000 acres in October, 2003 in order to improve the accuracy of landcover mapping data to >80%. DFW foresters and contractors also completed an accuracy assessment on 11,500 additional acres of state wildlife lands that were interpreted by Dendron Resource Surveys, Inc. of Ontario, Canada, in August of 2003. The assessment was completed in October of 2003, and included 121 of 995 forested polygons, plus 55 of 1,095 non-forested polygons. Dendron map accuracy was about 80% and gives DFW current landcover data for 97,500 acres.

Forest Cutting Operations & Management Activities

Two timber sales were operating in FY04. A 70 acre cut on the Chalet WMA was designed to regenerate high quality northern hardwoods and red oak. This operation began in July of 2003, and is expected to be completed by the end of September, 2004. A total of 221 thousand board feet (mbd) of timber, plus 120 cords of firewood will be harvested. Another 70 acre cut began on the Montague Plains WMA in January of 2004. This sale is a cooperative effort with the Ecological Restoration Program of DFW's Natural Heritage Section, and will assist with fuel reduction to facilitate prescribed burning in a fire-adapted pitch pine/scrub oak community on the Montague Plains WMA. This sale is subject to a seasonal restriction imposed by the Division's Natural Heritage and Endangered Species program which limits cutting activities to winter conditions, and requires snow cover to protect rare species that overwinter on the site. A total of 168 mbf of pitch pine and white pine timber, plus 550 cords of pulpwood will be harvested.

Sale preparation includes marking of trees to be cut, marking of trees to be retained, marking of location of wetland resource areas, rare species habitat, and priority natural communities, laying out 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 - ARCs), but groups of mature trees are retained on all sites. These 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 WMA's. Such 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 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.

Other activities included work on a GIS analysis of potential matrix forest reserve sites to establish late-seral forest habitat on state lands, as well as the drafting of ecoregion assessments and wildlife management unit plans to guide DFW forest management activities. Biological monitoring efforts will be continued, and new DFW timber sale activities are planned for the Chalet, Hiram Fox, and Peru WMAs.

Biological Monitoring

Breeding bird surveys were conducted on portions of the Hiram Fox WMA in Chester, the Fox Den WMA in Worthington, the Peru WMA in Peru, and the Herm Covey WMA in Belchertown in June, 2004. The Forestry Project contracted with a private vendor to conduct data analysis of, and to write a summary report for the breeding bird survey results from the Hiram Fox WMA covering the 16-year period from 1987-2003. The data analysis and summary report was completed in January of 2004 and indicated that a diverse and relatively stable breeding bird community occurs at the site.

An on-going effort to field-check all potential vernal pool (PVP) sites identified on DFW lands by the Natural Heritage section continued in FY04. Given that vernal pools require special attention during forest cutting operations, information on the location and condition of all vernal pools on DFW lands is needed. A total of 282 pools were visited from April-June, 2004 (previously, 333 pools were visited in April-June, 2003). To date, 351 of the 615 pools visited to date (57%) have been confirmed to be functional pools, and will be protected during any subsequent timber sale operations. Approximately 170 pools that remain unconfirmed will be visited during the spring season of 2005.

Wildlife Section Staff

Thomas K. O'Shea
Assistant Director of Wildlife Research

James Cardoza, M.S., *Black Bear/Turkey Project Leader*
Lori Cookman, *Wildlife Technician*
Thomas Early, *Wildlife Biologist*
Brian Hawthorne, *Forester*
Chrissie Henner, M.S., *Furbearer Project Leader*
H. Heusmann, M.S., *Waterfowl Project Leader*
Anne-Marie Kittredge, *M.S. Forester*
Jill Liske-Clark, M.S., *Upland Project Coordinator*
Trina Moruzzi, *Wildlife Biologist*
John Scanlon, M.S., *Forestry Project Leader*
William Woytek, M.S., *Deer/Moose Project Leader*

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

Dr. Thomas W. French
Assistant Director

Living Waters, BIO Map and Local Conservation

During FY04, the Natural Heritage & Endangered Species Program (NHESP) published and officially released *Living Waters: Guiding the Protection of Freshwater Biodiversity in Massachusetts*. This report details Natural Heritage's conservation vision that identifies **Core Habitats** for the state's rare freshwater species and exemplary habitats in lakes, ponds, rivers, and streams. The *Living Waters Technical Report* and the colorful *Living Waters* poster are additional companion publications. A variety of Living Waters follow-up projects included: 1) distributing Living Waters reports to conservation commissions, local land trusts, local libraries, and regional conservation partners, 2) writing Natural Heritage fact sheets for several state-listed aquatic species, and 3) speaking to a variety of watershed associations and statewide conservation organizations about the Living Waters project.

During the remainder of FY04 staff focused on integrating Living Waters with BioMap, Natural Heritage's recent plan that identified Core Habitats for terrestrial, wetland, and estuarine biodiversity. Specifically, staff wrote, edited, and synthesized Core Habitat summaries and species lists that describe the significance of each Core Habitat that was identified in either of these two plans. To facilitate the use of this information at the local level, staff developed templates to produce customized town-scale Core Habitat maps and reports. An effort was made to distribute these reports and maps to every planning agency, conservation commission, local land trust, committee for the Community Preservation Act, and committee for a Community Development Plan.

2003 Field Season Summary

Notable discoveries:

(1) In 1989 John Peacock of the U.S. Forest Service was trapping moths at Camp Squanto in Plymouth, and captured a single male *Catocala pretiosa pretiosa*, a globally rare species of underwing moth that disappeared from almost all of its eastern North American range over 100 years ago. The entire global range of *Catocala pretiosa pretiosa* was thought to be restricted to southern New Jersey, and the individual found by Peacock in Plymouth was thought to be a stray. However, in July 2002 a single male was found, not more than 300 meters away from the site where Peacock had set his trap in 1989. The presence of two individuals in the exact same location 13 years apart ruled out the possibility that they were strays, and indicated that there was almost certainly a breeding population in the vicinity. This was confirmed in June of 2003, when nine larvae were discovered on Red Chokeberry (*Aronia arbutifolia*) along the shore of a nearby pond.

(2) *Hadena ectypa* is globally a rare noctuid moth native to forest openings and savannas in the Appalachian Mountains and midwestern U.S. *H. ectypa* had never been recorded from Massachusetts until September of 2002, when a single individual was taken in a blacklight trap set at Knightville Wildlife Management Area in Huntington. In July of 2003 eight larvae and one egg of *H. ectypa* were found on Bladder Campion (*Silene vulgaris*), growing along the shore of the Westfield River near where the adult had been taken in the blacklight trap, confirming the presence of a breeding population at this site. *H. ectypa* had previously been recorded as feeding only on the native Starry Campion (*Silene stellata*), so its use of the introduced Bladder Campion is of interest.

Birds

Bald Eagle: The summer of 2003 was the 14th year that Bald Eagles have raised young in Massachusetts since their return as a nesting species. This year, there were 15 territorial pairs and 8 pairs successfully raised 13 young. Since 1989, when the first chick was raised, a total of 154 bald eagles have fledged from Massachusetts nests. In all of New England and New York there were 416 territorial pairs, 261 of which successfully fledged 389 chicks as follows: ME – 309 territorial pairs, 190 successful pairs, 273 chicks fledged; NY – 75, 53, 87; MA – 15, 8, 13; NH – 8, 3, 5; CT – 8, 6, 10; RI – 1, 1, 1; and VT – 0.

During the mid-winter eagle survey conducted on January 10, 2003 a total of 71 Bald Eagles (43 adults and 28 immatures), and one immature Golden Eagle were seen. Results from the standard survey routes included 29 at Quabbin Reservoir, 12 on the Connecticut River, 13 on the Merrimack River, and five on Assawompsett Pond. Other Bald Eagles were found at Silver Lake, Plymton (1); Plymouth Ponds (3); Watuppa Ponds, Fall

River/Westport (1); Mystic Lakes, Medford (2); Parker River National Wildlife Refuge (1); and Wachusett Reservoir (4). The Golden Eagle was seen at Quabbin Reservoir where most of the Golden Eagles in past years have been reported.

Peregrine Falcon: During the summer of 2003, Massachusetts hosted nine territorial pairs of Peregrine Falcons, of which eight pairs successfully fledged 16 chicks. This compares to nine pairs in 2002 and six pairs in 2001. A landmark in Peregrine recovery in 2002 was the first nesting at a cliff since 1955. This first nesting on a Massachusetts cliff since recovery efforts began, occurred on the Farley Cliffs in Erving which had been a historic location of nesting Peregrine Falcons. In 2003, this pair apparently moved to Mt. Sugarloaf in Deerfield which is also a historic nest site. Nesting, or territorial pairs, are now known to be present at the Customs House Tower, Boston; Christian Science Church Administration Building, Boston; Tobin Bridge, Boston; Goliath Crane in the Quincy Shipyard, Quincy; Braga Bridge, Fall River; Ideal Box Company in a renovated mill building, Lawrence; Monarch Place Building, Springfield; the library tower on the University of Massachusetts campus, Amherst; and on Mt. Sugarloaf, Deerfield.

Common Loon: In 2003, a network of cooperators monitored territorial and nesting Common Loons (*Gavia immer*) in Massachusetts. Loon numbers continue to increase in the state, with twenty-four territorial pairs observed on 10 waterbodies, compared to 21 pairs on 11 waterbodies in 2002. Fourteen pairs of loons laid eggs (*vs*. 10 pairs in 2002) at six waterbodies (*vs*. five in 2002), including Paradise Pond in Princeton, where they nested for the first time. Fourteen chicks were presumed to have fledged, resulting in a productivity estimate of 1.0 fledglings per nesting pair (0.58 fledglings per territorial pair); this is much higher than last year's estimate of 0.6 fledglings per nesting pair. Flooding was a problem at a couple of sites.

Terns, Laughing Gulls, Black Skimmers: Cooperators in Massachusetts surveyed 119 coastal sites in 2003 for the presence of breeding terns, Laughing Gulls (*Larus atricilla*), and Black Skimmers (*Rhynchops niger*); 75 sites were occupied by nesting birds of one or more of these species. Following two years of decline, Roseate Terns (*Sterna dougallii*) increased 18.2% to 1,725 pairs. Numbers of our most abundant tern species, the Common Tern (*Sterna hirundo*), jumped 17.0% to 16,075 pairs, a recent historical high. Least Terns (*Sterna antillarum*) continued their downward slide to 2,496 pairs, a 10.7% decrease from 2002. Laughing Gulls increased 8.6% to 1,201 pairs this year. Five pairs of Arctic Terns (*Sterna paradisaea*) and seven pairs of Black Skimmers nested in Massachusetts in 2003. Two significant events for seabirds this year were the Bouchard oil spill in Buzzards Bay, which affected three of the state's largest tern colonies, and the discovery of a major tern colony in Chatham on a small island that has formed between North and South Monomoy islands. This new island is being called Minimoy Island.

Least Terns.

Piping Plover: A coast-wide network of cooperators reported breeding Piping Plovers at 109 sites in Massachusetts in 2003. An additional 60 potential nesting sites were monitored but no breeding pairs were detected. The total breeding population for the state was estimated at 511 pairs, a 5% decrease from the 2002 count of 538 pairs. Two regions harbored 60% of all the breeding pairs in the state: Lower Cape Cod (Chatham to Provincetown) (37%) and Upper Cape Cod (23%). The largest numbers of pairs were reported from Crane Beach in Ipswich (35 pairs), Sandy Neck in Barnstable (31), South Monomoy Island, Chatham (31), and South Beach, Chatham (27). Overall statewide productivity was 1.26 chicks fledged per pair, based on data reported from 506 of 511 pairs (99%). Overall observed nest success was 42% (324 of 772 nests hatched at least one egg). For 696 nests for which complete data were reported, observed hatching success was 44% (1,102 of 2,505 eggs hatched) and observed fledging success was 56% (618 of 1,102 chicks survived to fledge).

American Oystercatcher: Observers reported a total of 376 adult American Oystercatchers which included 184 pairs at 69 sites in Massachusetts in 2003. The small discrepancy between number of adults and number of pairs is due to reports of several small groups of adults observed during the census period for which pairing status could not be determined. No oystercatchers were detected at an additional 107 sites that were surveyed. The largest numbers of breeding pairs were reported from Lower Cape Cod (46 pairs), Martha's Vineyard (40), Nantucket (39), Bristol County (19), and the Boston Harbor Islands (15). Individual sites with the largest numbers of pairs were the Coskata-Coatue area of Nantucket (27 pairs), Norton Point Beach in Edgartown (7), and Sylvia State Beach and Sengekontacket Pond in Edgartown (7). In contrast, no breeding oystercatchers were reported from 8 sites surveyed along the South Shore, and only 5 adults of uncertain breeding status were reported from 7 sites

surveyed on the North Shore. Statewide, at least 88 chicks were reported to have fledged from 152 pairs for which productivity data were available, for an overall productivity of 0.58 chicks fledged per pair. However, this may be an underestimate of actual fledging rate, given that oystercatcher chicks are wary and often difficult to monitor and so may be undercounted at some sites. The largest reported post-breeding concentrations of oystercatchers were at North Monomoy Island, Chatham (170 birds on August 23); Coatue, Nantucket (39 on July 3), and the Glades, Nantucket (33 on August 4).

Grassland Bird Surveys: During the 2003 field season surveys for breeding grassland bird species were conducted at five sites in eastern and central Massachusetts. Two of these were previously unsurveyed sites, while three were known as breeding sites for particular rare species, but had not been surveyed in several years. Surveys focused on the following species, which are listed on the Massachusetts List of Endangered, Threatened and Special Concern Species: Upland Sandpiper (*Bartramia longicauda*, E), Vesper Sparrow (*Pooecetes gramineus*, T), Grasshopper Sparrow (*Ammodramus savannarum*, T) and Henslow's Sparrow (*Ammodramus henslowii*, E). Bobolinks, Eastern Meadowlarks and Savannah Sparrows were also of interest. Surveys were conducted between June 11 and July 9 by walking transects spaced roughly 100 meters apart and making note of all individuals of all species detected by sight or vocalization. The surveys yielded Vesper Sparrows at one of the sites, which represent a new site for this species; Savannah Sparrows at three of the sites; and Bobolinks at two sites.

Reptiles and Amphibians

Plymouth Red-bellied Turtle: Due to contract delays and land access issues, searches for nests did not get underway until June 25 instead June 1, as is customary. Although nesting had already begun before field work began, a total of 40 nests containing 540 eggs (average 13.5 eggs per nest) were found. All 40 intact nests were covered by wire cages to prevent predation. Another 29 nests were found after predation had already occurred. A total of 438 eggs (81.1%) from the 40 nests covered produced viable hatchlings. This is an average of 11.0 hatchlings per nest. Of these, 152 hatchlings were saved for headstarting and 286 were released directly into the wild. Very encouraging was the discovery of 10 additional nests that had not been discovered when they were laid and from which hatchlings had emerged without any sign of predation. Seven hatchlings from three of these nests were found. The total number of nests discovered was 79 at the primary breeding pond.

Invertebrates

Lepidoptera: During the course of the 2003 season, 272 species of Lepidoptera were recorded by staff in Massachusetts (210 species of moths and 62 species of butterflies). Of these 272 species, 17 are listed as Endangered, Threatened, or of Special Concern in Massachusetts. Some of the 17 listed species were encountered at multiple sites. More than 350 Lepidoptera specimens were collected and preserved Over 1,000 photographs were taken of diurnal Lepidoptera and other insects and their habitats. Fifteen species (8 .of which are state-listed) were reared in order to obtain photos of immatures, specimens, and parasitoid records.

(1) *Grammia phyllira* project

In June of 2002 a female *Grammia oithona* (a colorful tiger moth) was captured by Mike Nelson at Westover Air Force Base, and with the help of several others, her offspring were reared. The next generation consisted of both *G. oithona* and *Grammia phyllira,* each of which listed as a species of special concern, from the single *G. oithona* female. Thus it is a single species with two forms; the name *G. phyllira* has nomenclatural priority. In June of 2003, a female *G. phyllira* was obtained from Westover, and a breeding colony was established in captivity. Breeding experiments conducted for four generations indicate that the wing pattern difference between the *phyllira* and *oithona* forms is likely due to a single gene, inherited in a simple Mendelian fashion, with the *phyllra* form showing incomplete dominance.

(2) *Erynnis persius* project

The Persius Duskywing (*Erynnis persius persius*) is a globally rare butterfly that has disappeared from most of its historic range during the past 40 years. The only currently known site in Massachusetts is Myles Standish State Forest where a breeding colony was found in May of 2002. In July of 2003, five larvae were found at the same site. A study of the vegetation and other habitat characteristics at this site may make it possible to implement a management plan for the habitat in the vicinity of the only known Massachusetts population of *Erynnis persius persius*.

Plants

Sandplain Gerardia (*Agalinis acuta*): State and Federally listed as Endangered. The number of Sandplain Gerardia plants continues to increase at nearly all sites being managed for this species. In addition to increases at the three sites where it was found occurring naturally in Massachusetts, recovery efforts since 1994 have led to healthy populations at four satellite locations. On Cape Cod, the two natural occurrences had a total of 2,813 plants in 1994 and increased modestly to 4,425 plants in 2003, however two satellite populations established on state lands in 1994 and 1997 grew to a combined total of 68,000 plants. On Martha's Vineyard, the recovery effort has progressed more slowly, but in a distinctly positive direction. In 1994 when the species was rediscovered on the Vineyard, only 378 plants were counted. This population had 5,112 plants in 2003 and two satellite populations on conservation lands had a combined total of 1,515 additional plants. Based on the above data, the total number of Sandplain Gerardia plants has increased about 29 fold since 1994.

Small Whorled Pogonia (*Isotria medeoloides*): State listed as Endangered and Federally listed as Threatened. Ten years of data have been collected on the largest population of this species in Massachusetts. Ann Silveri of Worcester, working on a volunteer basis, partially analyzed the data from this population for demographic trends and life history characteristics. The number of above ground plants in the population declined modestly from 145 in 2002 to118 in 2003, but the population is recognized to be somewhat higher due to a certain percentage of the population persisting as dormant tubers. Populations persisted with low numbers at three other sites (25, 1, and 4 individuals counted) in the Commonwealth. Deer browsing is thought to have reduced these populations in the past, and fencing is being employed by TTOR to protect one of them. Shading is considered another problem for the species and a plan prepared by Bill Brumback at the New England Wild Flower Society to thin the canopy at another site was approved and accomplished by Bill and others. The USFWS hosted a nationwide Recovery Meeting for the species in New Hampshire in December 2003 and Paul Somers and Ann Silveri attended to present Massachusetts findings.

Northeastern Bulrush (*Scirpus ancistrochaetus*): State and Federally listed as Endangered After a lapse of time, two New England Plant Conservation Program (NEPCoP) Massachusetts Task Force members (Lombardi and Rawinski) rediscovered three plants growing at the one know site in Massachusetts for this species.

New England Plant Conservation Program: Natural Heritage botanists Paul Somers and Melissa Dow Cullina assisted with the preparation of additional NEPCoP Conservation Plans for regionally rare plant species. By the end of the year, 80 plans were published and another 13 had received a final review by the NEPCoP Regional Advisory Council. The annual training and data assistance provided by NHESP to the New England Wild Flower Society's Plant Conservation Volunteers (PCVs) continued to yield impressive results. A data release agreement with NEWFS allowed the transfer of specific record data targeted for the annual work agendas of the PCVs and Massachusetts Task Force members. This resulted in numerous rare plant record updates as well as some new records for the NHESP database. From the annual volunteer training session two volunteers, Kathy Wilensky and Ruth Langh, were recruited to assist NHESP botanists with entering records of Watch List plant species. They have logged hundreds of hours and made significant progress toward completing the database of current records.

Botanical Field Highlights: With the close of the Living Waters project, Melissa Dow Cullina was able to turn her attention to monitoring some populations of terrestrial plant species. For example, fieldwork to support the proposal to list Mitchell's sedge (*Carex mitchelliana, G3G4)* was performed on Cape Cod; additional fieldwork on the cape updated records of Walter's sedge (*Carex striata,* G4). A population of Eatons' beggar's-tick (*Bidens eatonii*, G2) was rediscovered at a site where it had not been found in nineteen years.

Oriental bittersweet is highly prolific, producing multi-seeded fleshy fruits that are spread by birds. The resulting seedlings out compete many native species.

Botanical Survey Projects: Ted Elliman, working under NHESP guidance and assistance, completed the second of two years of vascular plant and vegetation survey work on the Boston Harbor Islands for the National Park Service. With the help of the GIS staff, the basic vegetation types of the island were mapped during the year. At a special Harbor Island Symposium held at the Boston Museum of Science, Ted presented his findings regarding the flora and vegetation of the Islands. Also completed under NHESP direction in 2003 was a report on the bryophyte and lichens of the Boston Harbor Islands by a team of six biologists led by Harvard's Dr. Scott LaGreca. A new project, a rare plant survey of Camp Curtis Guild in Essex and Middlesex counties, was initiated in the latter half of the year.

Invasive Plants: The Massachusetts Invasive Plant Advisory Group continued to work on the evaluation of non-native plant species that may be invasive in the Commonwealth using a set of criteria that the group had adopted earlier. It completed the review of a Phase I list of 39 species. Of these, 26 were classified as "Invasive," 11 were classified as "Likely Invasive" and two did not meet the criteria for either category An annotated list presenting the results of this effort was produced and posted on web sites of the Massachusetts Nursery and Landscape Association and the New England Wild Flower Society. This work was partially funded by the State (EOEA funds to DFW). Work then began to evaluate another group of approximately 45 additional candidates (Phase II). The group also completed a first draft of a document entitled "Strategic Recommendations for Managing Invasive Plants in Massachusetts."

Small Research Contracts

The program funded the following 14 Small Research Projects during FY04.

Plants

• Elizabeth Farnsworth, Matt Hickler, William Moorehead: Conducted a field inventory for False Mermaid (*Floerkea Proserpinacoides*) along the Green River Floodplain, Greenfield, Franklin County, MA.

• Carex Associates, Francis Clark: Conducted a plant inventory at Camp Curtis Guild: Reading, Lynnfield, Wakefield and North Reading, MA.

• Joann Hoy: Documented the status of Allegheny Mountain Buttercup (*Ranunculus allegheniensis*).

• Susan Williams: Conduct bryophyte inventories of Camp Curtis Guild, Reading, MA.

Invertebrates

• Lloyd Center for environmental Studies – Mark Mello: Surveyed Lepidoptera and Odonata at Camp Curtis Guild, Reading, MA.

• David McLain: Connecticut River Odonate survey. Athol Bird and Nature Club, David Small: Surveyed for American Rubyspot.

• Blair Nikula: Surveyed Scarlet Bluet (*Enallagma pictum)* and Attenuated Blue (*Enallagma daekii*) damselflies (Odonata: *Coenagrionidae*) across Southeast Massachusetts.

• Frederick Saint Ours: Conducted an assessment of distribution and conservation status of the Umber Shadowdragon *(Neurocordulia obsolete)*.

• Brian Coles and Jeff Nekola: Status of the state listed land snail (*Vertigo perryi)* in Massachusetts.

Vertebrates

• Matt Burne and Leo Kenney: Conducted inventories for reptiles, amphibians, and vernal pools at Camp Curtis Guild, Reading, MA.

• South Coast Terrapin Society: Conducted a field survey for Diamondback Terrapin in Buzzards Bay.

• John Crane: Survey for Red-bellied turtle nests.

• Michael Veit: Survey for rare and endangered Odonate on the Merrimack and Ware Rivers.

Environmental Review

The following table summarizes environmental reviews conducted during FY04.

Review Type	Count
Conservation Plan	5
Environmental Notification Form (ENF)	28
Forest Cutting Plan	106
Massachusetts EndangeredSpecies Act (reviews and information requests)	788
Notices of Intent	1042
Water Management Act	9
Public Documents Requests	3
Total	**1981**
Vernal Pools Certified	133

Data Management and Data Products

Between July 1, 2003 and June 30, 2004, a total of 103 new records were entered into the Natural Heritage and Endangered Species Program Database. These included records for 66 rare animal sites, four rare plant sites, and 33 natural communities. A total of 86 previously documented rare species site records were updated with new survey information. The spatial location of 728 additional rare species sites representing records awaiting entry into the NHESP Database was also digitized. During this period NHESP underwent a major conversion to a new, state-of-the-art integrated GIS and database system, to which many programs across the Natural Heritage network are converting. Data management activities during the pre-conversion period were focused largely on ensuring compatibility of existing data with the new system. Post-conversion activities have centered on improvement of existing data within the new system.

Land Protection

In FY04, MassWildlife spent a little under $3 million to protect approximately 19,256 acres of land across the state, bringing the agency's total land holdings to more than 155,000 acres. Several of the acquisitions were of particular relevance to protection of rare species and exemplary natural communities, as noted below. (For additional detail on land acquisition see the Section on Wildlife Lands, page 47.)

Western District

Lilly Pond, a high-quality example of a **Level Bog**, was further protected by DFW in Fiscal Year 04, with the gift of the 25-acre bog itself from the Five Colleges consortium and the purchase of the 36-acre Strienz parcel. Only one remaining private parcel now borders the bog.

Along the Middle Branch of the Westfield River, home to five species of state-listed rare dragonflies and damselflies, including the **Endangered Harpoon Clubtail** and **Threatened Rapids Clubtail**, 220 acres and more than 2000 feet of river frontage were protected by DFW in Worthington and Middlefield, connecting two parcels already protected by DFW.

Connecticut Valley District

An 11.5-acre parcel along the Connecticut River in West Springfield was acquired, protecting the nest site for a pair of **federally-Threatened Bald Eagles.** In Colrain, 28.7 acres were protected along a tributary to the Green River. The parcel itself has populations of **one Threatened and two Special Concern plants**, and the Green

River in that stretch supports the **Ocellated Darner**, a dragonfly of Special Concern. In Westfield, a conservation restriction on 38 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.**

Central District

Eighty-five acres of newly acquired land along Sucker Brook in New Braintree protects **BioMap Core Habitat for Wood Turtles.**

Southeast District

While no immediate changes in public access or day-to-day management of the **15,000 acre Massachusetts Military Reservation** in Bourne and Sandwich are anticipated, officially the Reservation has come under the "care and control" of MassWildlife. The Reservation is home to an extraordinary diversity of state-listed rare species including, **one bird, two turtles, thirteen moths, four dragonfly and damselfly, and four plants.**

Northeast District

Another 73 acres were added to the Salisbury Wildlife Management Area, protecting more of the **exceptional salt marsh** there. In Townsend, 17.6 acres were added to the Squannacook Wildlife Management Area, which harbors the Threatened **Blanding's Turtle**, as well as rare freshwater mussels, dragonflies, and other rare reptiles and amphibians.

Natural Communities

The main focus of natural community work in FY04 was the development of NHESP's natural community data layer for public access on MassGIS. Information on each occurrence was combined with general descriptions for each type, and attributes for each community occurrences were stored in the NHESP database. The natural community data layer includes 694 documented locations.

Nature Preserves Council

The Nature Preserves Council was inactive in FY04 while forestry reserves on state lands were being debated and determined. The appointments to the Council have expired.

The most recent members of the Nature Preserves Council members are:

Chair, Lisa Vernegaard, Director of Planning and Ecology at the Trustees of Reservations;

Secretary, Tom Rawinski, Director of Ecological Management at the Massachusetts Audubon Society and member also serving on the Natural Heritage & Endangered Species Advisory Committee;

Mark Mello, Research Director, The Lloyd Center for Environmental Studies; member also serving on the Natural Heritage & Endangered Species Advisory Committee;

Agency Associate members from DCR were Jack Lash from the former DEM and Peter Church from the former MDC.

Natural Heritage and Endangered Species Advisory Committee

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

Associate members are: Brian Cassie, Scott Jackson, Glen Motzkin, Blair Nikula, Wayne Petersen, Mark Pokras, Thomas Rawinski.

During FY04 the Committee held 11 scheduled meetings. August has been a traditional vacation month for the Committee. Ten of these meetings were held at the Westborough Field Headquarters and the other was held at the Broad Meadow Brook Audubon Sanctuary in Worcester.

Business of the Committee included:

- Voting to approve the NHESP Annual Report.

- Commending the agency and staff for the draft "Guidelines on the Release of Site-specific Natural Heritage Data" and to endorse the guidelines.

- Appraising proposed changes to the list of Endangered, Threatened, and Special Concern Species for 2004 were approved by the committee.

Natural Heritage and Endangered Species Program Staff

Thomas French, Ph.D., *Assistant Director*

Henry Woolsey, *Program Manager*
Kim Ausmus, *Administrative Assistant (part year)*
Jeremy Brooks, *Penikese Island Manager (summer 2004)*
Tara Boswell, *GIS Specialist*
Christopher Buelow, *Restoration Assistant*
Claire Corcoran, *Ecologist*
Adam DiNuovo, *Bird Island Assistant (summer 2004)*
Melissa Dow Cullina, *Botanist*
Nancy Eddy, *Administrative Assistant (part year)*
Lauren Flynn, *Tern Project Intern (summer 2004)*
Heather Foley, *Conservation Assistant*
Marea Gabriel, *Aquatic Ecologist*
Sergio Harding, *Data Manager*
Lynn Harper, *Habitat Protection Specialist*
Jeremy Hatch, *Bird Island Manager (summer 2003)*
Jennifer Loose, *Invertebrate Zoologist*
Sarah Luecke, *Penikese Island Assistant (summer 2004)*
Kathleen Maguire, *Ram Island Manager (summer 2003)*
Scott Melvin, Ph.D., *Senior Zoologist*
Jill Moravec, *Penikese Island Assistant (summer 2003)*
Carolyn Mostello, *Tern Project Manager*
Michael Nelson, *Invertebrate Zoologist*
Jami Nydam, *Ram Island Assistant (summer 2004)*
Jessica Patalano, *Finance and Project Administrator*
Nancy Putnam, *Endangered Species Project Analyst*
Jonathan Regosin, Ph.D., *Senior Endangered Species Project Analyst*
Ellen Shultzabarger, *Environmental Review Assistant (part year)*
Tim Simmons, *Restoration Ecologist*
Douglas Shoemaker, *Ram Island Assistant (summer 2003)*
Paul Somers, Ph.D., *Botanist*
Chloe Stuart, *Living Waters Project Manager*
Patricia Swain, Ph.D., *Plant Community Ecologist*
David Szczebak, *GIS Manager*
Joanne Theriault, *Conservation Assistant*
Christine Vaccaro, *Environmental Review Assistant (part year)*
John Warzybok, *Ram Island Manager (summer 2004)*
Megan Whitman, *Environmental Review Assistant (part year)*
Matthew Withroder, *Bird Island Assistant (summer 2003)*
Heather Ziel, *Penikese Island Manager (summer 2003)*

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.

Special Events

During the year MassWildlife hosted six special events.

July: Deer Permit Drawing and Presentation, Whately

November: Celebration of Wild Turkey Restoration with the National Wild Turkey Federation, Plymouth

December: Release of *Living Waters* publication with EOEA Secretary Ellen Herzfelder, Sudbury

January: Midwinter Eagle Survey, Statewide

May: George Darey WMA Dedication, Lenox

June: Redbelly Cooter Marking and Release, Westborough and Lakeville

Three of these events, Deer Permit Drawing and Presentation, Midwinter Eagle Survey and Redbelly Cooter Marking and Release, are annual events which hold great interest to members of the public. The other three, Celebration of Wild Turkey Restoration, Release of the Living Waters Publication, and Dedication of the George Darey Wildlife Management Area were unique, one-time events. Of these events, the most visible was the celebration of the restoration of Wild Turkeys. This was a joint venture of the Division of Fisheries and Wildlife and the National Wild Turkey Federation who gathered in southeastern Massachusetts in mid-November and held a ceremonial release of wild turkeys designed to draw public attention to the status of a bird that was abundant in colonial times, depleted by overuse and habitat changes and which has been successfully restored through cooperative ventures supported by public agencies, sporting / conservation groups, and the NWTF. In all cases information was provided to the media and public attendance was invited. For the unique events, special site and program arrangements were made to host dignitaries and to celebrate significant achievements by MassWildlife and by those who have dedicated their time and effort to supporting programs and projects to benefit Massachusetts' wildlife.

Information and Outreach

Marion Larson, Coordinator

MassWildlife News

Thirteen issues of the *MassWildlife News* were sent out via email, fax and hard copy—1562 individuals or organizations receive this news by surface mail, 1918 by email, 85 by fax. The MassWildlife News listserve total is now double the number of e-subscribers in FY03 (587). Of this total, 209 subscribers are Massachusetts Hunter Education instructors and 191 are License vendors. In FY04, 1081 individuals self-subscribed or were added to the electronic mailing list by staff bringing the total number of electronic subscribers to 1877. In addition to the subscribers all employees of the Department of Fish and Game and all staff of the Environmental Police continue to receive *MassWildlife News* but, as they do not receive notification through the Listserve, they are not included in the of the subscriber tally.

The listserve is a cost effective method of disseminating information. It would cost the agency an additional $13,650.00 if all individuals received 13 issues of the hard copy *MassWildlife News*. (1562 hard copies are printed and sent out at bulk rate postage of just over $400/issue for postage. Printing costs for the hard copies are just over $650/issue.)

This fax list is currently being updated, with a request that individuals provide an email address as an alternative means of receiving the information.

A *MassWildlife News* email subscription form is located at the front desk of MassWildlife's Field Headquarters in Westborough. It is also available at exhibits and displays where individuals can sign up. Animal Control Officers were asked to sign up by email at the annual meeting of their academy. Following a campaign of promotion of the new information system over 100 conservation and sporting organizations applied to participate in, and receive information through, this mailing list.

Through *MassWildlife News* and special media notification efforts we assisted writers in the production of articles that generated 1,315 news clippings. This is a little more than half the number of clippings logged in FY03 (2453). The shift is thought to be a reflection of new administrative policies which have redirected members of the news media to the Executive Office of Environmental Affairs. The fall hunting, spring fishing and young wildlife seasons were times of highest media interest.

Website

The website continues to be a useful source of information for many groups and individuals. An ever increasing percentage of callers indicate they have access to the internet. In many cases, callers are now referred to the website for information regarding wildlife species and specific topic information. Media contacts find the information useful as a follow up to their conversations with biologists.

Posting information to the web became much easier this year with the advent of agency training and the ability to post content directly to the website. Staff posting of information now takes place within a few hours instead of 24-48 hours as in the past.

New pages posted to the website in 2004 included: Public Hearings and Meeting Notices, and updated and re-formatted Wildlife Management Area maps for the Connecticut Valley and Western Wildlife Districts. New pages included Adobe® Portable Document Format (PDF) flyers with information about moose, bobcat, fox, fisher, crossbow permit applications, an esocids poster, bass creel survey form, history of tiger muskie and pike stocking, "Fishing for Tiger Muskie," hunting and fishing seasons, and Volunteer Opportunities in Fisheries.

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

Response to Public Inquiry

***MassWildlife* E-Mail:** This is the first time that agency email messages have exceeded telephone inquiries or mail. 5357 inquiries were processed this year compared to 4377 in FY03.

Phone calls: The Outreach Coordinator fielded twice as many calls between Jan – June 2004 as were tallied during the same time period in FY03. Calls included 117 calls on problem wildlife, most of which came from the Northeast District area, and over 150 calls were received from members of the news media. The remainder of the calls were general wildlife questions, questions about laws, permits, education, and hunting and fishing. Major media interest was generated in late July when a moose/car collision on the Mass Pike resulted in the first human fatality. Alleged mountain lion reports in Beverly and a coyote scare in Hull were also stories generating many media calls to the agency. In a number of cases, the media was referred to our agency by the press office at EOEA. Following protocols set during the last fiscal year, staff continues to limit their comments to technical information. Legislative and policy questions are referred to EOEA spokespeople.

Programs

Public Education Programs: Through our wildlife education programs, public appearances at conferences, festivals, and workshops we continue to reach urban youth, scouts, students in grades pre K-12, home schooled, pre-service teachers, college students and other adult audiences. This year the Education Coordinator alone reached nearly 1400 people through these presentations. As all Section staff members provided public programs, the total number of people reached through special presentations was far 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 2004 waterfowl stamp was selected in a morning competition held at MassWildlife's Field Headquarters in September of 2003. The five judges selected a painting of a wood duck drake carved by A. Elmer Crowell of Accord, MA, submitted by artist Larry Denton of Fort Smith, AR. Following the contest the Springfield Science Museum hosted a reception honoring the waterfowl stamp program and Mr. Denton. The artwork remained on display at the museum throughout the end of the month and was enjoyed by visitors to the museum.

Archery and Primitive Firearms Stamps

Design for the 2004 Archery and Primitive Firearms stamps was submitted to open competition by Jeffrey Klinefelter of Etna Green, IN who provided a painting of a buck emerging from the woods.

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 2003 - Summer 2004), 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 of particular note this year included one on emerging wildlife diseases; others on the natural history and identification of fireflies, red oak lichens and the garter snake; birdbanding and Lyme disease; and two articles on hemlock trees and the threat they face from a non-native insect (the Wooly Adelgid). Examples of "how to" articles included one on kayaking; another on tying choice trout flies; another on observing bald eagles on the Merrimack River; and another on creating backyard wildlife habitat. There were also features on nature viewing for the handicapped; Stellwagen Bank whale viewing; fishways for eels; limnology for fishermen; bird nests; and book reviews.

Other Publications

Only a few small publications were produced this year keeping us within our budget and the constraints of scheduling around magazine production. Certain materials, — trout and pheasant stocking lists, BOW event materials and program flyers, lists of locations for prime bass or esocid fishing — were updated and reprinted. We also published four new sheets, part of the "*Living with Wildlife*" series. The species so highlighted were fisher, coyote, red and gray fox, and bobcat.

In addition to these updated items, attention was focused on "infrastructure items" including a variety of signs for use on Wildlife Management Areas, agency mailing labels, certificates and labels for Project WILD, teachers' manuals for the Junior Duck Stamp Program and the agency's annual report.

Exhibits

Despite staff shortages, there was agency presence in the form of a display or exhibit in the following venues:

September
- Franklin County Fair, Greenfield—Conn. Valley
- Massachusetts Problem Animal Control Conference, Marlboro
- Waterfowl Stamp Reception, Springfield

October
- Topsfield Fair

November
- Women's Executive Network Trade Show, Fitchburg

January
- Southeast Sportsmen's Show, Bridgewater

February
- Eastern Fishing & Outdoor Expo, Worcester
- Springfield Sportsmen's Show
- Annual Meeting of the Blackstone Heritage Commission, Mendon*
- Central Mass. Flower Show, Worcester*

March
- Fly-fishing Show, Wilmington
- Massachusetts Association of Conservation Commissions Annual Meeting, Worcester
- Massachusetts Land Trust Conference, Worcester

April
- Outdoorswoman Display Board, Safari Club Annual Dinner, Boxboro
- EMS Club Day, Worcester*

May
- Great Falls Discovery Center Opening, Montague*
- Career Day, Wachusett Regional School District Middle School, Paxton

Photography

Staff photographer Bill Byrne continues to provide images in support of agency programs as well as special photography for each of the four issues of *Massachusetts Wildlife* magazine. This year photo assignments included recording the activities at the Mass Outdoor Expo, a day of outdoor activities for kids held in Sturbridge in celebration of National Hunting & Fishing Day. "Traditional" assignments included photographing the Sportfishing Awards, JDS awards, Conservation Camp awards in Chesterfield, and the dedication of the George Darey Wildlife Management Area. Miscellaneous research project photography included winter deer radio telemetry collaring, beaver survey ground truthing, summer black bears, and video filming of spring moose and calves in wetlands. Bill has developed "beginner skills" in scanning slides for PowerPoint, and he has gained familiarity with digital image files. Numerous black bear photos were provided to Rick Kennedy and Jim Cardoza for the successful launch of the Black Bear pages on the MassWildlife website.

Assignment photography for scheduled *Massachusetts Wildlife* articles continued to be Bill's major activity throughout the year with a range of subjects including pond-specific streamer flies, acclimated ruffed grouse, tree bark lichens, hemlock woolly adelgid insects, bald eagles wintering on the Merrimack River, birding sites, fireflies, Canada goose management, and invasive aquatic plants.

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,and 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.

Following considerable exploration of options, the Section acquired software needed to establish an electronic photo library and the photographer began development of an electronic filing system. Many images are now available electronically at various levels of resolution and are used for PowerPoint presentations, as well as being available to other entities, newspapers, magazines and conservation organizations.

Education Programs

Formal or School-based Education Programs

Pam Landry Coordinator

Project WILD: Twenty-two WILD Facilitators conducted 19 workshops (7 WILD, one Aquatic WILD, 10 combination WILD/Aquatic WILD, one combination WILD/Project Learning Tree) reaching a total of 218 educators from across the state. Audiences included scout leaders, formal & informal educators, pre-service teachers, members of City Year, University Wildlife Society members, and graduate students.

The Annual Gathering for Facilitators was held at Lawrence Heritage State Park with 27 facilitators enjoying a day of camaraderie, updates, recognition, fun and a presentation on the cultural and natural history of the Merrimack River.

* Asterisk indicates first time participation at event or venue.

Junior Duck Stamp Program (JDS): Students in grades K-12 from across the Commonwealth submitted 516 pieces of artwork to this "conservation through the arts" program. Entries were received from 30 K-12 schools and ten others (home schooled, individuals, private art lessons). Judging by a panel of five wildlife artists took place at USFWS Great Meadows National Wildlife Refuge. A painting of a drake & hen mallard by Brianne Hills of Billerica Memorial High School, was selected as Best of Show and represented Massachusetts at the national competition. Combinations of the top 100 pieces of art were part of a statewide traveling JDS exhibit appearing in 11 different venues. Sponsors of the program include MassWildlife, Massachusetts Waterfowlers, Inc., Boston Duck Tours, USFWS, the Massachusetts Wildlife Federation, and the Massachusetts Chapter of Ducks Unlimited.

Massachusetts Envirothon: Over the year MassWildlife has continued its involvement in this natural resource program for high school students through presentation of teacher and student workshops, serving on the education committee, preparing the wildlife exam, attending monthly meetings, and attending the competition. The Envirothon was held at Cochituate State Park in Framingham. MassWildlife staff provided exam questions, served as resource professionals, and served as judges for the event.

Non-Formal Education Programs

(Community, Nature Center or Parks)

Angler Education Program

Jim Lagacy, Coordinator

The Angler Education Program is the main component of MassWildife's Aquatic Resource Education Program. The other two components are Aquatic Project WILD, and Watershed Education. The Angler Education Program has several parts; freshwater fishing festivals, basic fresh-water fishing classes, fresh-water fishing clinics, and a fishing tackle loaner program through which angling equipment is provided to civic and community groups for special events.

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 the segment. Recruitment is conducted at the various winter sportsmen's shows and through positive "word of mouth" publicity. The program staffed display booths at four sportsmen's shows during FY04: the Worcester Sportsmen's Show, the Springfield Sportsmen's Show, the World Fly Fishing Expo in Wilmington, and the Massachusetts Striped Bass Fishing Show in Plymouth. Individuals who volunteer to serve as instructors are trained by apprenticing within a given workshop group. Four instructors are currently apprenticing volunteers.

Family Fishing Festivals and Derbies: There were nine events set up specifically as family fishing festivals. These festivals ranged in size from 50 participants to 900, for a total of approximately 3,800 people. An effort is made to make our fishing festivals educational with various learning stations (knot tying, casting, fish I.D., bait, equipment, etc.). We also participated (volunteers and equipment on site) in seven fishing derbies, including two special needs derbies (Disabled American Veterans events) totaling 1,400 participants.

Young anglers get started right at DFW's Family Fishing festivals.

Total estimated participation for Festivals and Derbies for FY04 was 5,200 people.

Four-Week Basic Fresh-Water Fishing Classes: There were 11 classes for the segment with approximately 238 participants. Five groups (Berkshire, Nashoba Valley, Newton, Shrewsbury, and Rehoboth) put on these classes.

Fishing Clinics and other short programs: These programs, while short in duration, seem to be the program's most popular offering. Clinics are generally two hours in duration, involving a short lecture on the basics of beginner level angling followed by casting instruction and a healthy dose of fishing. Also in this category: ice fishing programs, stocking programs, casting programs, and fishing educational talks (scout groups/etc.). Handouts are provided, and class participation is kept small enough to allow the instructors to work with participants one-on-one. There were 45 such programs in various parts of the Commonwealth during the year serving 925 participants (mostly children)

Tackle Loaner Program: The Angler Education Program maintains fishing equipment on-site at Westborough for loan to various groups throughout the state. Equipment, totaling 573 rod and reels, was loaned on 21 separate occasions during the year. Along with the rod and reels, we also provide the necessary terminal tackle, and various educational materials. These were loans to various groups/agencies including the Department of Conservation and Recreation, town Park and Recreation Departments, U.S. Army Corp. properties, USFWS, Sportsmen's clubs, and others.

Newsletter: The program newsletter *Shortcasts* was produced twice during the year (fall 2003 and winter 2004). In addition, communications through mail, email, and telephone conversations throughout the segment kept volunteers informed and up to date.

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 greater appreciation of the environment through education. The Hunter Education Program is a public education effort which provides 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 150,000 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 were offered in five disciplines across the state. A total of 3546 students participated in the Hunter Education Program in FY04. Participation levels increased 13% from FY03 (3092 students) and is slightly higher than the five year average. The following is a summary of course offerings and statistics on student participation:

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.

Seventy four courses were offered. Courses were 12-19 hours in length. A total of 2644 students participated, 2407 successfully completed the course; six failed and 231 did not complete the course. Students are asked to volunteer information on age, gender and ethnic background on their registration forms. Four hundred sixty two (462) students were minors (10 –14years old), 555 were 15-17 year old minors, and 43 were minorities. Three hundred and nine (309) women were identified.

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. There were 558 participants; 557 successfully completed the course; none failed and one did not complete the course. Seventy-three students were 10-14 years of age and 67 were 15 -17 years of age. Seven minority participants and 38 women were identified.

Trapper Education is mandatory for all first-time trappers. This two-day 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 90 participants. Course length was 10-13 hours. Eighty-nine successfully completed the course; none failed and one did not complete the course. Four women were identified. Three minorities, one minor (10 –14years old) and four 15-17 year old minors attended.

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 10-16 hours. Thirty-six students participated. Thirty-three successfully completed the course; one failed and two were incomplete. One minority, one minor (10-14 years old) and three 15-17 year old minors participated. Three women were identified.

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 topographical map for land navigation. Due to the technical nature of the course, it is not recommended for anyone under the age of 12.

Nine courses were conducted (3 in Pittsfield, 6 in Westminster). Courses range from 8-10 hours in length. A total of 218 students participated; 216 passed and two were incomplete. Twenty-two minors (10 -14 year olds) and 17 minors (15-17 year olds) participated. Two minorities and 50 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 16 project proposals. We funded 11 individual project proposals from three clubs. The selected clubs were notified of the awards and

** 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.

began work on the projects once all contracts 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 were conducted by DFW staff

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, *MassWildlife* offers a program coordinated by one staff member and staffed by volunteer instructors. This program provides a secure venue for basic instruction in a variety of outdoor activities.

Over the course of FY '04 the following workshops were offered:

Date	Topic	Number of participants
September 6 – 7	Trailblazing, Savoy	8
September 14	Deep Sea Fishing Skills, Hyannis	14
October 3 – 5	A Weekend at Sea: Boston Harbor & Beyond (marine ecology and sailing skills)	18
November 22	Deer Hunting Seminar	11
December 13	Deer Hunt	20
February 22-23	Winter Survival Weekend, Savoy	8
March 21	Reading Tracks and Animal Sign, Sudbury	30
April 28	B.O.W. in the City, Springfield	40
April 30	Turkey hunting Seminar, Devens	8
June 11-13	B.O.W. Weekend, Lenox	75

New workshops this year were Reading Animal Tracks and Sign, two Marine Education programs and the B.O.W. Sampler in Springfield. Reading Animal tracks and sign was a great success. Capped at 30, it filled very rapidly with an extensive waiting list. We will offer this again in 2005. Marine workshops brought women to apply their fishing skills in a saltwater environment. During the second of these workshops, "A Weekend at Sea" they also learned to sail and to crew an historic fishing vessel. The Springfield workshop was our first attempt at reaching out specifically to women in the minority community. The workshop was specifically designed with input from members of Springfield's

An enthusiastic angler shows off her first fish.

Hispanic and Afro-American communities. Enrollment was good and the event filled at 40 participants. Workshop segments included archery, birding, camping, canoeing, fishing, and self-defense.

All were enthusiastically received and both participants and local organizers expressed a desire for another program to be held in FY '05.

As in the past, 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.

During the year the electronic notification system for this program has grown and is now in use for many informational mailings. Operating in a Lyris system, it is rapid and efficient and will, in short order, replace the surface mail notification system.

During FY '03 staff had worked with researchers at Amherst College, Dept. of Sociology, to initiate a survey of Massachusetts B.O.W. registrants to learn more about their motivation for participating in the program and their activities after the workshops.

This year that study was completed. The concluding report indicates that, even if we discount the enthusiasm of participants and their responses at the close of a workshop, "BOW seems to have a positive effect on participation rates in a variety of outdoor activities." The researchers obtained demographic information

and determined that 4/5 of the participants were 40 or older, the majority are married or "partnered with a significant other." They are on average well-educated with 2/3 being college graduates and half of them having advanced degrees. Nearly 62% of the participants are employed full time and another 16% are employed half time.

The Amherst Team investigated how women had learned of the program and found, interestingly, that among those who had heard about the program from a friend – nearly two thirds of those friends had never previously attended a BOW workshop themselves. In fact 53% of the respondents attended their first workshop with a friend. A majority of the participants (63%) place a high value on observing wildlife without disturbing anything and it appears that they did more of it after attending a workshop. Participants gave the program high marks with 99% saying that they would "highly recommend (90%) or "recommend (9%) the program to other women."

Researchers also investigated participants' purchases (licenses, outdoor gear, club memberships) since attending the workshop and found them significant. They also found that the participants were, in overwhelming numbers, concerned about the environment..

In fact they reported that 75% of the participants said that as a result of the BOW program they now "pay greater attention to environmental issues."

Massachusetts Junior Conservation Camp

In August 2003 the Mass. Junior Conservation Camp held its first camp session at the Chesterfield Boy Scout Reservation. As in the past, MassWildlife staff managed registration, and both coordinated and conducted instruction in wildlife management, fisheries management and outdoor cooking skills.

The new location is a great benefit for the camp and staff from the Western MA Boy Scout Council have been extremely cooperative. The camp abuts *MassWildlife*'s Fisk Meadows Wildlife Management Area which provides excellent sites for instruction. As the camp has signed a 10 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

Northeast Information & Education Technical Committee

Pursuant to the committee's five-year plan to enhance agency recognition and credibility with members of the public, the Northeast Information & Education Technical Committee conducted an opinion research survey designed to establish a baseline assessment of public perception of this agency's initiatives. The survey instrument, developed in FY '03, was applied in all 13 northeastern states. Because the survey instrument was the same for all states, results are comparable.

Results of the Massachusetts Survey indicate that the most popular outdoor activity for Massachusetts residents was visiting a state or national park and viewing wildlife close to home. Sixty one percent of respondents indicated that they or someone in their family had watched wildlife in MA in the past year. A small majority (55%) indicated that they or a member of their family had gone fishing in the past year.

The majority of Massachusetts residents did not know which government agency manages fish and wildlife for the Commonwealth (13% could name the agency). Just over a third of respondents (34%) indicated that they were satisfied with the agency, 55% said that they did not know and only 7% were dissatisfied. Programs most cited as agency strengths were providing recreational fishing opportunities, protecting endangered species and enforcing fish and game regulations. Programs for which respondents thought the agency was doing a fair or poor job included offering educational programs on fish and wildlife, and protecting wildlife habitat.

Values rated as most important were that the water resources are safe and well protected (93%); that natural areas exist for enjoying and experiencing nature (89%); that wildlife exists in MA (87%); and that ecologically important habitats and lands are protected and preserved (87%). The values with the smallest percentage of respondents saying that that value is very important were that people should have the opportunity to fish in MA (68%); and that people should have the opportunity to hunt in MA (37%). Additionally MA residents showed deference for F & W habitat over human use of the land. Seventy seven percent of the respondents disagreed that development for new home sites should take precedence over preserving wildlife habitat and 76% disagreed that landowners should be allowed to develop their land regardless of its impact on wildlife.

For the most part respondents did not know how the DFW is funded; once it was explained however 72% supported the idea of funding the DFW through general tax revenues. Responses were broken out by the respondent's age, gender, income level, place of residence

Secretary's Advisory Group on Environmental Education

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

During the year the Section Chief served as Chairman of the subcommittee which oversees implementation of the Massachusetts Environmental Education Plan (MEEP). In this capacity she monitored progress to-

ward a series of goals set forth in the MEEP (1999) and hosted a workshop on evaluation of Environmental Education programs offered by the National Project on Excellence in Environmental Education.

Community Planning Workshop

The Section Chief worked closely with Dr Brandi Rue, Framingham State College and Sandra Ryack-Bell, the Dunn Foundation to plan a workshop on planning suburban communities to incorporate the needs of both people and wildlife. This workshop will incorporate the concepts contained in MassWildlife's "Living with Wildlife" program and make them available to teachers and community leaders. Further work on this project will continue

Tourism

Agri-Tourism Map: Staff collaborated with the Dept. of Agricultural Resources (DAR) and Dep. of Conservation and Recreation (DCR) on an Agri-Tourism map due to be printed in FY '05. MassWildlife properties and website will be labeled on this map. The North of Boston Convention and Visitor's Bureau invited DAR to speak on Agri-tourism. DCR and MassWildlife staff attended this session and were able to provide information about outdoor opportunities available through their respective agencies.

North Quabbin Ecotourism Task Force: This group was formed to support and promote eco-tourism opportunities in the North Quabbin region (Athol, Orange and the towns bordering them.) The production of a North Quabbin Woods Region brochure is expected by the end of this fiscal year. The Phillipston WMA is a featured attraction on the brochure's map.

Agency Visibility

In an effort to increase public identification of MassWildlife staffers, T -shirts, polo shirts dress shirts, caps and coveralls were made available to staffers. Name bars were prepared for all agency personnel.

Information & Education Staff

Ellie Horwitz, M.A., M.S., *Chief*

Bill Byrne — *Senior Photographer*
Jill Durand — *Circulation Manager,* Massachusetts Wildlife *Magazine*
Nancy Fulham — *Receptionist*
Jim Lagacy — *Coordinator, Aquatic Resources Education*
Pam Landry — *Education Coordinator*
Susan Langlois, M.S. — *Coordinator, Hunter Education Program***
Marion Larson — *Outreach Coordinator*
Peter Mirick, M.S. — *Publications Coordinator*

** 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.

DISTRICT REPORTS

Northeast District, Chuck Bell, *Supervisor*
Southeast District, Tom O' Shea, *Supervisor*
Central District, Bill Davis, *Supervisor*
Connecticut Valley District, Ralph Taylor, *Supervisor*
Western District, Tom Keefe, *Supervisor*

Most people seeking out MassWildlife make contact with one of the five Wildlife Districts. They are MassWildlife's field stations, administering wildlife lands, conducting on-site management, enhancing recreational opportunities and addressing wildlife issues pertinent to their region.

During the past year, staff from all of the Districts conducted administrative functions and they participated in a wide variety of research programs initiated by MassWildlife's biologists, based at the Westborough Field Headquarters (see Section reports for the status of these projects.)

District personnel sell licenses, stamps and selected permits out of the field offices. Beyond that, District staff distribute licenses, abstracts, stamps and other materials related to the sale of hunting, fishing, and trapping licenses to other vendors in the 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.

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 also monitor the water quality of lakes and streams prior to releasing fish into them. They release trout, northern pike, tiger muskies and landlocked salmon into waters scheduled to receive them. They also release pheasants on Wildlife Management Areas (WMAs) and in open covers.

In all parts of the state, District staff provide 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 to members of the public, and providing programs for civic groups and schools within their region. In fact they are often the first ones sought by the media in developing an article on a topic with implications for wildlife. District Supervisors and Managers serve as the agency's local public relations/education "point persons," spending many hours with civic and conservation groups including sportsmen's clubs, and responding to inquiries from interested citizens.

District staff members monitor and enhance the Wildlife Management Areas in their region. This involves cutting brush, mowing, trimming trails, designing forest cutting operations, planting shrubs and maintaining roads and parking areas. They take a primary role in erecting gates and signs and in making 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 MassWildlife's lands.

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 Wildlife District

Personnel

District Supervisor Chuck Bell made the move to Manager of the Sunderland Fish Hatchery in May 2004, leaving general administrative matters in the capable hands of Erik Amati and John Sheedy. Frank O'Meara retired as the Martin Burns WMA Supervisor.

Wildlife

District staff tracked 15 radio-collared deer throughout the year while assisting with the agency's ongoing deer monitoring project. The Youth Hunt pheasant seminar and Youth Hunt for pheasant at Martin Burns WMA were supervised by Chuck Bell. Waterfowl survey work was conducted in the Northeast, Central and Connecticut Valley Wildlife Districts, and this District assisted with the goose banding project in the Northeast, Central and Southeast Wildlife Districts.

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 wood duck nesting box site was added at the Rt. 2 heronry in Acton/Boxborough. The District tagged 114 beaver, 25 fisher, 20 coyote, one otter, 5 red fox and 3 gray fox pelts.

Fisheries

Fisheries surveys were conducted at twenty-one (21) streams and rivers within the Nashua River drainage. At the Essex Dam fishlift, two staff spent two days per week from May through mid-July trapping salmon and counting shad, herring, gizzard shad, lamprey eel and striped bass. The District responded to a report of a fish kill at Baddacook Pond in Groton where about a dozen dead rainbow trout were found. The cause was determined to be a natural die-off due to high temperatures and low oxygen levels in the water.

Natural Heritage

As part of the statewide Bald Eagle Restoration Project, District staff participated in the mid-winter eagle survey. They also monitored Bald Eagles nesting on the Merrimack River in Haverhill where District staff members surveyed the location of nests and monitored nest site conditions. Peregrine falcon work consisted of constructing a nesting platform for the clock tower in Lawrence and hacking (placing and monitoring in rearing sites) young birds.

Environmental Review

District personnel coordinated with the Natural Heritage & Endangered Species Program on project review of general and state-listed species issues associated with the Dunstable Rail Trail over Unkety Brook. Division comments were submitted for the development of the USFWS Comprehensive Conservation Plans for Oxbow National Wildlife Refuge, Great Meadows National Wildlife Refuge and Parker River Wildlife Refuge.

Information and Education

Talks, presentations and meetings were held with town representatives, legislators, conservation groups and citizens regarding coyote, beaver and bear complaints; public use of the Salisbury Salt Marsh WMA and Whittier Conservation Area in Acton; as well as other matters. Staff handled numerous public inquiries about nuisance wildlife and other standard, seasonal Division activities and projects. Division information was relayed to sportsmen through monthly attendance at Essex, Norfolk and Middlesex County League meetings. Staff attended Large Animal Response Team (LART) meetings. Topsfield Fair coordination, collection of materials, scheduling and booth coverage was handled by District personnel, with assistance from Field Headquarters staff.

Wildlife Management Areas and Other District Activities

District staff set-up and assisted in the Devens Deer Hunt for paraplegic hunters, the controlled waterfowl hunt at the Delaney WMA, and the pheasant Youth Hunt at Martin Burns WMA. Staff logged many hours mowing roads, refurbishing parking areas and trails, maintaining equipment, posting boundary signs, setting up duck blinds, picking up trash, checking public access ramps and town ramps. Eagle Scouts helped with sign posting at the Nissitissit River WMA. Extra time was spent in the repair and upkeep of structures at the Acton office. This District issued four camping permits, 12 dog and one horse field trial permits at the Delaney WMA, and 450 target range permits.

Dick Turner has served the sportsmen and wildlife of the state for over 50 years.

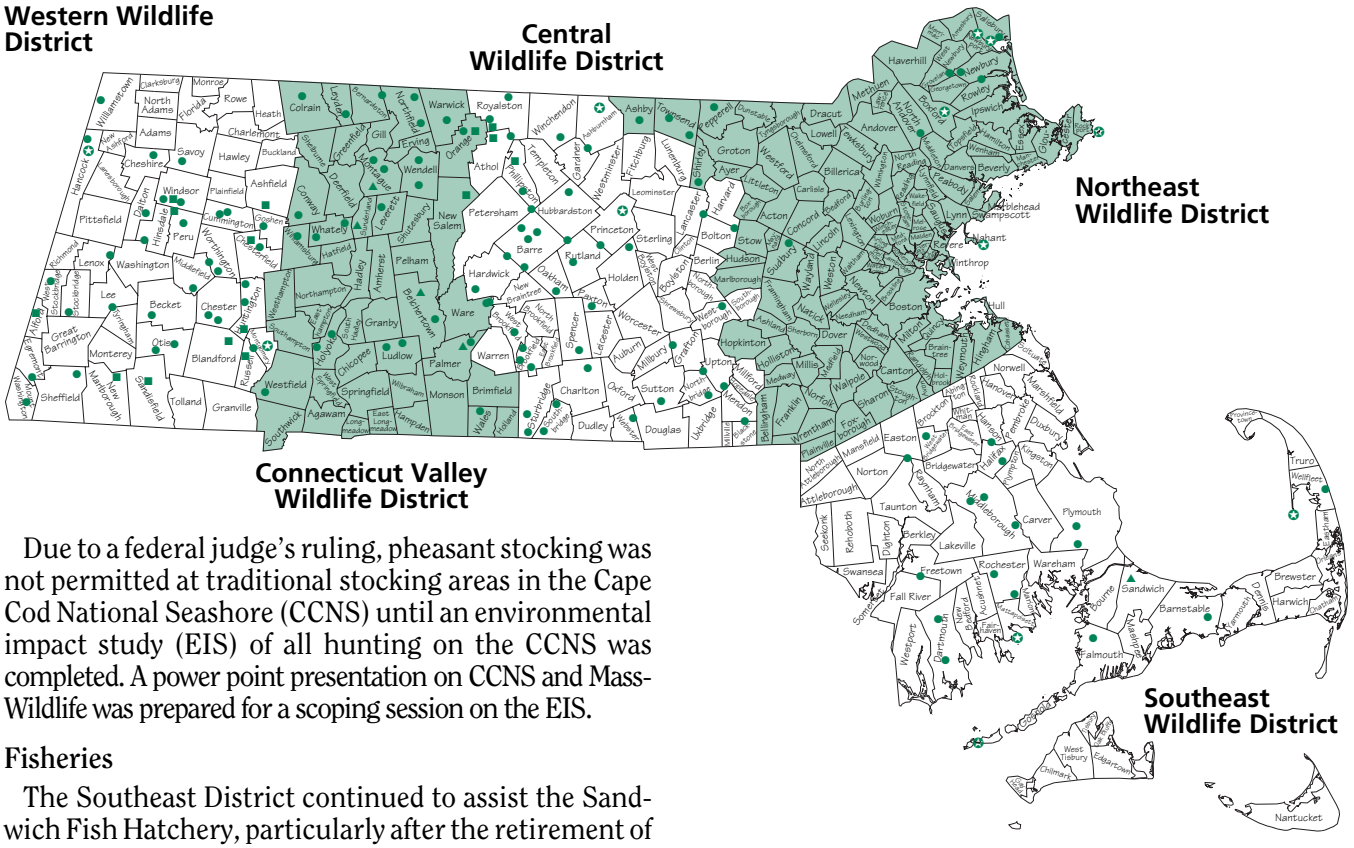
Southeast Wildlife District

Personnel and Administration

In FY 04, the Southeast District had several personnel changes: Wildlife Technician II Salvatore Paterno retired and District Supervisor Tom O'Shea was promoted to Assistant Director, Wildlife, assuming his new duties in Westborough on June 12, 2004. Steve Hurley stepped in to serve as Acting District Supervisor. Also in May 2004, Dick Turner, District Wildlife Manager, was honored for his 50+ years of service at a banquet hosted by the Bristol County League of Sportsmen.

Due to the problems encountered with over-the-counter sales of antlerless deer permit at the District in October 2002, alternate locations were reviewed for the first week of permit sales. Thanks to the cooperation of the Department of Conservation and Recreation's Region 1 Headquarters and Myles Standish State Forest (MSSF) staff, the first week of antlerless deer permit sales in October 2003 was conducted at the Nature Interpretive center next to the MSSF headquarters. Sales at this location were judged by both permit seekers and MassWildlife staff to be a great improvement over the 2002 operation at the District office. After the initial week, sales resumed again at the District office.

Cooperative agreements with farmers at Dartmoor Farm and Wilder WMAs were reviewed and an emu farm was inspected. Despite considerable initial interest, only a few permits were issued for the special post season pheasant hunts at the Erwin Wilder WMA.



Due to a federal judge's ruling, pheasant stocking was not permitted at traditional stocking areas in the Cape Cod National Seashore (CCNS) until an environmental impact study (EIS) of all hunting on the CCNS was completed. A power point presentation on CCNS and MassWildlife was prepared for a scoping session on the EIS.

Fisheries

The Southeast District continued to assist the Sandwich Fish Hatchery, particularly after the retirement of the hatchery manager and technician in 2003. During summer and fall of 2003, the District was inundated with sportsmen and citizen concerns about the proposed closing of the Sandwich State Fish Hatchery. Assistance was provided to the hatchery in computer operations and in routine hatchery operations such as trout spawning and unloading of feed.

During the summer of 2003, fisheries surveys were completed on eight ponds and 13 streams in the Cape Cod and Taunton River watersheds. Temperature and dissolved oxygen profiles were conducted on 19 ponds in summer 2003. The annual trout survey with Trout Unlimited volunteers on the Quashnet River was accomplished on September 21, 2003. Stream temperatures were monitored in the Quashnet, Mashpee, Childs, Coonamesset and Santuit Rivers. Four fish kills were reported in the summer of 2003, one of which was determined to be caused by pesticides. The Pesticide Bureau of the Department of Food and Agriculture was contacted. Nine fish kills were reported in spring 2004 and most were determined to be the result of natural disease outbreaks.

Close cooperation and communication with the Div. of Marine Fisheries regarding herring runs continued.

Wildlife

Southeast District staff played a key role in the capture and release of wild turkeys for a National Wild Turkey Federation Thanksgiving event at Wompatuck State Park in Hingham, and in capturing and shipping two wild turkeys to Texas for a similar even on the following day. Staff participated in all of the general wildlife survey operations identified above. They built and maintained nesting boxes and assessed nesting success for wood ducks. They also received training in deer aging, animal immobilization and in the "Right-to-Know" Law.

District staff assisted the Natural Heritage section in management of colonial waterbird nesting areas on Bird and Ram Islands. They assisted in the release of red bellied cooters and in the capture or release of rehabilitated animals including a northern gannet, a green heron and a diamond-backed terrapin. District personnel installed aluminum raccoon guards to help prevent predation on bald eagle nests. In May 2004, Southeast District personnel assisted biologists conducting a scavenged bird study to help assess the impact of the April 2003 Buzzards Bay oil spill.

Raccoon rabies appeared on Cape Cod during this fiscal year despite the rabies vaccine bait barrier project. Efforts to control the spread of rabies included an expanded bait program and a trap, vaccinate and release program conducted by the federal agency APHIS (Animal and Plant Health Inspection Service) and other cooperators. The Southeast District continued to answer numerous inquiries and complaints about nuisance animals.

Southeast District personnel helped organize and coordinate the fall 2003 deer hunts at Camp Edwards/ Massachusetts Military Reservation as well as a spring 2004 turkey hunt at the base. District personnel were aided by the Elder Services of Cape Cod and the Islands Senior Environment Corps, Otis Fish and Game Club and the Division of Law Enforcement in pre-registering hunters, daily check-in and checkouts, and staffing biological check stations. In the fall of 2003, 1291

hunter days of effort harvested 129 deer in eight days of hunting (2 days of archery, two days of shotgun and 3 days of primitive weapon season). In the spring 2004, eight days of turkey hunting were allowed at the base and four turkeys were harvested in 105 hunter-days of effort. District personnel attended coordination meetings and posted signs to denote hunting and off-limits areas.

Land Management

Illegal disposal of trash and debris on MassWildlife lands in the Southeast District has greatly increased and has required large amounts of staff time, as has control of illegal roads and trails created by the use of off-road vehicles. Considerable time was spent on the Burrage Pond WMA in maintaining water control structures. Selected bogs were flooded in the fall and winter to create migratory waterfowl and shorebird habitat and to maintain options for future management. A new gate and nesting boxes for kestrels and bluebirds were installed at the Burrage Pond WMA. The management plan for the Southeastern Massachusetts Bioreserve was finalized during this fiscal year. The boundaries of the Red Brook WMA were located and marked. The capping of a landfill next to the Muddy Pond required several site inspections. An encroachment issue on the Hockomock WMA was addressed. Thanks to the assistance of a private citizen, a permit to maintain and improve the Ashumet Pond Boat ramp was approved by the Falmouth Conservation Commission. At the Frances A. Crane WMA, open field habitat was maintained by mowing and brush cutting as well as through coordination with the Upland Habitat Program.

Permits were issued for seven field trials and three other events at Crane WMA.

Outreach and Education

Southeast District personnel provided outreach, education and coordination for sportsmen and the general public by attending meetings of the Barnstable, Bristol and Plymouth County Leagues, the Mashpee National Wildlife Refuge, the Southeastern Massachusetts Bioreserve Management Team, and the Assawompsett Pond Complex Management Team. Southeast District personnel also prepared displays for the Marshfield Fair and manned displays at the Waquoit Bay National Estuarine Research Reserve Watershed Block Party, the Freetown State Forest Fun in the Forest Day, a Cape Cod Ponds in Peril Conference and the Standish Sportsmen's Show.

Information was given to outdoor writers and news reporters as requested, including a chapter on rainbow trout for a book on Buzzards Bay and an article on trout fishing for the Home Gallery Magazine – South Coast edition. Information was provided to an author working on a book on freshwater fishing. The Southeast District Fisheries Manager was interviewed for a Fairhaven cable TV show and presented talks to the Coonamesset River Working Group, to a second grade class at the Learning Center for Deaf Children in Randolph, and to a meeting about the Third Herring Brook dam removal project. He also participated in the Dedham Middle Schools' student shadow day.

Technical Assistance

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 Massachusetts Military Reservation (MMR) cleanup. Construction impacts on the Crane WMA from the treatment systems and investigational wells were monitored and recommendations were made for reducing the impacts of construction on flora, fauna and public use. The Southeast District Fisheries Manager served as part of the management planning team for the Trustees of Reservations' Theodore Lyman Reserve (Red Brook), the Santuit Pond Preserve, and assisted in a study of the genetics of salter brook trout. The Fisheries Manager was actively involved in monitoring the MMR cleanup plans as a member of the Plume Containment Team (PCT) and the Ashumet Pond Nutrient Advisory Group. Assistance in permit preparation was given to a landowner seeking to clean up a private junkyard next to the Quashnet River WMA.

Central Wildlife District

Personnel and Administration

Wildlife Technician Paul Orrizzi retired after 29 years of service to MassWildlife. He was replaced by the hiring of Scott Kemp. Bridgett McAlice was hired to fill the vacant Wildlife Manager position. Wildlife Technician Brian Guerin was promoted to the position of Assistant Culturist at the Sunderland Fish Hatchery.

Planning meetings were held with the Templeton Development Center to implement future archery hunting on the property. Assistance was provided to the U.S. Army Corps of Engineers at Birch Hill Dam on habitat reclamation efforts. Managers and staff attended various staff, planning, professional, training and informational meetings. Technical assistance was given to state agencies and local organizations on issues such as water pollution, lake associations and open space plans. Issues relating to land acquisition, boundaries, conflicts with abutters, ATV intrusions, mountain bikes, equestrian activity, invasive plant control and research on WMAs were addressed.

The District participated in the evaluation of shooting range grant applications submitted to the Hunter Education Program.

Fisheries

Central District staff surveyed the Chicopee River watershed. The Quaboag, Ware and the East Branch of the Swift River were surveyed at 20 sites, and 10 tributaries were also sampled.

A warmwater survey was conducted on the Millers River to determine the presence/absence of various year classes of northern pike. No pike were collected. A

similar survey was done on Quaboag Pond where pike were known to be present.

Angler creel surveys were conducted on Quaboag and Quacumquasit (South) Ponds. 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 information on angler effort during January, February and March and the number and species of fish caught.

Wildlife

District personnel directed seven deer check stations, one turkey check station, and one black bear check station. New check stations were added in the towns of Athol, Royalston and West Boylston. The second black bear taken in Worcester County (Hardwick) since black bear hunting was instituted was recorded. Waterfowl banding and census activities were conducted. Fisher, bobcat and fox pelts were tagged and recorded. A total of 450 wood duck nesting boxes were checked and 18 new boxes were erected at various wetland sites.

As in other Districts, this District scheduled and carried out the release of ring-necked pheasants at 17 Wildlife Management Areas, 15 open town covers and to 21 sportsmen's clubs where birds were reared and subsequently released.

A proposal submitted by the Worcester County League of Sportsmen to allow winter pheasant hunting under permit was approved by the Fisheries and Wildlife Board and was instituted at one WMA in each of the five Wildlife Districts. Bolton Flats was available for the winter pheasant hunting opportunity in Central District and three permits were issued. Twenty-five Snowshoe Hare were released between two sites.

Staff assisted in a radio telemetry white-tailed deer survey, collaring and tracking multiple study animals. Multiple moose/vehicle collisions were documented and data were collected from moose carcasses which could be salvaged. Bear damage was assessed and electric fencing units were loaned out in Hubbardston and Phillipston.

Common loon nesting rafts were installed on the Quabbin and Wachusett Reservoirs and a loon nesting attempt at Paradise Pond in the Leominster State Forest was again safeguarded by posting signage invoking Massachusetts General Law Chapter 131, Section 86.

A bald eagle nesting attempt at Quaboag Pond in Brookfield was monitored but failed to produce young in 2004. Egg shell fragments and an intact egg were collected. Eagle nestings at Quabbin were monitored in cooperation with the Connecticut Valley Wildlife District.

An eagle nest foundation was constructed in cooperation with the DCR at Wachusett Reservoir prior to the 2004 nesting season. No eagle nesting activity was noted at the Reservoir.

Turkeys were trapped for release as part of a National Wild Turkey Federation event. (See page 31, Information & Education.)

Land Management Projects

District staff continued the maintenance of the Wildlife Management Areas within their Districts. In this District those activities were:

- Bolton Flats WMA - brush cut fields, maintained roads with assistance from the Quinapoxet model airplane club;
- High Ridge WMA - brush cut fields, maintained roads, repaired and replaced bluebird boxes, posted WMA signs on Whitmanville addition;
- Quaboag WMA - brush cut fields, maintained roads and parking areas;
- Richardson WMA - brush cut fields, maintained parking area, installed beaver water level control pipe and removed original pipes, blocked ATV trails;
- Westboro WMA - brush cut old fields, maintained roads, worked with a local Eagle Scout candidate on wetlands project;
- Winimusett WMA - maintained storage barn, brush cut old fields, maintained roads;
- Wolf Swamp WMA – maintained roads and parking lot, posted "no ATV" signs, blocked old ATV trails;
- Four Chimneys WMA – brush cut along access road, maintained parking lot;
- Deering Conservation Area – blocked ATV trails, posted no ATV signs, brush cut fields, maintained roads, salvaged utility poles (An application for funding through the Blackstone National Heritage Corridor was submitted for improvements to the access, parking, trails and signage of the WMA. The application was denied by the Commission.);
- Merrill Ponds WMA – worked with Massachusetts Sportsmen's Council to complete access and place commemorative plaque in recognition of Raymond Gribbons;
- Savage Hill WMA – maintained parking lot;
- Moose Brook WMA – Dumping and access issues were addressed;
- Millers River WMA – Investigated timber trespass.

Outreach and Education Activities

The District Supervisor attended meetings and functions of the Worcester County League of Sportsman Clubs. The District Supervisor and District Managers attended meetings with various federal, state and local agencies and private organizations including the Worcester Police Department, Mass. Aquatic Conservation Society, Mass. Audubon Society, the American Chestnut Foundation, Blackstone National Heritage Corridor Commission, Blackstone River Watershed Association, Blackstone Headwaters Coalition, Ecotarium, Bolton Historical Society, Sudbury Valley Trustees, and Friends of the Oxbow NWR. Presenta-

tions were given to the Forbush Bird Club, North Worcester Fox and Coon Club, Mahar Regional High School Fish and Game Club, Berlin Men's Club and the Nipmuc Rod and Gun Club.

District personnel set up and helped staff the Eastern Fishing and Outdoor Exposition at the Worcester Centrum. The Tags 'n' Trout program was sponsored at seven water bodies. The District assisted with the Neighborhood Nature program at Elm Park in Worcester by providing mounted specimens of various native species of wildlife.

Other District Activities

Numerous nuisance animal complaints involving beaver, coyote, fox, fisher and others were investigated and acted upon. Peregrine falcons nested for the first time in the city of Worcester at 100 Front Street and four chicks were banded. An alternate peregrine nest box was provided at One Chestnut Place.

Public Access

Six boat ramps were inspected and litter removed. Ramp work was accomplished at Quacumquasit (South) Pond, Chauncey Pond, Ware River, Eddy Pond and Webster Lake. Potential access sites were reviewed in Sturbridge and Charlton. District personnel worked with Watershed Associations on the Blackstone, Millers, Nashua, Chicopee, Quaboag, Ware, Assabet, Sudbury, and Charles Rivers.

Connecticut Valley Wildlife District

Administrative

The District Supervisor 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, local agencies and land trusts, focusing primarily on land acquisition and management.

Fisheries

Lake, pond and stream surveys were conducted prior to releasing fish into waters of this District and, as in other Districts, staff conducted extensive stocking operations of brown, brook and rainbow trout, landlocked salmon and tiger muskies.

Wildlife

Valley District staff assisted Central District with the annual beaver survey, completed Ruffed Grouse drumming routes, assisted in the mid winter Bald Eagle survey, and the wild turkey brood survey.

Staff administered a controlled waterfowl hunt at the Ludlow WMA. Eight hunters applied for and participated in the hunt.

Black Bear Project

Staff monitored the survival and reproduction of 13 radio collared bears during the reporting period. One two year-old slipped its collar, and one three year-old was hit by a vehicle. Ten females were checked in their den sites during February and March to determine reproductive success and first year cub survival. Six bears had 12 newborn of cubs (3M:9F). Two females had yearlings cubs of which three out of four survived their first year. Three barrel traps were set for about 10 nights in an attempt to capture and collar more female bears. Five bears were captured: three male, one collared female, and a new two year old female.

Moose Project

Staff monitored three radio-collared moose (2 bulls, 1 cow) during the reporting period. Staff captured and radio-collared a bull and a cow. Both were in urban areas and both were relocated to remote forested areas. Staff euthanized two female moose (one struck by a vehicle, one with symptoms of brainworm). The District Wildlife Manager investigated a bull calf mortality and determined that the animal expired as a result of getting stuck in the mud.

Wood Duck Program

Staff maintained 200 wood duck nesting boxes at 48 sites. Bluebird and kestrel nesting boxes were maintained at several Wildlife Management Areas as well.

Eagle Restoration Project

This District continues to monitor all breeding territories and band at all eaglets where we can safely climb. Staff climbed into 11 eagle nests and banded 14 eagle chicks throughout Massachusetts. Also, one nest was climbed and a chick banded in Hinsdale, New Hampshire. The District Wildlife Manager assisted in the midwinter eagle survey (aerial survey) at the Quabbin Reservoir and the Connecticut River, and compiled and summarized statewide eagle data as well.

Ravens

Staff climbed and repelled to band 50 raven chicks at 13 sites throughout western Massachusetts.

Peregrines

Staff assisted in banding chicks at the Monarch Place in Springfield and at the UMASS Library in Amherst. Two cliffside nests were checked at Mt. Sugarloaf in Deerfield.

Loons

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

Outreach and Education Activities

Fishing Festivals

District staff provided stocked fish for several festivals, including the Five Mile Pond Festival (Springfield), Forest Lake Derby (Palmer) and the USFWS Open House (Hadley).

Franklin County Fair

District staff provided fish for display at the Franklin County Fair, updated display materials and staffed MassWildlife's display booth for four days.

Springfield Sportsmen's Show

District staff responded to public inquiry and sold licenses during this show.

Public Presentations

The District Manager and staff provided numerous programs for local and civic groups.

Technical Assistance

District staff provided technical support, manpower and repair ability for Hatchery, Westborough and District equipment including electro shock equipment and the refit of new fish stocking trucks.

The District Fisheries Manager currently serves as 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.

Land Management

Wildlife Management Areas were monitored and both boundary and access signs were installed and replaced as needed. Staff developed a new parking area at the Wendell WMA. Gates were installed at Leyden WMA and Southampton WMA.

Staff picked up 10 yards of household trash that was illegally dumped over one weekend at the Herm Covey WMA!

Staff also removed and recycled 140 tires, 6 appliances, and 12 propane tanks. These items had been illegally dumped at Wildlife Management Areas over a several year period and had been stockpiled at the District Headquarters before funding was available to have them recycled.

Staff helped organize the clean up of Montague Plains WMA by utilizing the Source to Sea Volunteer Crew in the Montague/Greenfield area.

Thirty three (33) camping permits were issued for the Herman Covey WMA campsites.

Six field trial permits and four (4) Special Pheasant Stocking Permits were issued.

Western Wildlife District

In addition to activities carried out by all of the five Wildlife Districts, staff of the Western Wildlife District conducted activities and projects specific to their area. In this regard the District Supervisor met with the "new" Pittsfield City Clerk and Peru Town Clerk about Hunting/Fishing license issuance. He met with EPA, DEP, and their consultants numerous times during the year, and studied documents in the Housatonic/PCB Repository regarding ecological risks reviews. He surveyed and addressed boat access issues for the P.A.B. at Decker, Lake Buel, Thousand Acres Swamp, Lake Garfield and Stockbridge Bowl, and access issues regarding the Housatonic River cleanup.

In addition to this he participated on the Kampoosa ACEC Stewardship Committee; met with DCR regarding management issues at Jug End Reservation/WMA, and he made the ground arrangements for the surprise dedication of the George Darey Wildlife Management Area.

Fisheries

As in other Districts, the Fisheries Manager and other District staff participated in fish distribution, goose banding, environmental reviews, staffing of deer and bear check stations, stocking of salmon fry, and responding to reports of fish kills. In addition to this, the Fisheries Manager participated in meetings including the Eastern Brook Trout Conservation meeting in West Virginia and numerous meetings of local watershed and planning groups.

Like other staffers, the Fisheries Manager presented programs to local civic groups, sportsmen's organizations, and at a number of educational workshops including sessions at Berkshire Community College, Ashfield Fishing Derby and a Project Wild Workshop.

Fisheries personnel also assisted Wildlife staff with beaver surveys, duck banding and response to problem wildlife situations.

Wildlife

District staff monitored radio-collared deer and moose throughout the District and investigated several instances of moose found dead in the District, collecting lower jaws for aging purposes. Staff also conducted a comprehensive beaver population census in the Western District and assisted researchers from the University of Massachusetts in beaver telemetry monitoring.

Tony Gola, District Wildlife Manager, conducted rare plant inventories on four WMAs for Foxtail Sedge, *Carex alopecoidea*, Small Yellow Lady's-slipper, *Cypripedium parviflorum*, Downy Woodmint, *Blephilia ciliate*, Northern Prickly Rose, *Rosa acicularis* and Muskflower, *Mimulus moschatus*. In this process he discovered a small population of Monkey-flower, (*Mimulus guttatus*), (photo here) [1st in MA?] and a large population of the state threatened Narrow-leaved Spring Beauty, (*Claytonia virginica*). He also removed exotic invasive honeysuckle, (*Lonicera spp*.) which was over-crowding endangered *Blephilia ciliata* plants.

He also documented a large spring flight of the Mustard white butterfly, (*Pieris napi oleraceae*).

The Wildlife Manager participated in the Hy Fox WMA Breeding Bird Census which consists of observations at 100 3-minute point count stations plotted throughout 1000 acres. He assisted DFW forester Brian Hawthorne in conducting vernal pool certification on the George Darey / Housatonic Valley WMA, and documented the presence of an American bittern and a Sora.

Staff also worked closely with personnel from the Connecticut Valley District in banding Bald Eagle chicks in the Western District, and the Wildlife Manager worked with staff from Field Headquarters in airboating for the waterfowl project at Three Mile Pond WMA.

Wildlife Lands

Wildlife Manager Tony Gola and Land Agent Peter Milanesi GPS'd and photo-documented approx 50 miles of boundary lines on DFW Conservation Easement properties. They also provided descriptive write-ups for more than a dozen Wildlife Conservation Easement Areas for the DFW website, and attended Zoning Board hearings in Cheshire to express DFW's concerns over proposed activities

Outreach

The Wildlife Manager gave a slide presentation with Andrew Madden on Massachusetts flora and fauna for environmental students at Berkshire Community College.

He advised an Eagle Scout pursuing the coveted Hornaday Medal.

Activities Conducted by Various Personnel at Western District

One District member, (Kirvin), conducted the Paraplegic Deer Hunt in northern Berkshire County. Some District staff sold surplus antlerless deer & turkey permits, and attended L.A.R.T. training in Belchertown.

Tech Support

Staff picked up a kestrel in Gt. Barrington and delivered it to rehabilitator in Conway. They also delivered a barred owl there. A bald eagle carcass was recovered on the Stafford Hill WMA and staff participated in the investigation of its demise with a USFWS Special Agent.

Staff also attended Berkshire and Hampshire Counties' monthly Sportsmen's League meetings, and performed custodial functions on multiple WMAs.

Attended multiple meetings regarding the rebuilding/ repair to the historic "Keystone" Arches in Chester, MA.

District Personnel

Northeast District

Chuck Bell, *District Supervisor*
Erik Amati, *Wildlife Manager*
John Sheedy, *Fisheries Manager*
Frank O'Meara, *Martin Burns WMA Supervisor*
Bob Desrosiers, *Wildlife Technician*
Sue Ostertag, *Clerk*
Walter Tynan, *Wildlife Technician*
Steve Wright, *Wildlife Technician*
Dennis McNamara, *Land Acquisition Agent*

Southeast District

Tom O'Shea, *Southeast District Supervisor*
(promoted to Asst. Director Wildlife, June 12, 2004)
Dick Turner, *Wildlife Manager*
Steve Hurley, *Fisheries Manager*
(acting District Manager 06/12/2004 – 06/30/2004)
Ed Kraus, *Wildlife Technician II*
Salvatore Paterno, *Wildlife Technician II*
(retired FY 2004)
Jeff Breton, *Wildlife Technician I*
Daniel Fortier, *Wildlife Technician I*
Camie Marsh, *Clerk*
Joan Pierce, *Land Acquisition Agent*

Central District

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

Connecticut Valley District

Ralph Taylor, *District Supervisor*
David Fuller, *Wildlife Manager*
David Basler, *Fisheries Manager*
Barbara Bourque, *Clerk*
Adam Davies, *Wildlife Technician*
Gary Galas, *Wildlife Technician*
Rick Gamelin, *Wildlife Technician*
James Wright, *Wildlife Technician*
Will Steinmetz, *Land Acquisition 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 Acquisition Agent*

WILDLIFE LANDS

William J. Minior
Chief of Wildlife Lands

FY04 was a very frustrating year for land protection primarily because acquisition funds were not available until the second half of the year, funding was rather minimal, and we experienced a personnel shortage. We did however manage to complete 34 acquisitions in FY04. Several gifts were completed prior to March however all purchases were completed between March and the end of the fiscal year.

Individual acquisitions varied in size from a 0.8 acre gift in Middlefield to the 15,000 acre transfer of the care and control of the Mass. Military Reservation (MMR) on Cape Cod. With the exception of the MMR, the largest acquisitions were Conservation Easements (CEs) which totaled nearly three thousand acres. The 970 acre Wright property CE in Chester was the largest CE, a gift followed by The Nature Conservancy CE of 665 acres in Mount Washington and the 634 acre Crane and Co. CE in Middle Berkshires. Other CEs of particular note include the 358 acre Hudson CE in the Tyringham Valley, the 148 acre Fitchburg Rod & Gun Club, Inc. CE in Ashby, and the SVT CE in Billerica. Protection through Conservation Easement is often the primary method of protection available when fee acquisition is not possible. With rare exceptions MassWildlife's CEs include compatible public access including hunting.

Once again non-profit organizations played a key role in our acquisition efforts. The Nature Conservancy pre-acquired and conveyed at no cost to DFW a CE on approximately 665 acres in Mount Washington, doubling the size of our existing Mount Plantain WCE. This was made possible with a Forest Legacy grant of approximately one million dollars. The East Quabbin Land Trust negotiated, pre-acquired and conveyed the 212 acre Lubelczyk property in Barre and Hardwick ending an approximate decade long effort to protect the property. The Valley Land Fund assisted in a land trade effort along the Connecticut River and also conveyed a 20 acre addition to the Whately Wildlife Management Area at an extreme bargain sale. Mount Grace Land Conservation Trust gifted the 87.5 acre former Whitney property to enhance DFW holdings along the Millers River in Winchendon. Sudbury Valley Trustees pre-acquired an 18.9 acre tract for DFW along the Concord River as part of the Route 3 Transportation Improvement Project Open Space Grant Program. The assistance of non-profit organizations has been most helpful and appreciated.

All things considered it was a fairly successful land protection year. Including the 15,000 acre Mass Military Care and Control transfer, 19,275 acres were protected at a cost of $2,915,025.00. DFW currently has care and control/management of approximately 155,000 acres (or about 242 square miles) statewide.

Fiscal Year 2004

Western District	
Expended	$1,335,000.00
Acreage	3,359.70
Cost/acre	$397.36
Valley District	
Expended	$ 226,525.00
Acreage	170.90
Cost/acre	$1,325.48
Central District	
Expended	$705,000.00
Acreage	381.10
Cost/acre	$1,849.91
Northeast District	
Expended	$640,500.00
Acreage	347.00
Cost/acre	$1845.82
Southeast District	
Expended	$8,000.00
Acreage	15,016.00 (16)*
Cost/acre	$0.53 ($500.00)*
TOTAL EXPENDED:	$2,915,025.00
TOTAL ACREAGE ACQUIRED:	19,274.7 (4,274.7)*
AVERAGE COST PER ACRE:	$151.24 ($681.93)*

**Figures provided are with and (without) the 15,000 acre MMR property.*

*Above figures include departmental acquisitions. It should be noted that the acreage figures and costs of those properties acquired with FY04 funds **and** RECORDED for FY04 between 7/1/03 and 9/7/04 are included herein. Ancillary costs are not included.*

Western District

The Western District completed fourteen acquisitions in twelve different areas and fifteen towns. Conservation Easements (CE) accounted for nearly eighty per cent of the 3360 acres protected. The largest CE protected the 970 acre Wright property in Chester which contains extensive frontage along the Westfield River and abuts DFW's 812 acre Mica Mill WCE. A gift 665 acre CE in Mount Washington from TNC which more than

doubled our existing Mount Plaintain WMA was made possible through a Forest Legacy grant of approximately one million dollars. Crane and Co. conveyed a CE on the approximate 634 acre "Boulders" property located in the City of Pittsfield and in the Towns of Dalton and Lanesborough increasing the size of our Chalet WMA to well over seven thousand acres. A bargain sale CE on 358 acres from the Hudson family increased our Tyringham Valley CE holdings to nearly seven hundred acres.

The twenty five acre Lilly Pond property was gifted by Five Colleges and it along with the 43 acre Strienz acquisition increased our Lilly Pond WMA to about 350 acres, nearly completing our protection effort of this valuable R&E resource. A key 138 acre acquisition in Hawley provided substantial protection for one of the most important herpetological sites statewide. Other acquisitions were not as large or flashy but all provided valuable habitat protection while adding significantly to existing DFW areas.

Valley District

Eight acquisitions were completed in the Connecticut Valley District in FY04 protecting one hundred and seventy one acres. Four acquisitions added seventy two acres to the Whately Great Swamp WMA increasing it to three hundred and seventy acres. Other valuable rare and endangered species resource lands acquired included the 37.8 acre Bogdan addition to the 131 acre Honey Pot Road Natural Heritage Area in Westfield, and the 29 acre Drew property in the vicinity of the Green River in Colrain. The Valley Land Fund assisted in a land protection effort/trade that resulted in the protection of an 11.5 acre parcel along the Connecticut River in West Springfield, and also conveyed a twenty acre addition to the Whately WMA at a bargain sale rate. Valley FY04 land protection efforts resulted in 171 acres being protected in four towns.

Central District

Three hundred and eighty one acres were protected in the Central District at a cost of approximately $ 700,000 dollars. The most notable acquisition was the 212 acre Lubelczyk property in the Towns of Barre and Hardwick which was pre-acquired by the East Quabbin Land Trust on our behalf. This acquisition essentially concluded a decade long effort to protect the subject property which is valuable for Quabbin water supply protection as well as for the diversity of wildlife habitat it possesses. The 80 acre Stumpf acquisition is the base or building block of our new North Brookfield WMA. It includes extensive frontage along Sucker Brook. It contains a variety of habitat consisting of woodland, fields, pasture and wetlands including the riparian corridor along Sucker Brook.

The Mount Grace Land Conservation Trust gifted a Conservation Easement to DFW on the eighty seven acre Whitney property along the Millers River in Winchendon. The Mountain Laurel Trust gifted a 1.6 acre CE in Westminster which provides additional access to our 2,327 acre High Ridge WMA.

Northeast District

Six acquisitions in FY04 resulted in the addition of 180 acres to three WMAs in the Northeast District, additional Concord River access and the creation of a new Wildlife Conservation Easement area in the Town of Ashby. The Fitchburg Rod & Gun Club, Inc. conveyed a CE including public access on 148 acres of their club property at a considerable bargain sale. The funding from this sale will enable the club to protect additional abutting land to further protect the club's and DFW's open space interests. Two acquisitions totaling 74 acres were added to the Salisbury Marsh WMA and the Ashby WMA benefitted from the addition of an 89 acre acquisition. The Squannacook River WMA was enhanced through the purchase of an 18 acre parcel which was slated for development. The abutting sportsmen's club has agreed to convey a CR on the majority of their property because of DFW's purchase of the abutting Bagley property. Sudbury Valley Trustees, utilizing mitigation funds set aside to compensate those communities along Route 3 for the loss of land and environmental impact associated with the widening of Route 3, pre-acquired 18.9 acres of Concord River access in the Town of Billerica on behalf of DFW. A total of 347 acres were protected in the NE district in FY04 at a cost of less than $2,000 per acre.

Southeast District

The Southeast District had only two land transfers in FY04. One was the sale of 16 acres from the Town of Middleborough to DFW, which increased the size of the Rocky Gutter WMA to 355 acres. The other acquisition was the Division of Capital Asset Management transfer of the Care and Control of the fifteen thousand acre Massachusetts Military Reservation to our agency. The land was transferred subject to a twenty five year lease to the military therefore its immediate use as a WMA with public access and DFW management input is fairly restricted, however this transfer of Care and Control could prove valuable in the future. It certainly gets our foot in the door for environmental management decisions on the subject area. This area is extremely important as it is the major aquifer for the entire Cape.

Land Agents

Peter Milanesi, *Western District*
Bill Steinmetz, *Connecticut Valley District*
Phil Truesdell, *Central District*
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	1,248.3	211
Fisk Meadows	1120.8	88
Fox Den	3,991.4	100
Green River	489.2	125
Hancock	204.0	123
Hinsdale Flats	1,544.5	89
Hiram H. Fox	2,951.0	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 (Incudes 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
	37,598.6 acres	

*Jointly owned and managed with DCR

Wildlife Conservation Easements: 12		
Alford Spring	640	269-1
Ashfield	101	247-1
Blanford	986	249-1, 2 & 3
Chesterfield	491	248-1 & 2
Dalton Fire District	2,568	253-1
Goshen	194	251-1
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
	9,743.4	

River Access Areas: 4		
Hoosic River	5.9	213
Hoosic River	5.9	213
Hoosic River	5.9	213
Hoosic River	5.9	213
Hoosic River	5.9	213
Housatonic River	27.5	103
Konkopot River	8.8	114
Westfield River (W)	373.0	94
	415.2	

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 48,874.2 acres

VALLEY DISTRICT

Wildlife Management Areas: 27	Acres	Tract #
Catamount	413.0	119
Coy Hill(V)	201.6	221
East Mountain	241.5	202
Facing Rock	1,556.1	179
Herman Covey***	1,475.1	49
Honey Pot	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	255.5	222
Orange	1,534.2	229
Palmer	1,017.3	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
	16,535.7 acres	

*WMA and Connecticut River Access
**Acreage includes 402.5 acres of CR
***Combination-Hatchery (McLaughlin), WMA and District Headquarters

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 (included 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 99. 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
	3.28	

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	170.1	175
	401.0	

TOTAL VALLEY DISTRICT **20,112.6 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	710.5	258
Moose Brook	495.3	132
Moose Hill	567.1	59
Muddy Brook	906.0	167
North Brookfield	80.0	278
Oakham	690.6	153
Palmer***	208.0	178
Phillipston	3,411.3	31
Popple Camp	1,161.0	A31
Poutwater Pond	378.0	133
Prince River	749.0	113
Quaboag River	1,673.6	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
	33,155.2 acres	

*Management and control under DFW 1,673.7 acres
DFW owned in fee 282.0 acres
**Acreage includes 15.72 acre CR
*** Listed and managed under Connecticut Valley District
**** 467 acres added from a '97 DCAM transfer

Wildlife Conservation Easements: 2

North Quabbin CRs		257
Phillipston (Secret Lake)	212.0	
Tully River	6.6	
	218.6	

Wildlife Sanctuaries: 2

Susan B. Minns	140.0	20
Watatic Mountain	100.0	25
	240.0	

River Access Areas: 5

Five Mile River (inc. 17 acre CR)	195.5	120
Natty Brook	95.2	220
Quinapoxet River	32.0	66
Seven Mile River	77.0	275
West & Blackstone Rivers	28.0	76
	427.7 acres	

Natural Heritage Areas: 3

Podunk Marsh	15.0	104
Clinton Bluff NHA	42.0	154
Quag Pond Bog	31.0	197
	88.0	

Conservation Restriction: 5

Carter Pond	280.0	155
Burnshirt River	5.64	160
Hunting Hills*	53.7	183
Quabbin	28.0	161
Stillwater River	29.0	162
	396.3	

*Part of Hunting Hill WMA in NE District

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 Area	58.5	164
	101.2	

Forest: 2

Hamilton	70.0	75
Northboro	88.8	51
	158.8	

TOTAL CENTRAL DISTRICT **34,844.8 acres**

NORTHEAST DISTRICT

Wildlife Management Areas: 10	Acres	Tract #
Ashby	1,020.0	134
Crane Pond	2,235.6	38
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
	9,774.4	

*Includes 53.7 acre CR in CD
** 21 acres title vested in DEM

Wildlife Conservation Easement (WCE): 1		
Ashby	148.0	280
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 11,602.4 acres

*Held jointly with D.E.M.
**Departmental acquisition

SOUTHEAST DISTRICT

Wildlife Management Areas: 18	Acres	Tract #
Burrage Pond	1,638.0	265
Copicut	3,762.1	141
Dartmoor Farms	473.0	236
Erwin Wilder	450.0	A83
Frances A. Crane	1,912.8	27
Gosnold	3.5	96
Haskell Swamp	2,787.7	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
	20,447.0	
Wildlife Conservation Easements: 4		
Acushnet River	30.2	263
Angeline Brook	50.7	273
Camp Cachalot	789.0	223
Santuit Pond	293.0	268
	1,162.9	
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: 5		
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
	492.1	

* NHESP priority area-Departmental taking

** 360 acres of Quashnet held jointly with DEM

Pond/Coastal Access: 12		
Agawam Mill Pond	1.2	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
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
	186.8	
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 39,045.4 acres

Total Acreage Area by Area Type
(Through FY04)

Wildlife Management Areas: 125	117,510.9 acres
Wildlife Sanctuaries: 13	1,197.0
Fish Hatcheries: 5	559.3
Game Farms: 3	367.1
River Access: 29	2,046.0
Salt Marsh: 7	698.0
Lake, Pond & Coastal Access: 25	293.4
Fisheries & Wildlife Areas: 3	293.5
NHESP Areas: 31	2,041.4
Conservation Restriction: 26 (Some CRs are included in WMAs)	13,617.1
MA Military Reservation: 1	15,000.0
Other*	855.6
GRAND TOTAL	154,479.4

**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.

Bluebirds

FEDERAL AID PROGRAM

KRISTIN McCarthy
Federal Aid Coordinator

Project Objectives: *To implement the Division of Fisheries and Wildlife's (DFW) 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 (FWS), grant administrator for the U.S. Department of the Interior.*

Federal Aid in Wildlife Restoration

(Pittman-Robertson)

The Massachusetts Division of Fisheries and Wildlife (DFW) apportionment of Federal Aid in Wildlife Restoration funds ($1,974,680) was a decrease from last year's apportionment. These funds are available for wildlife restoration projects and hunter education. Six projects were reimbursed with these funds including wildlife research, hunter education, wildlife population trends and harvest surveys, waterfowl research and management, wildlife habitat management, and program coordination.

Federal Aid in Sport Fish Restoration

(Dingell-Johnson and Wallop-Breaux)

The State's Federal Aid in Sport Fish Restoration Act apportionment of $2,605,270 represents a slight decrease over 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 $390,790.50 (15%) and the balance of $2,214,479.5 was divided equally ($1,107,239.75 each) between the Division of Marine Fisheries and the Division of Fisheries and Wildlife (DFW). Fourteen grants were reimbursed with the PAB and DFW share of the D-J and W-B funds. The Public Access Board in cooperation with DFW submitted and approved nine boat accommodations grants in FY04. The Division of Fisheries and Wildlife had five projects reimbursed under the Sport Fish Restoration Program. DFW's fish restoration projects include aquatic resources education, anadromous fish restoration, and program coordination. The Division of Fisheries and Wildlife also utilizes these funds for hatchery operations, hatchery maintenance, and distribution of hatchery fish.

Wildlife Conservation and Restoration Program

The Wildlife Conservation and Restoration Program (WCRP) apportionment of $737,272.00 in federal funding was available for obligation through September 30, 2003. In FY 02 we used $375,000.00 on the Biomap Project. The remaining balance of $362,272.00 was obligated prior to the September 30, 2003 deadline to the Burrage Pond Land Acquisition (2002). The Burrage Pond Land Acquisition grant was officially closed on December 31, 2003. DFW's entire apportionment of $737,272.00 has been reimbursed. No future funding is expected under the Wildlife Conservation and Restoration Program.

In order to be eligible for WCRP funding the DFW agreed to develop and implement a Comprehensive Wildlife Conservation Strategy within five years. Our written commitment to develop this strategy under WCRP was submitted and approved on May 25, 2001. We are required to submit our Comprehensive Wildlife Conservation Strategy by October 1, 2005.

State Wildlife Grant Program

The Division of Fisheries and Wildlife's FY 03 State Wildlife Grant (SWG) apportionment of $878,643.00 in federal funding was available to Massachusetts for obligation until September 30, 2004. We successfully obligated our entire FY03 apportionment prior to the September deadline. We also obligated a portion of our FY04 apportionment of $932,424.00. SWG funds were obligated toward five projects. Activities reimbursed under SWG funds include fish community research, biodiversity impact review, biodiversity inventory and research, biodiversity conservation mapping and planning, and land acquisition. SWG funds were also used to initiate our Comprehensive Wildlife Conservation Strategy development project. Like WCRP, in order to establish eligibility for SWG funding the DFW committed to developing a Comprehensive Wildlife Conservation Strategy by October 1, 2005. Our commitment to develop this Wildlife Conservation Plan under SWG was submitted and approved on April 10, 2002. This plan must be submitted by October 1, 2005.

Restoration of endangered species is supported, in large part, through Federal Aid.

The Endangered Species Act
(Section 6)

The Division of Fisheries and Wildlife continues to receive minimal, Endangered Species Section 6, funding. Our entire FY04 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 Division of Fisheries and Wildlife was awarded a combined total of $2,160,000 under the competitive Land Owner Incentive Program (LIP). A total of $360,000.00 of (Tier I) will be used for project coordination. The remaining $1,800,000.00 (Tier II) will be used to implement the Land Owner Incentive Program. Since July 2004, when the Division of Fisheries & Wildlife hired the Land Owner Incentive Program coordinator, a great deal of progress has been made in implementing the program. On the ground projects are scheduled to begin in July 2005.

Other Matters

The Division of Fisheries and Wildlife contracted with the Auditor of the Commonwealth to conduct an audit of all Sport Fish and Wildlife Restoration grants administered by the Division for fiscal years 2001 and 2002. The Coordinator's Office spent considerable time facilitating the audit by providing records, performing additional data analysis and coordinating audit efforts within the agency.

Other Federal Aid Coordinator's duties include responding to requests for information, public inquiries, DFW 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 DFW.

Project Personnel

Kristin McCarthy, *Federal Aid Coordinator*

Jessica Lane, *Assistant to Federal Aid Coordinator*

Debbie McGrath, *Federal Aid Bookkeeper*

MAINTENANCE & DEVELOPMENT

Gary Zima
Senior Planner

Division maintenance and development projects enable us to upgrade and improves agency properties across the state. Major emphasis and funding in FY04 was committed to the clean up of hazardous waste materials on two of our state Wildlife Management Area (WMA) properties.

On the High Ridge Wildlife Management Area in Westminster, we completed the remediation of the Westminster landfill and the demolition of three abandoned buildings. Operations included the excavation, transport and off-site disposal of materials from the sites. The areas were then leveled to a natural grade and hydro-seeded with a mixture of native vegetation.

The Birch Hill Wildlife Management Area in Winchendon was the second area addressed. The former Lake Dennison Shooting Range was the site of another cleanup operation, this one involved identification and removal of lead contaminated soil. The cleanup consisted of grid sampling and the excavation of lead contaminated soil. The stockpiled soil was then transported to a licensed off-site disposal facility. As with the High Ridge WMA project, this area was also leveled to a natural grade and hydro-seeded with a mixture of native vegetation. The final stage of this project consisted of drilling a series of test wells to sample ground water. The test wells confirmed that the site had no further leaching of contaminants.

During FY04 the Division was able to replace four vehicles within the Division fleet. One truck was replaced at the Westboro Field Headquarters along with three large stocking trucks for the Connecticut Valley, Western and Northeast Wildlife District offices.

Administrative Staff

Gary Zima, *Senior Planner*

Debbie McGrath,
Administrative Assistant and Clerical Supervisor

LEGISLATIVE REPORT

Jack Buckley
Deputy Director

The following legislation, having a direct impact on wildlife management in the Commonwealth, was passed during this fiscal year.

Chapter 26 ActS of 2003

Approved: June 30, 2003

Chapter 26, Outside Sections 384, 622, 710 and 713 eliminated the Inland Fish and Game Fund as the statutory fund that held all hunting and fishing license revenues.

Chapter 26, Outside Section 34 made expenditures from the Natural Heritage and Endangered Species no longer subject to appropriation.

Chapter 101 Acts of 2003

Approved: October 30, 2003

Chapter 101 restored the Inland Fish and Game Fund language that existed prior to the passage of Chapter 26 Acts of 2003.

PERSONNEL REPORT

Peter Burke
Personnel Officer

New Hires

Name	Title	Date	Type of Position	Comment
Oliver, Robert	Program Coordinator I	09/21/03	Permanent	
Aitaniemi, Alan	Fish Culturist II (E.Q.)	10/05/03	Excess Quota	PT after Retirement
Green, Ernest	Wildlife Technician I	10/05/03	Excess Quota	PT after Retirement
Henry, Stephen	Fiscal Officer V (E.Q.)	10/05/03	Excess Quota	PT after Retirement
Hew, Lillian	Accountant I (E.Q.)	10/05/03	Excess Quota	PT after Retirement
Liske, Jill	Program xCoordinator	11/16/03	Contract	
Regosin, Jonathan	Scientist	12/13/04	Contract	
Schultzbarger, Ellen	Researcher	12/14/03	Contract	
Whitman, Megan	Researcher	12/14/03	Contract	
Plett, Kathleen	Administrative Assistant I	02/17/04	Permanent	
Vasquez,Joseph	Wildlife Technician I	03/21/04	Permanent	
Kemp, Shawn	Wildlife Technician II	03/28/04	Permanent	
McAlice, Bridget	Game Biologist I	03/28/04	Permanent	
Pelosky, Kevin	Wildlife Technician I	03/28/04	Permanent	
Hawthorne, Brian	Game Biologist II	04/04/04	Permanent	
Marchant, Daniel	Fish Culturist II	04/13/04	Permanent	
Jefts, Eric	Wildlife Technician I	04/20/04	Permanent	
Brooks, Jeremy	Scientist	5/9/2004	Contract	
DiNuovo, Adam	Scientist	5/9/2004	Contract	
Flynn, Laura	Student Intern	5/9/2004	Contract	
Luecke, Sarah	Scientist	5/9/2004	Contract	
Nydam, Jamie	Scientist	5/9/2004	Contract	
Warzybok, John	Scientist	5/9/2004	Contract	

Promotions

Sheppard, Patricia	Fiscal Officer VI	01/04/04	Permanent	from Riverways
O'Shea, Thomas	Program Manager VI	03/15/04	Permanent	from Dist. Fish & Game Super.
Guerin, Brian	Fish Culturist I	03/21/04	Permanent	from Wildlife Technician II
Lodowsky, Craig	Fish Culturist II	03/22/04	Permanent	from Fish Culturist I
Gibson, Gail	Accountant I	04/25/04	Permanent	from Receiving Teller I
Regosin, Jonathan	Conservation Biologist III	05/30/04	Permanent	from Contract Position

Demotion

Bell, Charles	Fish Culturist II	05/30/04	Permanent	from Dist. Fish & Game Super.

Reallocations

Meagher, Kerry	Program Coordinator II	11/03/03	Permanent	2 Grade Increase
Oliver, Robert	Program Coordinator II	11/03/03	Permanent	2 Grade Increase
Chadwick. Leslie	Wildlife Technician II	05/02/04	Permanent	1 grade increase
Jackson, Alan	Wildlife Technician II	05/02/04	Permanent	1 grade increase

Terminations

Hatch, Jeremy	Scientist	08/09/03	Contract	end of contract
Maguire, Kathleen	Scientist	08/09/03	Contract	end of contract
Singfield, Joanne	Scientist	08/09/03	Contract	Resigned
Moravec, Jill	Scientist	08/23/03	Contract	end of contract
Nydam, Jamie	Student Intern	08/23/03	Contract	end of contract
Withroder, Matthew	Scientist	08/28/03	Contract	end of contract
Ho, Peter	Wildlife Technician I	09/30/03	Permanent	Resigned
Aittaniemi, Alan	Fish Culturist II	10/01/03	Permanent	Early retirement
Corey, Wayne	Wildlife Technician I	10/01/03	Permanent	Early retirement
Green, Ernest	Wildlife Technician I	10/01/03	Permanent	Early retirement
Henry, Stephen	Fiscal Officer V	10/01/03	Permanent	Early retirement
Hew, Lillian	Accountant I	10/01/03	Permanent	Early retirement
Masley, Michael	Fish Culturist II	10/01/03	Permanent	Early retirement
Orrizzi, Paul	Wildlife technician II	10/01/03	Permanent	Early retirement

continues, next page

Terminations, continued

Name	Title	Date	Type of Position	Comment
Pietryka, Frank	Fish Culturist II	10/01/03	Permanent	Early retirement
Saczawa, Lawrence	Wildlife Technician II	10/01/03	Permanent	Early retirement
Ziel, Heather	Scientist	10/12/03	Contract	end of contract.
Eddy, Nancy	Administrative Assistant	11/30/03	Contract	Resigned
Aittaniemi, Alan	Fish Culturist II (E.Q.)	12/12/03	Excess Quota	end of E.Q.
Green, Ernest	Wildlife Technician I	12/26/03	Excess Quota	end of E.Q.
O'Meara, Francis	Wildlife Area Supervisor	12/31/03	Permanent	Retired
Paterno, Salvatore	Wildlife Technician II	01/12/04	Permanent	Disability Retirement
Corcoran, Claire	Scientist	05/01/04	Contract	Resigned
Schultzbarger, Ellen	Researcher	06/18/04	Contract	Resigned

Leave of Absence

Ostertag, Sue	Clerk III	07/01/03	Permanent	Ind. Accident: ret'd 09/01/2003

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, 2003 to June 30, 2004

PROGRAMS/ASSESSMENTS	EXPENDITURES	PERCENTAGES
Administration:		
Administration	$1,346,248.30	
Information-Education	$570,986.32	
Total	**$1,917,234.62**	**20%**
Fisheries and Wildlife Programs:		
Hatcheries	$1,142,186.77	
Game Farm	$352,934.45	
Cooperative Units	$49,668.00	
Fisheries and Wildlife Management	$3,321,223.53	
Total	**$4,866,012.75**	**51%**
Other Programs:		
*Natural Heritage and Endangered Species Program		
Land Acquisitions	$1,282,193.81	
Waterfowl Management Program	$40,605.00	
Hunter Safety Program	$382,077.12	
Total	**$1,704,875.93**	**18%**
Other Assessments:		
**Pensions		
Group Insurance and Other Fringe Benefits	$1,098,000.00	
Operating Transfer		
Lease Costs 251 Causeway		
Total	**$1,098,000.00**	**11%**
TOTAL EXPENDITURES	**$9,586,123.30**	

*0% of total expenditures charged to the Inland Fish and Game Fund for FY04

**Funding for Pensions and Transfer of Assets: In the FY04 GAA, the Legislature changed the funding mechanism for the Commonwealth'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, 2003 to June 30, 2004

REVENUES	
Nongame Wildlife Tax Checkoff Donations	$224,844.00
Sales	$78,871.00
Federal Aid Reimbursements	$98,404.00
Direct Donations	$96,020.00
Interest	$1,933.00
TOTAL REVENUES:	***$500,072.00***
EXPENDITURES	
*Natural Heritage and Endangered Species Program	$545,807.45
Fringe Benefit Costs	$105,611.34
TOTAL EXPENDITURES:	***$651,418.79***
TOTAL FUND EQUITY:	***$149,747.21***

*100% of total expenditures charged to Natural Heritage Fund for FY2004

Other Funds and Programs Expenditures
July 1, 2003 to June 30, 2004

TRUST FUNDS:	
Tern Restoration Trust	$174,208.80
TOTAL EXPENDITURES	***$174,208.80***
CAPITAL OUTLAY FUNDS:	
Heritage Ecological Restoration	$218,631.44
Heritage Mapping for Biodiversity	$646,108.22
Forest Certification	$244,998.56
Upland Habitat Management	$224,441.00
TOTAL EXPENDITURES	***$1,334,179.22***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2003 to June 30, 2004

DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$6,042,123.28
Archery Stamps	$143,753.70
Primitive Firearms Stamps	$146,191.50
Trap Registrations	$565.00
Waterfowl Stamps, Administration	$34,658.62
Waterfowl Stamps, Ducks Unlimited	$11,556.74
Waterfowl Stamps, Other	$11,486.99
Wildlands Stamps	$1,153,464.40
Antlerless Deer Permits	$188,450.00
Bear Permits	$7,210.00
Turkey Permits	$66,524.94
Special Licenses,Tags and Posters	$73,248.50
Magazine Subscriptions	$116,267.96
Sales,Other	$1,360.90
Fines and Penalties	$46,334.27
Rents	$42,878.05
Prior Year Refunds	$47.17
Miscellaneous Income	$15,448.00
NSF Charge	$1,275.00
Debt. Collection	$1,477.80
Total	**$8,104,322.82**
FEDERAL AID REIMBURSEMENTS:	
Dingell-Johnson (Fisheries)	$1,064,316.72
Pittman-Robertson (Wildlife)	$3,837,169.13
Indirect Cost Reimbursements	$807,539.47
Total	**$5,709,025.32**
TAXES:	
Gasoline Tax Apportionment	$901,735.00
OTHER FINANCIAL SOURCES:	
Reimbursement for Half-Price Licenses	$171,288.75
Investment Earnings	$3,352.83
Total	**$174,641.58**
TOTAL REVENUE	***$14,889,724.72***
FUND EQUITY AS OF JUNE 30, 2004	**$11,136,601.42**

License and Stamp Sales

July 1, 2003 to June 30, 2004

Type of License	Unit Cost	Quantity	Amount
Resident Citizen Fishing	22.50	138,396	3,113,910.00
Resident Citizen Minor Fishing	6.50	6,146	39,949.00
Resident Citizen Fishing (Age 65-69)	11.25	4,564	51,345.00
Resident Cit. Fishing (Over 70, etc.)	FREE	12,686	0.00
Non-Res. Citizen/Alien Fishing	32.50	8,949	290,842.50
Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,009	37,166.50
Resident Fishing (3 day)	7.50	925	6,937.50
Non-Resident (Citizen) Minor Fishing	8.50	284	2,414.00
Duplicate Fishing	2.50	471	1,177.50
Quabbin 1-Day Fishing	5.00	2,190	10,950.00
Resident Citizen Trapping	30.50	247	7,533.50
Resident Citizen Minor Trapping	6.50	5	32.50
Resident Citizen Trapping (Age 65-69)	15.25	17	259.25
Duplicate Trapping	2.50	8	20.00
Trap Registration	5.00	113	565.00
Resident Citizen Hunting	22.50	22,387	503,707.50
Resident Citizen Hunting (Age 65-69)	11.25	799	8,988.75
Resident Citizen Hunting (Paraplegics)	FREE	280	0.00
Resident Alien Hunting	22.50	71	1,597.50
Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,178	205,821.00
Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	858	51,909.00
Resident (Citizen) Minor Hunting	6.50	1,371	8,911.50
Duplicate Hunting	2.50	288	720.00
Resident Citizen Sporting	40.00	40,587	1,623,480.00
Resident Citizen Sporting (Age 65-69)	20.00	2,371	47,420.00
Resident Citizen Sporting (Over 70)	FREE	9,993	0.00
Duplicate Sporting	2.50	584	1,460.00
TOTAL LICENSE SALES (GROSS)		***258,777***	***6,017,117.50***
Type of Stamp			
Archery Stamps	5.10	28,187	143,753.70
Primitive Firearm Stamps	5.10	28,665	146,191.50
Wildlands Stamps	5.00	216,335	1,081,675.00
Non-Resident Wildlands Stamps	5.00	14,349	71,745.00
Waterfowl Stamps, Administration	5.00	6,931	34,658.62
Waterfowl Stamps, Ducks Unlimited	5.00	2,311	11,556.74
Waterfowl Stamps, Other	5.00	2,297	11,486.99
TOTAL STAMP SALES (GROSS)		***299,075***	***1,501,067.55***
Fees Retained by Clerks			(29,508.60)
Refunds			(2,207.78)
TOTAL			***(31,716.38)***
TOTAL LICENSE/STAMP SALES (NET)			***$7,486,468.67***

APPENDIX I

Massachusetts Division of Fisheries and Wildlife

Field Headquarters • One Rabbit Hill Road • Westborough, MA 01581

An Agency of the Department of Fish & Game

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 Initia-

tive 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.

References

Judy, R.D., Jr., T.M.Murray, S.C. Svirsky, M.R. Whitworth, and L.S. Ischinger. 1984. 1982 national fisheries survey, Volume 1. U.S. Fish and Wildlife Service, FWS/OBS-84/06. Washington, DC.

The Federal Interagency Stream Restoration Working Group. 1998. Stream corridor restoration: principles, processes, and practices.

Naiman, R.J., J.J. Magnuson, D.M. McKnight, and J.A. Stanford, editors. 1995. The freshwater imperative: a research agenda. Island Press, Washington, DC.

Williams, J.E., and seven coauthors.1989. Fishes of North American endangered, threatened, or of special concern: 1989. Fisheries 14(6): 2-20.

Williams, J.E., C. A. Wood, and M.P. Dombeck, editors. 1997. Watershed restoration: principles and practices. American Fisheries Society, Bethesda, Maryland.