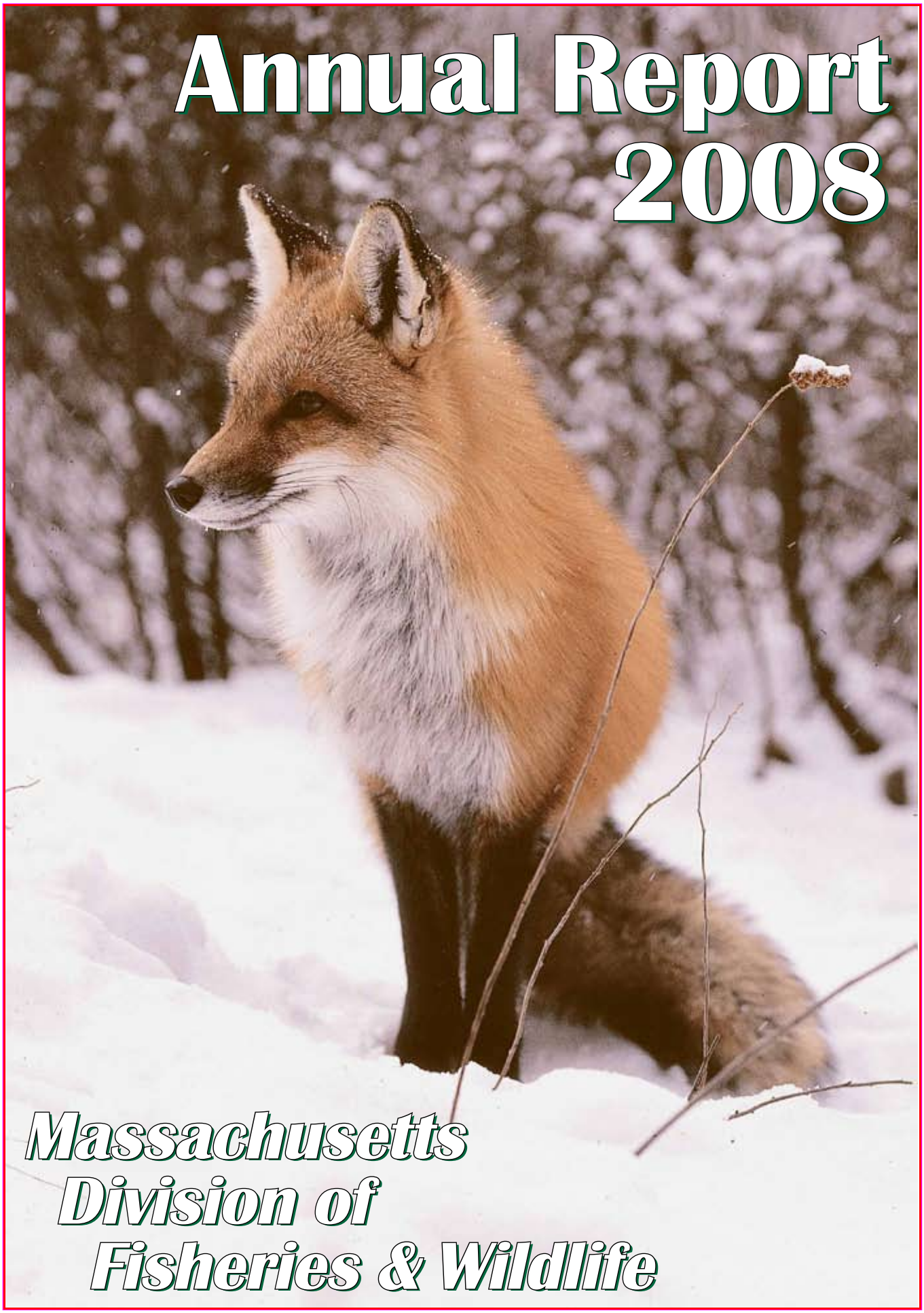
Annual Report 2008



Massachusetts Division of Fisheries & Wildlife

Annual Report 2008

Massachusetts Division of Fisheries & Wildlife

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An agency of the Massachusetts Department of Fish & Game

http://www.mass.gov/dfwele/dfw/

Table of Contents

About The Cover:

Common and abundant throughout most of Massachusetts (it does not occur on Nantucket or Martha's Vineyard), the Red Fox is one of 14 native mammals managed under the MDFW's Furbearer Project. Collectively, these species provide both recreational and economic opportunities for citizens and households in the Commonwealth, and are among the most exciting animals to observe in terms of behavior and aesthetics. Photo by Bill Byrne/MDFW

All photos by Bill Byrne unless otherwise credited.

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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 reimbursement of 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 the operations of the Division of Fisheries and Wildlife, reviews the agency's programs, and sets policy and regulations pertinent to wildlife in the Commonwealth.

The Board has continued the tradition this year of holding its monthly meetings at locations around the state. It held public hearings on proposed regulatory changes, and addressed many 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:

Youth Sporting License

Following a request received from the Conway Sportsmen's Club, the Board voted to review the possibility of creating a new youth sporting license class. Deputy Director Jack Buckley provided the Board with background information on this complicated question. This would be the 23rd class of license the agency would offer, and, for electronic licensing in particular, there would be significant advantages in *reducing*, rather than increasing, the number of classes. Nevertheless, after some consideration, noting that the Board is highly cognizant of the importance of getting young people involved in sporting activities, the Board decided to review the proposal in more detail before making a decision. After examining what other states are doing relative to youth sporting licenses, the Board took up the discussion again. The proposal was to charge $18.00 for a Youth Sporting license (combining the Youth Hunting and Youth Fishing licenses which sell for $11.50 each), offering a $5.00 savings to the purchaser. While the Board felt that the main financial obstacle to youth hunters is the cost of the Firearm Identification card (FID), and not the cost of the license, it held a public hearing on the new license class proposal in May, and, after considering public input, voted to recommend establishment of the new license class. The issue now moves to Administration and Finance, which will review establishment of the new license class and will, if accepted, determine the fee.

Coyote Regulation Vote

The Board heard a presentation from Assistant Director Tom O'Shea on the biology and values of and conflicts with the Eastern Coyote during FY 07. This included a thorough review of the current hunting season and related regulations. In order to support awareness of the value and benefit of coyotes while addressing the issue of human conflicts with coyotes, biologists recommended expanding hunting season opportunities, increasing hunting hours, improving hunter effectiveness (by updating the definition of buckshot; permitting shot sizes from B through FF; rescinding the Director's daytime rifle restrictions in Barnstable, Bristol, Dukes, Nantucket, and Plymouth counties; and clarifying the permissible use of night vision equipment).

The Board held two public hearings on the proposed regulation changes in May and June of FY07. Following review of all comments received, a vote on the proposed regulation changes was taken in July 2008, and they were passed unanimously.

Nestle Waters

The Board heard a report from Director MacCallum regarding a request from Nestle Waters of North America to conduct reconnaissance on the Montague WMA/Bitzer Hatchery Aquifer. Nestle was looking for water sources for a new Poland Springs bottling plant. Mr. Doug Smith, a private citizen, asked for and received permission to address the Board on his concerns regarding this matter. The Board also agreed to hear, and heard, statements on the matter from Ms. Tina Clarke, representing both the Montague Alliance to Protect Our Water and Massachusetts Clean Water Action; and from Ms. Eileen R. Simonson of the Water Supply Citizens Advisory Committee.

The Board was very concerned about the reconnaissance request, but Nestle had proposed only to send two geologists to walk the site, take water quality samples, and gauge stream and spring flows. As these activities require no permits from any member of the public, the Board could take no regulatory action except to await results, but it voted unanimously to require Nestle to provide it with a copy of any resulting report, and to make sure that the Nestle geologists were escorted by

an agency observer during the testing. Nestle provided a report of the findings of their contractor, Northeast Geoscience, and also notified the Board that they had decided to suspend any further water investigation on state-owned land in Montague. The Board voted unanimously to make the report and the letter part of the public record.

Waterfowl Regulations

The Board heard the annual presentation from Waterfowl Project Leader H Heusmann on the framework and proposed season dates and bag and possession limits for the 2007-08 waterfowl seasons. Following a public hearing on these proposals, the Board voted unanimously to accept them.

Emergency Public Health Regulations

The Board was informed by the Director of the fact that emergency regulations dealing with a potential outbreak of Eastern Equine Encephalitis (EEE) had been signed. These emergency regulations were put in place because the Department of Public Health (DPH), while monitoring mosquitoes, had detected a mosquito carrying the EEE virus two weeks earlier than had been previously encountered in Massachusetts. Emergency regulations allow the Division to take permitting action relative to pesticide spraying in the event that such spraying would take place in areas where species are protected under the Massachusetts Endangered Species Act (MESA). DFW staff proposed that the agency allow spraying to occur in priority habitat areas only if the Commissioner of the DPH or the Governor declare a public health emergency. The Board held a public hearing on this matter in April and voted unanimously to accept the proposed change.

Changes to the Massachusetts Endangered Species List

The Board voted to accept proposed changes to the MESA species list as recommended by the NHESP Advisory Board.

Youth Turkey Hunt Program

Mark Tisa reported to the Board on the proposal for creating a Massachusetts Young Adult Turkey Hunt Program. A human dimensions study conducted in 2004 for the agency by Lyndon State College (VT) had indicated that young hunters and their parents were looking for a complete program, not just a day in the field. It was based on these findings that the Board had established the Young Adult Pheasant Hunt Program in 2005, a program in which 300 young hunters have already participated. Dr. Tisa proposed a similar three-part comprehensive program for turkey, to be offered by the agency in conjunction with participating clubs and the National Wild Turkey Federation, and which would also require setting aside a special youth hunt day. The Board unanimously voted to endorse such a program and move forward with a public hearing as soon as possible.

Congratulations

The Board was very pleased to present the Governor Francis W. Sargent Conservation Award to Kathleen (Betty) Anderson of the Natural Heritage & Endangered Species Advisory Committee. She is the sixth recipient of this prestigious award, presented annually by the Fisheries & Wildlife Board to honor an individual or organization for their contribution to the conservation of natural resources in the Commonwealth. The Board

Drake Mallard.

also extended its congratulations to Henry Woolsey, Coordinator of the Natural Heritage & Endangered Species Program, for being the recipient of the Conservationist of the Year Award by The Nature Conservancy. It also congratulated the agency itself as the recipient of the 2008 Cooperative Conservation Award from the Department of the Interior.

Presentations

The Board heard a large number of informative presentations from staff this year. The agency's Upland Game Bird Biologist, Dave Scarpitti, advised the Board of the agency's involvement in the conservation management of game species. He provided an excellent overview of the status and habitat of upland game birds, the upland habitat forestry program, and the public-private partnerships associated with the Woodcock Initiative and the Landowner Incentive Program. At a later date, he also provided a presentation on the Woodcock Initiative in Massachusetts, including a project completed last fall at the Poland Brook WMA.

Another presentation, by Senior Zoologist Scott Melvin on the status of, and conservation efforts to benefit, the Piping Plover, was also of great interest. The Board would like to see such information receive increased public distribution, particularly on the agency's website.

GIS Coordinator Dave Szczebak provided the Board with a much-needed explanation of how the Geographic Information System has evolved in recent years, and why it is so crucial to the meeting the agency's mission.

Another presentation, by Grants Administrator John O'Leary, involved a request to endorse an agency set of Best Management Practices for Controlling the Spread of Invasive Plants. The Board voted unanimously to endorse the proposal, which will put protocols on all agency habitat management contracts or grants, as well as staff management and research activity and public field collection permits.

The Board was also very pleased to hear a very informative presentation on the restoration of the federally threatened Northeastern Beach Tiger Beetle by Restoration Ecologist Tim Simmons. He stated that there are 17 species of tiger beetles in the state, two of which are federally listed, and another six of which are state listed. Primary threats to the federally listed species are off-road vehicles and beach stabilization structures.

Another subject that was presented to the Board was Forest Inventory on DFW Lands. Forest Project Leader John Scanlon made the presentation, which was most informative, covering the history and all aspects of this very successful research project. The Board would like to see a publication offered to the public on the results.

Finally, the Board heard an excellent presentation by Kathy Sferra of the Massachusetts Audubon Society on the Proposed Housatonic River PCB Cleanup.

Miscellaneous

The Board discussed the possibility of selling advertising space in the annual Abstracts of the Fish & Wildlife Laws. It voted to create a working committee consisting of three Board members to review advertising and the Abstract publication process. The committee reported back to the Board in April, and recommended that the information they had collected be turned over to agency staff for review. The Board voted to support this motion and to have staff report back every few months on their progress in determining how to move forward on production of Abstracts that contain advertising and that are published by a contracted publisher. Staff reported that there were no legal obstacles to selling advertising in the abstracts. The Board's committee indicated that they would frame out a policy that would govern the content of the Request for Proposals (RFP) for the competitive bidding process.

As it has for several years now, the Board continues to have grave concerns about the illegal use of ATVs, particularly on WMAs and other agency-owned or -controlled properties. The Board voted unanimously to send a letter to the towns that contain WMAs to recommend more law enforcement and higher fines for infractions. The Board noted that it was pleased that the Department of Conservation & Recreation, which also experiences great problems with the illegal use of ATVs on their properties, is holding a meeting with various groups with the goal of producing draft legislation to deal with the ATV problem.

The Board also voted to endorse the Director's nomination of Deputy Director Jack Buckley as a candidate to represent the Northeast Association of Fish & Wildlife Agency Directors at CITES (Convention on the International Trade in Endangered Species). It would also like to report that it is greatly relieved to have the crucial positions of Deer and Moose Project Leader and Furbearer Project Leader filled with two highly qualified wildlife scientists after many months of advertising and interviews.

FISHERIES

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

Introduction

Fishing, hunting, and wildlife-related recreation are important recreational activities for residents and non-residents of Massachusetts. According to the U.S. Fish and Wildlife Service's (USFWS) 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, more than 292,000 Massachusetts residents age 16 and older went freshwater fishing. Additionally, more than 99,000 non-residents fished the state's lakes, ponds, rivers, and streams in 2006. Freshwater anglers alone contributed more than $270 million in retail sales in Massachusetts. Further, there are over 3,500 jobs in the Commonwealth that are directly attributable to freshwater angling, with salaries, wages, and business earnings amounting to more than $140 million annually. This generates more than $32 million and $38 million in state and federal tax revenues, respectively. In all, the total economic multiplier effect for freshwater angling in Massachusetts is approximately one-half billion dollars annually (USFWS 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation).

The Commonwealth's aquatic resource inventory includes a variety of both lotic (running-water) and lentic (standing-water) fisheries habitat, ranging from coldwater, wild trout fisheries to warmwater, panfish habitat. 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) coursing through 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.

Anadromous Fish Investigations

Overview

In FY 08, the DFW hired three six-month seasonal workers to stock Atlantic salmon fry, conduct the Atlantic salmon smolt production assessment work in Connecticut River tributaries, and staff the West Springfield fishway on the Westfield River. An additional three three-month seasonal workers were hired to staff the Essex fishway on the Merrimack River. Northeast Utilities, as directed by the conditions of their Federal Energy Regulatory Commission (FERC) hydroelectric license, hired seasonal employees for the Holyoke fishway, and Firstlight Power and USGS employees from the Conte lab counted fish at the Turners Falls fishway. The DFW supervised these activities.

A total of 1,377,620 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 2008. Because 2008 fish passage operations are ongoing at this time, this report will summarize 2007 fish passage activities. No major malfunctions were experienced any of the fishways on the Connecticut or Merrimack rivers in Massachusetts in 2007.

Connecticut River

The project leader actively participated in the Connecticut River Atlantic Salmon Commission (CRASC), and continued as the chair of both the CRASC Technical Committee and the CRASC Shad Studies Group. The project leader also participated in the Connecticut River/Long Island Sound Eco-team (CTR/LIS ET) and as a member of the CTR/LIS ET fish passage sub-committee. The project leader was actively involved in the re-licensing of the Holyoke #4 Project on the Holyoke Canal; the re-licensing of the Woronoco hydroelectric project on the Westfield River in Russell; and the applications for FERC exemptions at the Westfield Paper dam in Russell, The Ice House Dam in Ayer, and the Alternatives project on the Mumford River in Northbridge. The FERC re-licensing process has also begun for two projects on the Housatonic River in Massachusetts (Glendale and Willow Mill). Many telephone, electronic, and written requests for information were also answered by the project leader. The Atlantic Salmon Egg Rearing Program (ASERP) continued in 30 schools in the Connecticut River watershed. The project leader was actively involved with the River Restore Program, acting as the DFW's representative on the Dam Removal Triage team.

Holyoke

The City of Holyoke (as the Holyoke Gas and Electric Co.; HG&E) bought the Holyoke Hydroelectric project from Northeast Utilities in 2002. Since that time the project leader has been involved in ongoing negotiations with the new owner to settle the outstanding issues and finalize the FERC license for the project. HG&E, as directed by the conditions of their new FERC hydroelectric license, hired seasonal employees for the Holyoke fishway in spring 2007; the Project Leader supervised their activities. The Holyoke Fishway was

rebuilt between the 2004 and 2005 fish passage seasons. Improvements included:

- New tailrace lift tower, bucket, and hoist
- New spillway lift tower, bucket, and hoist
- Redesigned spillway entrance gallery and crowder
- Wider exit flume
- New salmon traps
- New shad trap and truck facility
- New counting room and second counting window

The new fishlift was operated for upriver fish passage from April 5 through July 15, 2007, except during periods of high water. 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 118 in 2006 to 101 in 2007. Ten Atlantic Salmon were radio-tagged and released at Holyoke as per agreement with HG&E.

The total number of shad lifted in 2007 (158,807) was 22% of the record high passage of 1992. Passage in 2007 was 71% of the previous 5-year mean, and 65% of the previous 10-year mean. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed this project on the 42nd day of passage (May 27). A total of 542 American Shad were sampled for biological data on 26 days, from May 11 through June 19. Fork length, weight, sex, and scale samples were collected from all individuals. This represents 0.3% of the total American Shad passed for the year and between 0.1% and 28% of the daily shad passage at the facility. The weighted percentage of the run sampled (the total number of fish passed on days of sampling expressed as a percentage of the entire run) was 80%. The weighted sex ratio of American Shad lifted at the Holyoke facility in 2007 was 52% males and 48% females.

Fishlift personnel trapped a total of 2,137 shad for restoration efforts. Four hundred ninety-five were transferred to the Vernon Pool on the Connecticut River; the balance were transferred out of basin.

Blueback herring passage in 2007 was 75 (Table 1). This was 0.012% of the maximum passage of 1985, 7% of the previous 5-year mean and 0.7% of the previous 10-year mean.

Sea Lamprey passage in 2007 (39,933) was 41% of the record passage of 1998 and was 86% of the previous 5-year mean and 89% of the previous 10-year mean.

Gizzard Shad passage was 8% of the previous 5-year mean and 0.8% of the previous 10-year mean.

Turners Falls

The Spillway, Cabot, and Gatehouse facilities were operated during the andromous fish passage season in 2007 (May 11 through June 30). Due to staff limitations, passage was recorded on videotape to be reviewed later by representatives of the Conte Anadromous Fish Lab and/or Firstlight Power. All ladders were monitored from 06:00h until the loss of daylight made video monitoring impossible around 20:00h. All fish ladders remained open for passage twenty-four hours each day.

Ten adult Atlantic salmon were allowed to pass the Holyoke fish passage facility. Of these, eight were subsequently observed passing the fish ladders at Turners Falls.

The number of shad passing the Gatehouse fish ladder in 2007 (2,248) was 4% of the maximum passage of 1992, 106% of the previous 5-year mean and 52% of the previous 10-year mean. The number of shad passing the Spillway fish ladder in 2007 (1,793) was 15% of the maximum passage of 1992, 62% of the previous 5-year mean and 57% of the previous 10-year mean. The number of shad passing the Cabot fish ladder in 2007 (11,130) was 12% of the maximum passage of 1992, 142% of the previous 5-year mean and 88% of the previous 10-year mean.

Examining the cumulative percent of shad passed at Gatehouse, 50% of fish passed this ladder on the 29th day of operation, June 8. Examining the cumulative percent of shad passed at Spillway, 50% of fish passed this ladder on the 21st day of operation, May 31. Examining the cumulative percent of shad passed at Cabot, 50% of fish passed this ladder on the 20th day of operation, May 30.

Only 1.4% of the shad lifted at Holyoke (158,807) passed the Gatehouse observation window, well below the restoration goal of 50%.

Westfield River

The West Springfield fishway was operated for upriver passage during spring/summer (April 3 through July 6) in 2007. Closures due to high water occurred on April 5, April 7-22 and April 28. 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 2001. The eelway was operated for upstream elver passage from June 10 through September 30, 2007.

During the spring/summer season, 21 Atlantic Salmon were trapped. All salmon were transported to the Richard Cronin National Salmon Station, Sunderland, by USFWS personnel.

A total of 4,497 American Shad; 1,797 Sea Lamprey; no Striped Bass; no Blueback Herring; 245 American Eel; and no Gizzard Shad were passed upstream in spring/summer 2007. The shad passage was 95% of the record high of 4,720 in 2001.

Atlantic Salmon Fry Stocking, Survival, and Habitat Assessment

Between April 14 and May 9, 2008, 1,377,620 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), and the Sawmill River.

The Westfield Watershed Association (a private group) organized two fry stocking days (118,415 fry total).

Index sites on streams stocked in 2006 were sampled by electro-fishing to evaluate Atlantic Salmon fry growth and survival. Sixty-eight sites on 48 streams were sampled by personnel from the DFW in 2007.

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

Population estimates for each age class were obtained by expanding the number of salmon captured by the historical sample efficiency at each site (calculated in past multi-pass depletion samples). Survival was calculated by dividing the population estimate for that year class by the number of units surveyed, multiplied by the stocking density of that year class. An estimate of spring 2007 smolt production was produced by multiplying the population estimate of 2+ salmon by the estimated over-winter survival (.65)

A survey of the total amount of Atlantic Salmon habitat in the tributary waters of the Connecticut River 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 2007, the project leader actively participated in Merrimack River Policy and Technical Committee meetings as well as several working group meetings.

The two mainstem fishlifts on the Merrimack River in Massachusetts were operated and monitored for anadromous fish passage during the spring/summer of 2007.

Essex Dam

During the spring of 2007, the Essex Fishlift operated for 73 days between May 4 and July 17. For the fall season the fishway was operated from September 15 through November 1. Anadromous fish were identified and counted at the counting station. Atlantic Salmon were trapped for brood stock purposes and transported to the USFWS National Fish Hatchery at Nashua, New Hampshire.

Seventy-one adult Atlantic salmon were captured at the Essex fishlift during spring 2007. This was 22% of the record passage of 1999. Salmon returns were 94% of the previous 5-year mean, and 78% of the previous 10-year mean. Two salmon were captured in the fall. All were trapped for brood stock purposes. The captured salmon were transported to the USFWS National Fish Hatchery at Nashua, New Hampshire, to be spawned.

The total number of shad lifted in 2007 (15,876) was 21% of the record high passage of 2001. Shad passage in 2007 was 50% of the previous 5-year mean and 39% of the previous 10-year mean. A total of 1,155 shad were trapped and trucked the USFWS National Fish Hatchery at Nashua, New Hampshire, for spawning. An additional 300 shad were trapped and trucked to a shad hatchery in Maine. A total of 212 shad were sampled for biological information in 2007.

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 (10,866) and 2004 (14,945). The total 2005 passage was 98 fish. Herring passage in 2006 was 1,105. Passage in 2007 was 1,169; this was 0.3% of the record high passage of 1991. Herring passage in 2007 was 21% of the previous 5-year mean and 20% of the previous 10-year mean.

Total number of Sea Lamprey, Striped Bass, and Gizzard Shad passing through the Lawrence fishlift were 1,399; 56; and 1, respectively.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator began 1 week after shad began to move through the Lawrence fishway (May 31), which is approximately 12 miles downstream, and concluded on July 9. The system was operated 7 days per week, generally from 7:00 A.M. to 6:00 P.M. Frequency of lifts varied from 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.

The estimated total number of anadromous fish passed at the Lowell facility is as follows: American Shad, 1,653; river herring, zero; Sea Lamprey, 127; Striped Bass, zero; American Eel, two; Gizzard Shad, zero. This is 10% of the shad, none of the river herring, and 9% of the Sea Lamprey 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 brood stock. However, a large number of domestic Broodstock Salmon from the sport fishery in the mainstem Merrimack River in New Hampshire were seen in the vicinity of the Lowell fishlift. These can legally be harvested in the Massachusetts portion of the Merrimack River and its tributaries upstream of the Essex Dam in Lawrence.

Hatchery/Trout Program

The DFW met its annual trout production goal of between 400,000 and 450,000 pounds in FY 08. This production goal is based on the rearing capacity of each hatchery (determined by a combination of the quantity and quality of the water supply and rearing space) and the limits imposed by the National Pollution Discharge Elimination System permit that each hatchery is issued by the Massachusetts Department of Environmental Protection (DEP) and the Federal Environmental Protection Agency (EPA). The DFW's four trout hatcheries produced a total of 408,639 pounds of trout, comprising a total of 653,050 Brook, Brown, Rainbow, and Tiger trout in FY 08, which includes both the fall 2007 and spring 2008 stocking seasons (Tables 1 and 2).

A total of 70,868 pounds of trout, comprising 100,649 fish, were stocked during fall 2007. The fall fish included more than 74,000 Rainbow and Brown trout that averaged more than 12 inches apiece. In spring 2008, a total of 337,771 pounds of trout were stocked, which included 325,823 rainbow trout that ranged between 9 and 14+ inches long. More than 150,000 of these Rainbow Trout averaged 14 inches or longer. The spring stocking also included 87,232 Brook Trout that ranged between 6 and 18+ inches long; 133,946 Brown Trout that ranged between 6 and 18+ inches long; and 5,400 Tiger Trout that were more than 14 inches long (Tables 1 and 2). The Tiger Trout averaged 1.2 pounds apiece. Tiger Trout are a cross between a Brook Trout male and a Brown Trout female. They are called Tiger Trout because of their beautiful tiger-like stripes.

The Roger Reed Hatchery in Palmer continued its important role in both the Atlantic Salmon restoration program and the Landlocked Salmon program for the Quabbin Reservoir in FY08. A total of 8,940 Landlocked Salmon smolts were produced; 7,500 were stocked into Quabbin Reservoir in May 2008 and the balance was given to the state of New Jersey in return for 300,000 Brown Trout eggs. A total of 1.48 million Atlantic Salmon eggs were collected from the brood stock held at the station and distributed among cooperating hatcheries in New England. A total of 854,200 Atlantic Salmon fry were raised and stocked into rivers and streams in the Connecticut River drainage basin within Massachusetts. In addition, 223 adult Broodstock Salmon produced at Roger Reed Hatchery were stocked in selected waters across the Commonwealth. A summary of the numbers

2008 Fish Production

Table 1. Summary of the number trout produced and stocked from each of the Division's four trout hatcheries in FY 08.

(Fall stocking 2007 and Spring stocking 2008)

Species	Size Cat. (inches)	Number of fish				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	9+	24,500	26,603	0	0	51,103
	12+	32,000	62,721	56,274	46,473	197,468
	14+	0	163,901	0	10,000	173,901
	Sub-total	**56,500**	**253,225**	**56,274**	**56,473**	**422,472**
Brook Trout	6 - 9	25,500	0	0	0	25,500
	9+	0	0	50,264	0	50,264
	12+	0	0	0	11,074	11,074
	18+	0	0	0	394	394
	Sub-total	**25,500**	**0**	**50,264**	**11,468**	**87,232**
Brown Trout	6 - 9	23,780	0	0	0	23,780
	9+	0	36,900	35,500	0	72,400
	12+	17,970	0	16,965	6,200	41,135
	18+	0	0	0	631	631
	Sub-total	**41,750**	**36,900**	**52,465**	**6,831**	**137,946**
Tiger Trout	14+	0	0	0	5,400	5,400
Sub-total	**0**	**0**	**0**	**5,400**	**5,400**	
	Total	**123,750**	**290,125**	**159,003**	**80,172**	**653,050**

Table 2. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY 08.

(Fall tocking 2007 and Spring stocking 2008)

Species	Size Cat. (inches)	Weight of fish (lbs) Bitzer	McLaughlin	Sunderland	Sandwich	Total Wgt. of Fish (lbs)
Rainbow Trout	9+	12,333	7,415	0	0	19,748
	12+	31,452	41,328	28,260	29,281	130,321
	14+	0	153,293	0	8,908	162,201
	Sub-total	**43,785**	**202,036**	**28,260**	**38,189**	**312,270**
Brook Trout	6 - 9	8,030	0	0	0	8,030
	9+	0	0	10,713	0	10,713
	12+	0	0	0	7,387	7,387
	18+	0	0	0	996	996
	Sub-total	**8,030**	**0**	**10,713**	**8,383**	**27,126**
Brown Trout	6 - 9	5,299	0	0	0	5,299
	9+	0	9,330	7,951	0	17,281
	12+	16,860	0	16,759	4,927	38,546
	18+	0	0	0	1,761	1,761
	Sub-total	**22,159**	**9,330**	**24,710**	**6,688**	**62,887**
Tiger Trout	14+	0	0	0	6,356	6,356
	Sub-total	**0**	**0**	**0**	**6,356**	**6,356**
	Total	**73,974**	**211,366**	**63,683**	**59,616**	**408,639**

Table 3. Summary of Landlocked salmon and Atlantic salmon produced at the Roger Reed Hatchery in FY 08.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked salmon	smolts (8+)	8,940	2,424
	Sub-total	**8,940**	**2,424**
Atlantic salmon	green eggs	1,480,000	
	unfed fry (1+)	854,200	314
	adults (15+)	223	3,127
	Sub-total	**233,4423**	**3,441**

of each of the fish species produced by the Roger Reed Hatchery is found in Table 3.

Improvements were made to the infrastructure of Montague, McLaughlin, and Palmer hatcheries in FY 08. The most significant project was implemented at Montague Hatchery, where the office building was completely rebuilt. The project included construction of a small addition to the building, as well as installation of new restroom facilities, electrical wiring, lighting, insulation, walls, flooring, and a new HVAC system. At McLaughlin Hatchery, a 5,000-gallon underground heating fuel oil storage tank and a 5,000-gallon underground gasoline storage tank were successfully removed. At Palmer Hatchery, a new backup electrical generator was installed; the rearing water filtration and sterilization system was also upgraded.

There were four changes in the hatchery staff in FY 08. Heather Hanecak was hired as a Wildlife Technician at Sunderland Hatchery to fill the vacancy created by the resignation of Mike Dumont. John Garafoli was hired as a Wildlife Technician at Sandwich Hatchery to fill the vacancy created by the resignation of Amber Courier. Richard Pecorelli was hired as a Wildlife Technician at Montague Hatchery to fill the vacancy created by the retirement of Karl Hansen. Jeremy Davis was hired as a Wildlife Technician at McLaughlin Hatchery to replace the vacancy created by the transfer of Jessi Manti to the Central Wildlife District.

Warmwater Fisheries Investigations

Esocid Stocking Program

The DFW relies entirely on surpluses from other states (Pennsylvania, New York, New Jersey, and Virginia) for its

Freshwater Sportfishing Gold Pin Awards for 2007

Species	Number of Adult Pins	Number of Youth Pins	Weight of Gold Pin Adult	Weight of Gold Pin Youth
Broodstock Salmon	23	2	21 lb. 0 oz.	6 lb. 9 oz
Brook Trout	14	23	3 lb. 15 oz.	4 lb. 2 oz.
Brown Trout	11	10	10 lb. 14 oz.	9 lb. 3 oz.
Bullhead	16	37	4 lb. 4 oz.	2 lb. 14 oz.
Carp	27	15	29 lb. 4 oz.	29 lb. 0 oz.
Chain Pickerel	34	50	6 lb. 13 oz.	7 lb. 12 oz.
Channel Catfish	32	5	15 lb. 14 oz.	8 lb. 10 oz.
Crappie	65	47	3 lb. 6 oz.	3 lb. 0 oz.
Lake Trout	18	5	19 lb. 6 oz.	12 lb. 1 oz.
Landlocked Salmon	29	13	5 lb. 14 oz.	4 lb. 0 oz.
Largemouth Bass	36	74	9 lb. 1 oz.	7 lb. 13 oz.
Northern Pike	13	7	25 lb. 1 oz.	16 lb. 8 oz.
Rainbow Trout	21	8	7 lb. 11 oz.	5 lb. 4 oz.
Shad	7	7	7 lb. 8 oz.	4 lb. 12 oz.
Smallmouth Bass	30	30	6 lb. 2 oz.	4 lb. 9 oz.
Sunfish	21	52	1 lb. 12 oz.	1 lb. 6 oz.
Tiger Muskelunge	4	0	18 lb. 8 oz.	N/A
Tiger Trout	23	19	3 lb. 3 oz.	2 lb. 9 oz.
Walleye	9	1	5 lb. 15 oz.	4 lb. 2 oz.
White Catfish	5	2	6 lb. 14 oz.	3 lb. 8 oz.
White Perch	37	13	2 lb. 15 oz.	2 lb. 6 oz.
Yellow Perch	27	62	2 lb. 5 oz.	2 lb. 1 oz.

The sixth annual Angler of the Year Award (presented to the angler who submits the highest number of eligible species) was presented for the second time to Roy Leyva of Plymouth (2004 Angler of the Year) who weighed in 13 different species.

esocid program (Northern Pike and Tiger Muskellunge). In recent years, these other states have begun scaling back their production of both species. As a result, the DFW stocked fewer esocids this year than it did in past years. The state of New Jersey provided the DFW with 9,050 six-inch Northern Pike, which were stocked into East Brimfield Reservoir, Brimfield. No surplus Tiger Muskellunge were available to the DFW in FY 08.

Freshwater Sportfishing Awards Program

For over 45 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. Beginning in 2005, lower minimum weights were established for Youth Anglers (age 17 and under). This change has resulted in a near-doubling of the number of pins awarded annually. Upon weighing a fish on a state certified scale, 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 adult and youth anglers who weigh in the largest fish of the year for each of the categories are awarded a plaque and gold pin at the annual Eastern Fishing and Outdoor Exposition held in February at the DCU Center in Worcester. Affidavits are still being received for 2008, so results from 2007 are presented here. Nine hundred eighty-four pins were awarded in 43 of the 44 categories (482 for youth anglers and 502 for adult) for calendar year 2007 (up more then 300 from 2006). The only category which had no entries was the state's most elusive: Youth Tiger Muskellunge.

Bass Tournament Creel Analysis

For the past 12 years, the Fisheries Section has monitored 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 that requests the use of a facility governed by the Office of Fishing and Boating Access (OFBA) must receive a Special Use Permit to hold a fishing event. As part of the permit, the OFBA 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 collect information on tournaments held at non-OFBA facilities. The creel sheets are also available to download on the DFW's website. The completed creel sheets are mailed to the Warm/Coolwater Project Leader at the

A happy kid with her award winning pickerel.

Field Headquarters. The creel sheet seeks 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 who caught limits of bass, total number of bass weighed in by species, total bass over 5 pounds, number of bass returned to the water alive by species, total weight, winning weight, and the weight of the biggest bass of the event. There is also a space for the club to include comments. This information is entered into the database to allow the DFW to detect long-term trends in the bass populations in some of the Commonwealth's most heavily-fished waters. Creel sheets are still being received for the 2008 tournament season, so results from the 2007 season are presented here.

In 2007, a total of 209 creel sheets were sent in to the Field Headquarters. This represents a voluntary reporting rate of approximately 33%, based on the number of Special Use Permits issued by the OFBA. These 209 tournaments were held by 59 different bass clubs fishing on 44 different waters. A total of 6,967 Largemouth Bass and 1,415 Smallmouth Bass were weighed in for a catch rate of approximately 1 bass per 3 angler-hours. The average weight of a bass weighed in was 1 pound, 13 ounces. Seventy-nine percent of all anglers weighed at least one bass, while 31% caught a limit (5 bass total of either species). Ninety-nine percent of all bass were returned to the waterbody alive at the close of the tournaments. These indices have not changed significantly since tracking began in 1996. For waters with more than four tournaments, Mashpee-Wakeby Lake, Mashpee, yielded the highest number of bass over 5 pounds with nine caught in 11 tournaments, while the A-1 Site in Westborough, had the highest catch rate for bass 5 pounds and over. Stockbridge Bowl, Stockbridge, produced the highest percent of anglers weighing bass (100%), as well as the highest percent of anglers who caught the limits (84%). A breakdown of the number of tournaments by waterbody revealed that most host only a few tournaments a year, while the two highest number of occurrences continue to take place on Congamond Lake, Southwick, and the Connecticut River, which hosted 22 and 25 tournaments, respectively. Mashpee-Wakeby Lake, Mashpee; Pontoosuc Lake, Pittsfield; and Quaboag/Quacumquasit Ponds, Brookfield, each hosted 10 or more tournaments in 2007. Over time, this data will aid the DFW in detecting 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 DEP, the DFW, the Division of Environmental Law Enforcement (now the Massachusetts Environmental Police), and the Department of Food and Agriculture (now the Department of Agriculture Resources), the DFW, as the coordinating agency, received 24 calls relative to incidents which involved dead fish. Of these 24 reports, nine required field investigations by DFW or DEP personnel to determine the cause of the kill. The final disposition of the 24 calls was that 18 were natural kills; two were chemical kills; one was due to low flow conditions; in one, no fish were found; one was in marine waters; and one was a fish kill of unknown origin.

Environmental Review:

In 2008, the DFW reviewed and provided comments on all major projects affecting fisheries resources published in the *Environmental Monitor*. The DFW also provided technical information to a wide variety of consultants and town and state officials on local projects. There were 136 requests to review project proposals potentially affecting 154 different waters (114 rivers, streams, and unnamed tributaries, and 40 lakes and ponds) statewide. Seventy three percent of the requests were received from environmental consulting contractors to fulfill DEP and Massachusetts Environmental Policy Act (MEPA) filing requirements. The remainder of the requests were from state agencies such as the DEP, the Massachusetts Highway Department, the Massachusetts Riverways Program (Riverways), and the Massachusetts Water Resources Authority (MWRA) (15%); federal agencies such as the Army Corp of Engineers and the FERC (2%); local entities such as departments of public works, boards of health, and watershed associations (5%); and private entities such as individual property owners, hydropower companies, and rod and gun clubs (5%). Fisheries water resources were partitioned as follows: warm water (23%), coldwater (22%), trout stocked waters (24%), anadromous (13%), rare, threatened, or endangered (6%), unknown (11%), and no fisheries resources (1%). The majority of the projects were bridge replacements or rehabilitations over rivers and streams and road reconstruction including culvert replacements (32%). The remaining reviews involved new construction (19%); lake management issues such as drawdowns for aquatic vegetation management, dredging, phosphorus inactivation, and mechanical

harvesting (15%); dam repairs and maintenance (10%); dam removal and habitat restoration (9%); proposed new well sites and/or increased production of existing wells (6%); and utility projects such as waste water treatment plant upgrades, hydroelectric projects, and utility right-of-way projects (9%).

Fisheries Survey and Inventory Project

Fiscal Year 2008 Stream Survey project involved participation in the following segments:

1. Statewide Fisheries Survey and Inventory
2. Target Fish Community Development
3. Coldwater Fishery Resource Designation
4. Stream Temperature Investigations
5. Stream Habitat Restoration Project – Hamant Brook, Sturbridge, MA

1. Statewide Fisheries Survey and Inventory

Watersheds were sampled as part of the 5-year basin cycle using a standard sampling protocol. Of 346 sites sampled in FY 08 (Appendix I, page 81), the majority of the samples were in the Deerfield (63), Westfield (53), Chicopee (52), and Connecticut (41) watersheds. Samplings were also conducted in 13 other watersheds (Table 1). The sampling resulted in the collection of 43,452 fish of 46 different species (Appendix II, page 87). Requests for preferred potential stream survey and inventory sampling locations in the above watersheds were solicited from agencies and stakeholders, and were used to prioritize sampling locations. For a complete description of stream survey methods, see the FY 05 annual report.

2. Target Fish Community Development

The primary efforts for FY 08 focused on production of a final report on statewide Target Fish Community development. The report, entitled "Development of Target Fish Community Models for Massachusetts Mainstem Rivers," was in final draft stage at the time this annual report was written. The report describes Target Fish Communities for most of the large rivers in the state and provides comparisons to current fish communities where adequate information is available to make comparisons. It is anticipated that the executive summary for the report will be included in the FY 09 annual report.

3. Coldwater Fisheries Resource Designation

A project to identify waters that the DFW considers to be Coldwater Fishery Resources (CFRs), initiated in FY 01, was continued and updated based on the fish samples collected in FY 08. The current list of waters contains 775 streams statewide. Future efforts are being planned to create GIS coverage that includes all coldwater resources. 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.

4. Stream Temperature Investigations

The following information was provided as a progress report to the EPA for a temperature study conducted by the DFW and funded by the EPA.

Project Title: Spatial-temporal Variability of Water Temperature in Headwater Drainage Basins in the Blackstone River, Massachusetts, Watershed

Assistance ID #: X7-97167401-0

Report Period: July 3, 2007 to May 27, 2008

Project Description

Recipient will conduct a study in the State of Massachusetts to better understand stream temperature dynamics. Headwater drainage basins selected for study in the Blackstone River watershed were Warren Brook, Emerson Brook, and Muddy Brook. These three basins were chosen because they each contain tributary sections currently containing a mixture of coldwater and warmwater fish communities. Recipient seeks to identify

Table 1. Watersheds and number of samples in each watershed sampled in FY08.

Deerfield	63
Westfield	53
Chicopee	52
Connecticut	41
Millers	23
Nashua	23
Quinebaug	19
Blackstone	14
Hoosic	9
Concord	8
Housatonic	7
Taunton	7
Buzzards Bay	6
Ipswich	5
South Coastal	5
Farmington	4
Cape Cod	2
Mt.Hope/ Narragansett	2
Bashbish	1
Charles	1
French	1
Total	346

factors that cause this spatial variability in basin-wide stream temperatures. Recipient will collect stream water temperatures from these headwater basins for a one-year period using submerged temperature loggers. Multiple temperature loggers will be placed in riffle, run, and pool habitats along the longitudinal network of each basin. Analysis of temperature data will focus on identifying temperature patterns within individual basins and the multi-scale relationship between drainage basin land use and stream water temperatures.

Project Progress

To date the progress for this project has focused on purchase of temperature loggers for deployment, planning, and reconnaissance for thermograph placement, and final selection of headwaters to be researched.

The majority of the budget expenses were used to purchase 66 thermographs from Onset Computer Corporation for a total of $7,016. The balance of the $8,000 award will be used to purchase hardware for anchoring the thermographs for the period of deployment.

Initially Warren Brook was included in the list of waters but has been removed due to human-altered flows. Center Brook in Upton fit the criteria for initial selection and is being substituted for Warren Brook.

These thermographs will be placed in locations determined through field reconnaissance that met study objectives (range of habitats throughout the longitudinal extent of the study streams). Thermographs are placed during the low-flow season to help insure that they will remain wetted throughout the one-year deployment period. Once deployed, information from the thermographs will be downloaded quarterly.

5. Stream Habitat Restoration Project – Hamant Brook, Sturbridge, MA

The DFW is investigating stream habitat restoration activities on Hamant Brook, a stream flowing through the Leadmine Mountain Wildlife Conservation Easement (WCE) in the Town of Sturbridge. Stream survey and inventory procedures revealed a coldwater population of fish upstream of three impoundments on the property and a population of fluvial species, primarily cyprinids and catostomids, below the three impoundments. Removal of the three dams and replacement of a perched box culvert at the confluence of Hamant Brook and the Quinebaug River would benefit native fluvial fish species in the Quinebaug River by helping to restore stream form and function, improving the stream temperature regime, restoring coldwater habitat downstream to the Hamant Brook confluence with the Quinebaug, and improving fish passage from the Quinebaug upstream into Hamant Brook.

As a first step in this stream habitat improvement process, a pre-feasibility study was funded jointly by the DFW and Riverways. An executive summary of that study follows:

Executive Summary

On June 24, 2008, Inter-fluve, Inc., conducted a site reconnaissance on the portion of Hamant Brook within the Leadmine Mountain WCE and downstream to the confluence with the Quinebaug River.

The site reconnaissance included the examination of three dams on Hamant Brook and a box culvert at the confluence of the brook and the Quinebaug River. Inter-fluve, Inc.'s observations are detailed in a Technical Memorandum, as are the full conclusions and recommendations for each structure. Costs for repair or removal are also estimated in "ballpark" fashion, which is also further defined in the full text.

The recommendations in the memorandum include the removal of all three dams (one partially and two fully) and the replacement of the Shattuck Road box culvert with a more suitable stream crossing. The total cost for removal of the three dams is estimated to be $676,000. The estimated cost for repair of the dams totaled $715,000 and does not include an estimated $6,000 per year in maintenance costs associated with dam operation.

The recommendation to remove the structures rather than repair and maintain them is based on a series of benefits highlighted in the document. In addition to cost, the benefits of removal include: fish passage restoration, stream habitat improvement, exotic plant species removal, public safety, and water quality improvement in Hamant Brook and the Quinebaug River.

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WILDLIFE

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The Wildlife Section oversees research and management of all avian and mammalian species within the Commonwealth of Massachusetts that are primarily used in any way for meat, fur, or sporting purposes. The Wildlife Section is also responsible for the DFW's forestry project and upland habitat program on over 150,000 acres of state Wildlife Management Areas. The overall goal of the Wildlife Section is to promote wildlife biodiversity, conserve the Commonwealth's game species, resolve and mitigate human-wildlife conflicts, and provide and enhance wildlife recreational opportunities.

Managing wildlife recreation, conservation, and restoration projects in the third-most densely populated state in the nation is certainly a challenging task. In meeting the DFW's goals, Wildlife Section biologists are faced with significant issues relating to human-wildlife conflicts occurring statewide, from urban to rural environments, while striving to maintain wildlife populations at levels that are in balance within the biological carrying capacity of their habitat and the cultural carrying capacity of the public. Wildlife Section biologists and foresters also have the tremendously complex task of working to stem declines in certain species populations and their associated habitats that result from losses due to development and both natural and human-induced changes in the landscape.

Wildlife Section staff must meet demands related to wildlife management and recreational opportunities in a state with 73,000 hunters. Expenditures from sportsmen and women in Massachusetts are estimated at $71 million annually, according to statistics from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

The Wildlife Section's efforts are devoted primarily to researching and managing populations of wildlife species that are hunted or trapped, as well as to actively managing habitat to support those wildlife populations and species determined to be in greatest need of conservation. The Wildlife Section is also responsible for the DFW's pheasant stocking program, the testing and registration of problem animal control (PAC) agents and falconers, and the licensing and inspection of commercial deer farms and certain other propagators' facilities.

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

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

Upland Game Bird Monitoring

Northern Bobwhite Quail: Quail populations are indexed through biennial whistle count surveys; 18 survey routes (six per county) are equally distributed in Bristol, Plymouth, and Barnstable counties. These survey routes have remained largely unchanged for >35 years. In 2007, no (0) northern bobwhite quail were detected. Counts of whistling male bobwhite quail have been declining for >15 years; however this is the first year in which no quail were detected.

Mourning Dove: Mourning Dove populations are monitored annually as part the USFWS Call Count Survey. This is a standardized effort conducted nationwide to index Mourning Dove populations. The number of doves heard on five of eight Massachusetts survey routes in 2007 was equal to or higher than the number heard on the same routes in 2006. The total number of calling doves heard on eight comparable routes in 2007 (100) was slightly below the 10-year long-term average (109).

[1] Tom O'Shea is on a 10-month Administrative Leave, engaged in a Program in Public Policy at Harvard University.

The 10-year average of the number of doves seen or heard on Call Count survey routes has remained stable across New England; the 40-year long-term average shows a slight (1-2%) increase. Doves are a popular gamebird throughout most of the country; however, hunting of Mourning Doves is not permitted in Massachusetts.

American Woodcock: Woodcock populations are indexed through the Singing Ground Survey (SGS), an effort that exploits the unique, conspicuous courtship behavior of male woodcock each spring. The SGS methods are standardized and are conducted across most states east of the Mississippi River. Eleven randomized spring woodcock singing ground surveys were conducted in 2007. The total number of singing woodcock heard on comparable routes decreased nearly 60%. Heavy spring snow storms in April probably influenced breeding activity in 2007.

Each year, the USFWS surveys woodcock hunters through the Migratory Bird Hunter Harvest Information Program (HIP). In 2006, HIP data indicated that, in Massachusetts, approximately 1,327 hunters bagged roughly 3,052 woodcock (2.3 birds per hunter), a slight increase from 2005 (1.7 birds per hunter). The recruitment index (ratio of immature birds per adult female) for 2006 was 1.6, and slightly higher than in 2005 (1.3).

Ruffed Grouse: Ruffed Grouse breeding activity is monitored annually through roadside drumming surveys that exploit the bird's distinctive male courtship behavior. The average number of drums per stop (ANDS) along 29 random routes in 2007 was 0.21, approximately 33% higher than in 2006 (0.16), and two times higher than in 2005 (0.10). This increase in 2007 was most pronounced in the Western (ANDS = 0.50) and Connecticut Valley (ANDS = 0.27) districts, indicating an overall upward trend in grouse breeding activity. Grouse breeding activity remains very low in the Northeast and Southeast districts, despite areas of suitable habitat.

To provide additional information on true grouse abundance, a pilot study was initiated to assess the efficacy of accurately measuring the abundance or density of ruffed grouse statewide. Ten transects covering approximately 70 km (43.5 miles) were sampled; 20 grouse flushes were recorded. Sample size precluded calculation of reasonable density estimates; however, the encouraging initial survey results justified an expanded effort in late summer and early fall 2007.

Waterfowl Surveys and Management

DFW personnel continued to conduct nest box checks on 52 sites used by the DFW to monitor wood duck populations statewide. Nesting success in 2007 was reduced by extensive spring flooding for the second year in a row. This led to flooded nest boxes, especially on active beaver areas. Beaver have also caused the DFW to shift from cedar poles to erecting boxes on U-channel metal poles because of the tendency for beaver to chew through the wooden poles. There were 401 Wood Duck nest starts, similar to the past two years, in 592 available boxes, with 259 successful hatches, five more than last year but 24 fewer than in 2005. In addition, there were 98 Hooded Merganser hatches from 124 starts.

Massachusetts participates in the Atlantic Flyway Resident Goose Banding Program. The DFW's goal is to band 1,000 geese each year to provide data for the federal database. Geese are captured by round-ups during the summer molt. A total of 972 Canada Geese were banded at 72 sites in 63 cities and towns in Massachusetts. The total included 361 goslings and 611 adults. Crews also captured an additional 277 previously-banded geese. In addition, 110 geese were sampled as part of a nationwide Avian Influenza surveillance program.

The 2007 field season was the second year of use for our new airboat. While staff did not experience some of the mechanical problems encountered last year, it was still a poor year for air-boating. In the first place, the moon phases repeatedly complicated operations. With a full moon on July 29, nightlighting could not commence until after August 2, when the waning moon would rise late enough not to hamper operations. However, that day the Project Leader, who normally drives the boat, had to be away for an important, extended family commitment, and therefore was unavailable to operate the boat. The biologist who would normally drive back-up was out on medical leave. A district biologist with considerable airboating experience had injured his back and was also out on medical leave. This left one biologist with limited airboating experience who had driven the boat only briefly twice before, to operate the boat. The novice driver took the boat out on two occasions but experienced mechanical difficulties on both occasions. Lackey Pond was boated on August 20 when the project leader had returned, but the moon was entering its first quarter, making it too light to airboat again effectively until September 1, which was the beginning of the Labor Day weekend.

In addition to moon phases and lack of personnel, it was also the second driest August on record in 2007, and low water prevented airboating on several areas, including Milford Pond, Milford; Long Pond River marsh, Lakeville; and West Hill Dam, Uxbridge. Biologists did airboat the Quaboag River, Brookfield, but if beaver had not dammed up a small tributary where a small number of ducks were concentrated; likely no ducks would have been captured on that site.

Delaney Wildlife Management Area was scouted for ducks and 50-60 wood ducks were seen flying into the area. Water conditions were adequate when the site was scouted on September 7, but when the area was airboated on September 10, a beaver dam in the culvert had been removed and water levels were 8 inches lower, which caused the airboat to bog down constantly. Few ducks were seen and only half of those were caught.

On those sites where there was adequate water, biologists did well. Although they were only able to boat on 13 nights, on four of those nights they captured over 100 birds. In total they banded 691 birds, with catches ranging from four to 111 (twice). Among the birds banded were 526 Wood Ducks, 101 Mallards, and five American Black Ducks; these totals include 16 Wood ducks, eight mallards, and one black duck that were banded by DFW cooperators. Migrant Green-winged Teal captured were sampled for Avian Influenza during September

During the period of September 4-25, Massachusetts conducted a resident Canada Goose season with a five-bird daily bag limit. The HIP data estimated a September 2007 season harvest of 2,600 geese (September 2006 had a harvest estimate of 3,800 geese).

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 October 20 in the Berkshire zone. During the sea duck season, the DFW contracted with a guide to collect samples for Avian Influenza surveillance from Common Eiders and Long-tailed Ducks.

The annual Midwinter Waterfowl Survey was flown in January under very mild conditions. December 2007 was exceptionally cold and Boston snowfall was the second-greatest on record. Early January followed the same trend, but unseasonably warm temperatures arrived in mid-January, shortly before the survey began. American Black Duck numbers were above the 10-year average, with 19,271 counted. Mallard numbers (5,133) were at a record high. Canada geese (12,243) were 3% above the 10-year average. Sea duck numbers were exceptionally high, with 83,461 eiders and 24,000 scoters counted, primarily in the area south of Cape Cod.

Between January 15 and February 13, 2008, Massachusetts held a late, resident Canada Goose season in the Central waterfowl zone; a similar season in the Coastal waterfowl zone north of Cape Cod ran from January 21 to February 15. The USFWS estimated a harvest of 2,300 geese, compared to 3,100 birds taken the previous year.

In January, staff conducted the 5-year park waterfowl survey. A total of 12,682 mallards, 422 American Black Ducks, and 1,768 Canada Geese were counted on 160 sites in 93 municipalities at, or associated with, areas where people feed waterfowl. Four hundred sixty-five birds of other species of waterfowl were also recorded. The survey period covered January 4-28, 2008. The number of Mallards at feeding sites has declined since the peak count in 1993 of over 20,000. The decline appears related to an increasing number of sites being posted "No Feeding," as Canada Goose numbers increased at feeding sites during the 1990s.

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 92 of the 1,485 plots used in the survey. The population estimate for Mallards was 332,549 pairs $\pm$ 14%. The estimate for Black Ducks was 24,714 pairs $\pm$ 34%; Wood Ducks, 196,717 pairs $\pm$ 16%; and Canada Geese, 390,630 pairs $\pm$ 14%. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its tenth year of participation in the HIP program, which replaced a survey that was based on collecting the names of duck stamp buyers at post offices, and which allows for more specialized surveys of various migratory bird species. Waterfowl and woodcock hunters are required to register by calling an 800-number each time they buy a new license. Hunters were also able to register online through the state's Internet registration system. The HIP number is valid only for a particular calendar year, and, as Massachusetts' annual waterfowl hunting seasons extend over parts of two years, hunters must obtain a new HIP number for each new calendar year.

The Project Leader attended the Technical Section and Council meetings of the Atlantic Flyway Council in New Hampshire and Vermont in FY 08. He also directed the Avian Influenza surveillance program, collecting samples from both resident waterfowl during Canada goose and pre-season duck banding, and from migratory ducks during September airboating actions, and also via hunter-collected waterfowl.

Wild Turkey

Wild Turkey Range and Harvest Evaluation: The 18th modern-day fall either-sex turkey season was held from October 29 to November 3, 2007. The open zone included wildlife management zones (WMZ) 1 through 9 and 13. There were 15,059 eligible permittees. A total of 149 turkeys was taken, including 47 (31.5%) in Berkshire County, 39 (26.2%) in Franklin County, 24 (16.1%) in Hampshire County, 23 (15.4%) in Worcester County, 7 (4.7%) each in Hampden and Middlesex counties, and 1 (0.7%) each in Dukes and Norfolk counties. There were 34 adult males (22.8%), 35 immature males (23.5%), and 80 females (53.7%) harvested.

The 29th Massachusetts spring gobbler hunt was held in April-May 2008. WMZs 1 through 10 and 13 were open for a 4-week hunting season. WMZs 11 and 12 were open for a 2-week period. The DFW received a record total of 15,661 sportsman applications. A record harvest of 2,689 turkeys was attained (the 17th consecutive year over 1,000 and the 10th over 2,000). The estimated overall success rate for taking one bird was 14.3%, as compared to 14.8% in 2007. The Worcester County harvest was highest, at 665 (24.7%), followed by Berkshire (470, 17.5%), Franklin (420, 15.6%), Hampshire (288, 10.7%), Plymouth (190, 7.1%), Middlesex (176, 6.5%), Hampden (173, 6.4%), Bristol (105, 3.9%), Essex (104 (3.9%), Norfolk (78, 2.9%), Barnstable (16, 0.6%), and Dukes (4, 0.1%). There were 1,719 (63.9%) adult males, 960 immature males, and 10 bearded hens taken.

Black Bear

Black Bear Distribution and Harvest Investigations: A record total of 6,387 bear-hunting permits were issued for the 2007 hunting season (5,789 in 2006). A total of 143 bear were taken during the 35-day season, including 125 during the 17-day September segment and 18 during the 18-day November segment. Sixty-seven males and 76 females were taken in Berkshire (n=71), Franklin (n=33), Hampden (n=9), Hampshire (n=29), and Middlesex (n=1) counties. There were 17 non-hunting mortalities in 2007-08, including 10 road kills and seven depredation or public safety kills. A total of 84 problem-bear complaints was received in 2007-08 (113 in 2006-07), primarily including 28 depredations on bird feeders, 17 residential complaints, 17 trash and garbage complaints, and 11 entries into outbuildings or businesses. Additional untallied complaints were received by the Office of Law Enforcement and local officials.

Black Bear Cub Production and Survival: The black bear field study begun by the University of Massachusetts (in cooperation with DFW) was shifted to the DFW in 1999. Fifteen radio-collared females were active on July 1, 2007. Two were killed during the September hunting season. Four 2-year-old bears were preparturient (before the age of bearing young) and the reproductive status of one bear (#290) was unknown. Five of the remaining bears had a total of 10 yearlings (two males, two females, 6 unknown) and three bears had a total of nine cubs (three males, six females).

Seven additional sows (including four yearlings) were captured incidentally or in barrel traps. One of the yearlings was road-killed one month after capture. Two bears had a total of five yearlings (one male, three females, one unknown). One bear had three female cubs. Seven male bears were captured incidentally (n=3), in barrel traps (n=3), or while denned with the sow (n=1). Nineteen radio-collared females were being monitored as of July 1, 2008.

Furbearer Project

The furbearer program is responsible for the management and research of 14 species of wild mammals in the Commonwealth. This group includes American Beaver, Common Muskrat, Bobcat, Eastern Coyote, Red Fox, Gray Fox, Northern River Otter, Fisher, Striped Skunk, American Mink, Long-tailed and Short-tailed Weasel (Ermine), Raccoon, and Virginia Opossum. Massachusetts' furbearers are abundant and widely distributed throughout the state. The populations of these species are scientifically managed and secure; none are threatened or endangered. The value of the Commonwealth's furbearer resource is very diverse and includes economic, ecological, cultural, biological, aesthetic, and educational opportunities for individuals who encounter these species in the state.

Furbearer management presents many challenges to wildlife managers in the state. It makes use of various tools including habitat manipulation, public education, and regulated hunting and trapping in the management of these renewable resources in the Commonwealth. A combination of techniques is used to:

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

These activities provide recreational and economic opportunities for citizens and households in the state. A total of 3,537 furbearers were harvested in the 2007-08 season. The harvest by species was 848 American Beaver, 53 Bobcat, 530 Eastern Coyote, 486 Fisher, 72 Northern River Otter, 48 Red Fox, 33 Gray Fox, 344 Raccoon, 40 American Mink, 3 Weasel, 25 Striped Skunk, 79 Virginia Opossum, and 976 Common Muskrat.

Regulated trapping is an important component of wildlife management programs. Sustainable harvesting is the most feasible and effective method to control wildlife population growth. Wildlife professionals use regulated trapping conducted by trained, licensed members of the public to regulate wildlife populations and reduce the negative effects of high wildlife populations. Residents of the state derive financial savings due to decreased amounts of property damage caused by furbearers, and by reducing the need to pay control agents.

The DFW heavily regulates the harvest of furbearing animals. Massachusetts has complex laws and regulations that govern the activity of trapping. They include:

Mandatory licensing of trappers
Mandatory trapper training
Restrictions on the size of traps
Restrictions on types of traps

Restricted seasons for trapping
Restricted areas for trapping
Mandatory regular checking of traps
Mandatory tagging of traps to identify the owner

Management and Research Efforts

Coyote: The 2007-08 coyote hunting season was extended by five weeks (to overlap the deer season), and coyotes were added to the list of 25 species that Problem Animal Control (PAC) officers are currently authorized to remove. Licensed PAC agents are required to take additional training to receive certification to remove problem coyotes. The first PAC coyote training class was offered in the fall of 2008.

The 2007 coyote trapping season occurred during the month of November (30 days). The 2007-2008 coyote hunting season was held October 13, 2007 to March 8, 2008. During these seasons, 530 coyotes were taken (n=242 in 2006-07). Of the coyotes that were harvested by hunting (n=516), 109 (21.1%) were harvested during the five-week season extension, of which 58 were harvested during the shotgun deer season, 387 (75.0%) during the original season, and 20 (3.9%) unknown.

Pelt Sealing: All beaver, Bobcat, coyote, Fisher, fox, wild mink, and river otter that are taken or salvaged must be brought to a designated representative of the DFW and sealed with an official seal. Pelt sealing is used to gain harvest and distribution information on these species statewide. During the 2007-08 harvest season, DFW personnel sealed 2,110 animals.

Wetland/Beaver Management: During the general election of November 1996, a ballot referendum known as "The Wildlife Protection Act" or "Question 1" was approved by voters in Massachusetts. This statute restricted regulated lawful traps for certain species of wildlife, including beaver. Beaver are prolific rodents that occasionally cause flooding on public and private property. A consequence of the trapping restrictions was a decrease in the beaver harvest during the regulated trapping season and a concomitant increase in the statewide population from 1996 through 2000. In that period, 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 impacted by flooding 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 DFW. Towns are not required to report beaver-related activities that occur under the emergency permitting process, so the DFW attempts to obtain this information in other ways, such as from annual reports submitted by PAC agents and from voluntary surveys of licensed trappers. Based on pelt sealing, PAC annual reports, and trapper surveys, PAC agents and licensed trappers removed a minimum of 1,104 beaver during the period from April 16, 2007 to April 15, 2008.

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

Wildlife Depredation and Damage

DFW personnel responded to complaints about furbearer species causing the loss of domestic livestock and pets. Specific furbearer species causing concern are Eastern Coyote, Red Fox, Gray Fox, Fisher, Raccoon, and Striped Skunk. Staff conducted site visits and providedh technical advice in an attempt to eliminate or alleviate damage situations. Currently the DFW offers information sheets on seven of the 14 furbearer species occurring in Massachusetts. These sheets describe the natural history of the species as well as methods and techniques the public can use to prevent conflicts. 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. Most complaints report coyotes killing livestock, poultry and domestic cats, harassing pet dogs and cats, and denning in or around human structures.

Wildlife Welfare and Disease Program

Furbearer program personnel have been monitoring an outbreak of rabies in raccoon populations along the eastern seaboard since 1977. This epizootic (an outbreak affecting many animals of the same kind all at once) was documented in Massachusetts on September 16, 1992. When the outbreak peaked in the Commonwealth during the 1990s, the die-off of raccoons from this epizootic was tremendous. Since the initial die-off it appears that raccoon populations have recovered and, depending on specific population dynamics, local populations increase and decrease on a 3-5 year cycle.

Deer Project

Harvest and Population

The 2007 statewide harvest of 11,576 deer is the fifth-highest harvest reported in Massachusetts since 1966 (Table 1, page 22). A break-out of the 2007 White-tailed Deer harvest by sex/age and the number of antlerless deer permits allocated and issued by WMZ for Massachusetts is shown in Table 2 (page 22). Overall, there was a 10% increase in harvest from the 2006 hunting season with a 51.5% increase in the muzzleloader season from last year. The 2007 deer harvest by season and wildlife management zone is shown in Table 3 (page 22).

This was the fifth year in which hunters were required to have an antlerless deer permit to harvest an antlerless

Table 1. The 2007 White-tailed Deer harvest by season and sex/age class.

Season	Adult Male	Female	Male Fawn	Unknown sex	Total	% Harvest
Unknown	0	0	0	0	0	0.00%
Paraplegic	4	2	1	0	7	0.06%
Archery	2,033	1,031	227	12	3,303	28.18%
Shotgun	3,043	2,365	596	16	6,020	51.35%
Muzzleloader	746	1,266	225	9	2,246	19.16%
Sub-Totals	**5,826**	**4,664**	**1,049**	**37**	**11,576**	**98.75%**
Quabbin*	64	73	10	0	147	1.25%
TOTALS	**5,890**	**4,737**	**1,059**	**37**	**11,723**	**100%**

* Controlled hunt in cooperation with DCR; limited access

Table 2. The 2007 White-tailed Deer harvest by deer sex/age and the number of antlerless deer permits allocated and issued by Wildlife Management Zone for Massachusetts.

WMZ	Adult Male	Female	Male Fawn	Sex Unknown	Total Harvest	Goal	ADP Allocation	ADP Issued
1	142	80	14	2	238	Stabilize	750	719
2	362	51	4	0	417	Increase	200	193
3	437	315	62	1	815	Stabilize	2,950	2,843
4N	364	110	10	1	485	Increase	450	430
4S	207	68	6	0	281	Increase	300	282
5	508	262	46	5	821	Stabilize	1,650	1,595
6	132	74	18	0	224	Stabilize	550	531
7	389	282	69	1	741	Stabilize	2,700	2,557
8	584	449	85	5	1,123	Stabilize	3,800	3,618
9	586	486	108	2	1,182	Reduce	4,450	4,332
10	770	1,009	216	11	2,006	Reduce	9,100	8,940
11	921	969	248	9	2,147	Reduce	9,300	8,985
12	104	73	18	0	195	Stabilize	850	801
13	150	226	84	0	460	Reduce	2,850	1,092
14	166	206	61	0	433	Reduce	2,600	925
Statewide	5,826	4,664	1,049	37	11,576		42,500	37,843

Table 3. The 2007 deer harvest by wildlife management zone and season.

WMZ	Paraplegic	Archery	Shotgun	Muzzleloader	Total
1	1	48	141	48	**238**
2	0	108	248	61	**417**
3	1	171	468	175	**815**
4N	0	106	294	85	**485**
4S	0	59	136	86	**281**
5	0	167	505	149	**821**
6	2	41	140	41	**224**
7	0	211	377	153	**741**
8	0	237	629	257	**1,123**
9	3	311	629	239	**1,182**
10	0	742	822	442	**2,006**
11	0	828	961	358	**2,147**
12	0	43	102	50	**195**
13	0	134	275	51	**460**
14	0	95	292	46	**433**
Unknown0	2	1	5	8	
Statewide7	3,303	6,020	2,246	**11,576**	

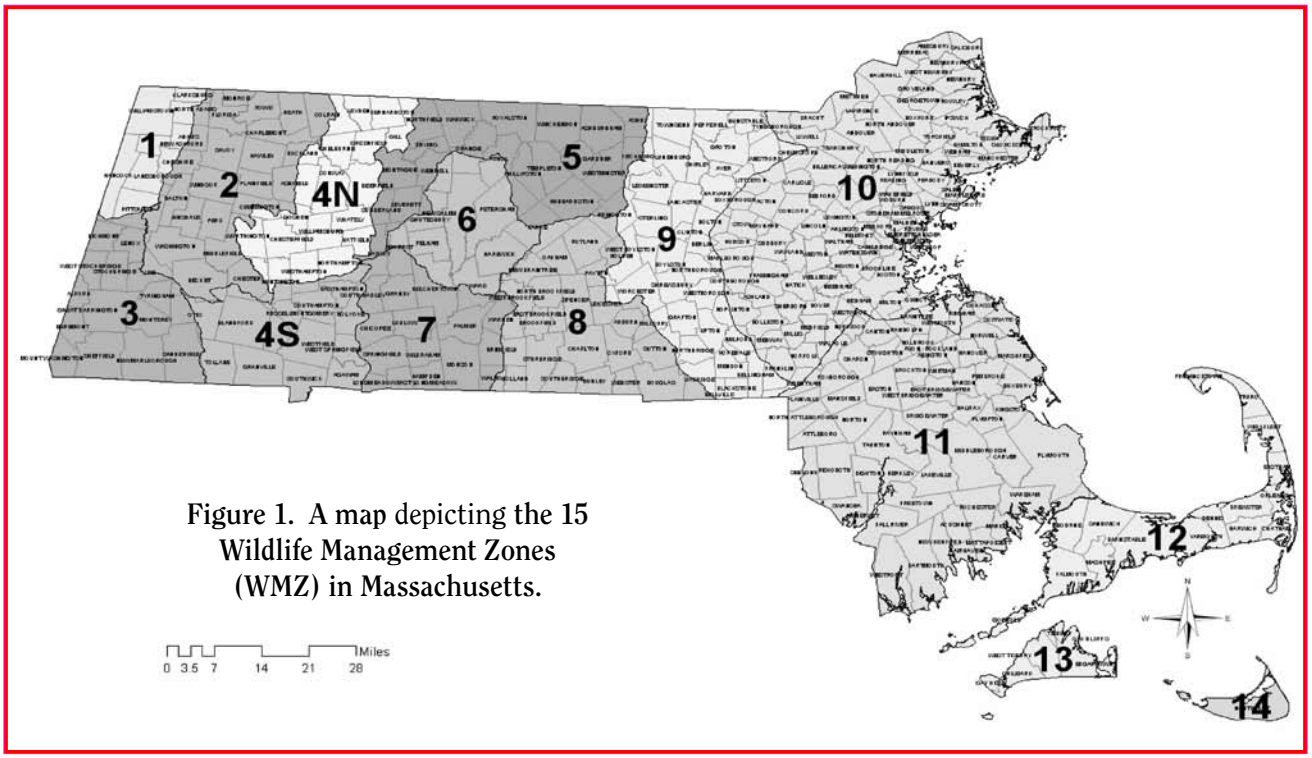


Figure 1. A map depicting the 15 Wildlife Management Zones (WMZ) in Massachusetts.

deer in ***any*** deer season. The changes have increased hunter opportunity statewide while regulating deer harvest across all WMZs.

Deer densities in three zones (WMZs 2, 4S, and 4N) have increased, densities in four zones (WMZs 1, 5, 6, and 12) were maintained, and densities in eight zones (WMZs 3, 7, 8, 9, 10, 11, 13, and 14) decreased in 2007. At this point, the DFW has achieved the desired deer density goals in nine of the 15 WMZs (1, 2, 3, 4N, 5, 6, 7, 8, and 12) – mainly in western and central Massachusetts. Challenges still remain in eastern zones; specifically, hunter access limitations and high deer densities.

Currently, the deer population statewide is estimated to be between 85,000 and 95,000 animals. Densities range from 10-12 deer per square mile in western Massachusetts to over 40-60 deer per square mile on the islands of Martha's Vineyard and Nantucket in eastern Massachusetts.

The antlerless deer permit (ADP) allocation for 2007 was 42,500 permits, a 3% decrease from 2006, while 37,843 permits (89%) were actually issued. Nearly 38% of the issued permits were sold over the counter as additional antlerless deer permits in those zones where allocation exceeded demand.

Research

DFW biologists continue to investigate cause-specific mortality for deer in three study areas in eastern, western, and north-central Massachusetts by monitoring radio-collared deer. Annual survival of males has been relatively high. Annual survival of females has also been relatively high regardless of the number of antlerless deer permits issued. Some of the deer in this study were collared as adults in 2000 and 2001 and are still alive. Survival research is ongoing.

Chronic Wasting Disease

In accordance with the USDA-APHIS guidelines for Chronic Wasting Disease (CWD) Surveillance, DFW staff continued the state's CWD surveillance program. Deer heads were collected from each deer management zone to obtain the samples required to generate a statistically valid, stratified sample for Massachusetts. During the 2007 deer seasons, Massachusetts collected 487 samples. CWD was not detected. Staff will continue surveillance efforts in the 2008 season with funding provided by the USDA-APHIS, especially in the WMZs adjacent to New York or those that have captive deer facilities.

Moose Project

Moose Project 2007

Traditionally, the DFW has collected data concerning moose sightings from the public, moose found dead, and moose vehicle accidents (MVA). These indices are used for estimating the moose population and for determining population trends in Massachusetts. There have been a total of 1,287 moose reports submitted to the DFW since 1924; in 2007, there were 57. This included 17 MVA, 15 sightings, three moose found dead, one crop damage report, two nuisance reports, three research captures, five Large Animal Response Team (LART) responses, and six relocations of problem moose.

The trend in moose sightings reported to the DFW is declining, and we had a decrease in reported vehicle collisions in 2007 from the number reported in 2006. Figure

2 represents the number of moose vehicle accidents per month from January 1980 through 2007. Moose vehicle accidents are defined as all moose that were struck and killed on Massachusetts roadways, plus all moose that were struck by vehicles but walked away from the accident. There have been 304 MVA in Massachusetts from 1980 to 2007 (Table 4). Figure 3 represents the number of MVAs from 1980 to 2007 broken out by town. The MVA rate for 2007 was 1.42 moose per month, which is a 57% decrease from the 2006 rate (Figure 2). The 2007 MVA rate is below both the 5-year MVA average of 2.85 per month and the 10-year average of 2.03 per month. We feel that this is a minimum number, since MVAs are not always reported to the DFW or to the Office of Law Enforcement, though we do learn about some MVAs indirectly through newspaper reports and include them in our data.

The current moose population in Massachusetts is estimated to be between 850 and 950 animals. We use a basic population model that incorporates sighting rates from the deer hunter survey and available moose habitats in the 12 WMZs that we feel have potential for moose (Figure 1, page 23). Cape Cod and the islands are not included in this estimate, as they do not offer potential moose habitat.

Table 4. The moose mortality reported in Massachusetts from 1980 to 2007.

Total MVA is the sum of roadkill and collisions, while total mortality is the sum of total MVA and other mortality.

Year	Roadkill	Collisions	Total MVA	Other Mortality	Total Mortality
1980	1	0	1	0	1
1981	0	0	0	0	0
1982	0	0	0	0	0
1983	1	0	1	0	1
1984	0	0	0	0	0
1985	2	0	2	0	2
1986	0	0	0	3	3
1987	0	0	0	0	0
1988	1	0	1	1	2
1989	2	0	2	2	4
1990	0	0	0	0	0
1991	2	0	2	4	6
1992	5	0	5	5	10
1993	8	0	8	4	12
1994	5	0	5	3	8
1995	8	0	8	4	12
1996	12	1	13	5	18
1997	11	0	11	4	15
1998	6	4	10	8	18
1999	8	0	8	9	17
2000	8	0	8	7	15
2001	18	2	20	9	29
2002	22	5	27	12	39
2003	28	5	33	7	40
2004	43	9	52	15	67
2005	24	5	29	20	49
2006	28	12	40	15	59
2007	8	9	17	9	26
Total	**243**	**43**	**286**	**137**	**427**

We included moose in the CWD surveillance and monitoring for 2007. We collected one sample from a road-killed moose during the fall of 2007, and this moose tested negative for CWD.

In 2007, biologists continued work on a research project with the USGS that uses GPS collars to evaluate movement and habitat use in Massachusetts at a detailed level. They collared 12 moose, six males and six females, with GPS units in the 2007 capture season. Three of the moose were free-ranging. They were stalked and darted, then fitted with GPS tracking collars. Seven moose were successfully approached and darted with the aid of VHF radios on existing GPS collars that had previously been placed on the animals; these moose were re-collared with new GPS collars. Two moose were captured and transported from urban areas where they had been a problem; these animals, too, were fitted with GPS collars.

Eight data sets were obtained from GPS collars during the reporting period. Seven of the moose were recaptured, their collars were removed, and new GPS collars were placed on the animals. One collar was removed from a moose that died at the end of the winter. The collars performed well and obtained between 1,000 and 3,000 locations per animal. Additionally, data was downloaded remotely from two collars, each collar providing approximately 3,500 positions in the 8 months they were deployed. Some preliminary analysis of the data has been performed, but further analysis is needed. The DFW's capability to capture more free-ranging moose during this year and combine the resulting data with the results obtained from the collared moose to date is promising. Continued capture efforts will be made in the fall and winter of 2008-09.

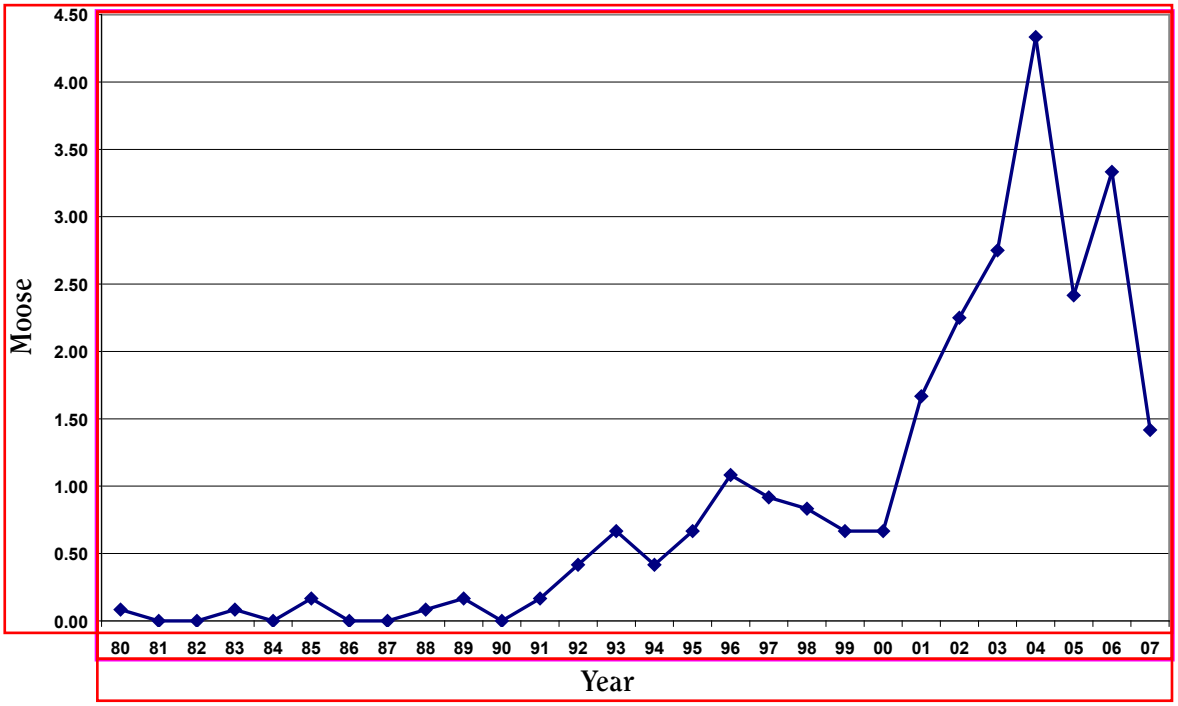
Forestry Project

The Forestry Program is a component of the DFW Biodiversity Initiative, which seeks to maintain and restore the native diversity of flora and fauna through active land management. The Forestry Program focuses on creating a distribution of successional stages, from young forest habitat to biologically mature (late-seral) forest habitat, in a landscape context that will conserve the biological diversity of species and communities within the forest ecosystem.

The Forestry Program's objectives are to:

1) Build and maintain a forest inventory and property boundary geo-database with GIS land cover maps, and establish property boundary lines in the field for each wildlife management area (WMA).

Figure 2. Moose vehicle accidents reported in Massachusetts from 1980 to 2007.



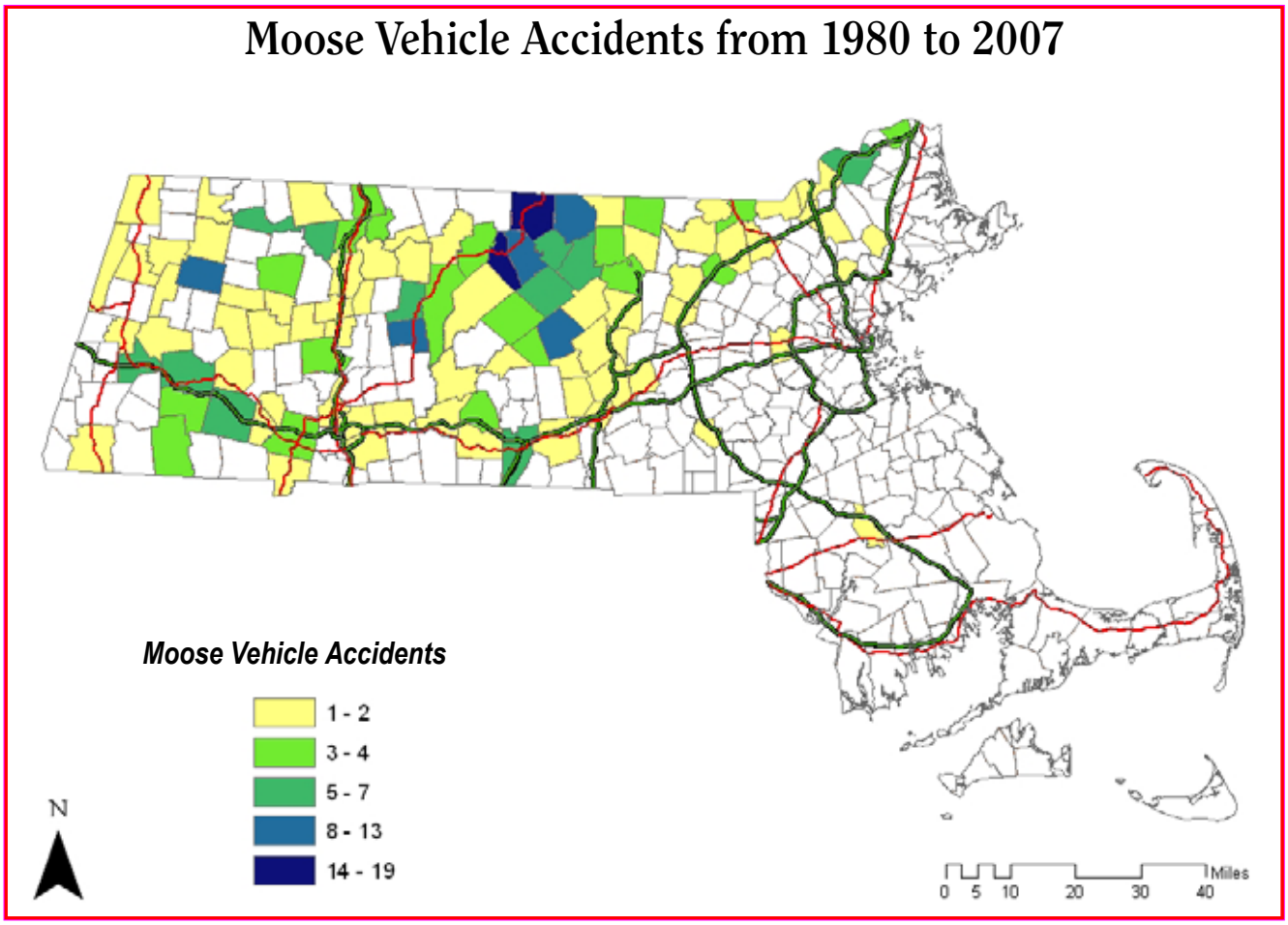


Figure 3. The number and location by town of the moose vehicle accidents reported from 1980 to 2007 in Massachusetts.

2) Use inventory data to design and carry out both commercial forest harvesting operations and non-commercial management activities to meet landscape composition goals for successional forest habitats 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 DFW Forestry Program's landscape composition goals include 15-20% young forest habitat ≤30 years old, 10-15% biologically mature forest habitat ≥150 years old, and 65-75% mid-successional forest habitat 30-150 years old. The Forestry Program Leader and two Management Foresters conduct commercial forest harvesting operations through a public, competitive bidding process in compliance with DFW forest management guidelines to create young forest habitat. 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, DFW foresters consult with District staff to address local access and aesthetic issues, and with personnel from the NHESP to ensure conservation of state-listed species and priority natural communities on WMAs. All forest management activities receive permits from the DCR under the Massachusetts Forest Cutting Practices Act.

Forest Certification

DFW lands continue to operate as certified, sustainably-managed forestlands under the international Forest Stewardship Council (FSC) criteria for sustainable forestry (see http://www.mass.gov/envir/forest/). This independent, third-party certification assures the general public that all forest cutting practices employed by the DFW are sustainable on ecological, economic, and social bases. Information on DFW forest management is available to the general public at: http://www.mass.gov/dfwele/dfw/habitat/management/bdi/forest_mgt/forest_mgt_home.htm.

One major requirement of certification is that the DFW complete management planning for all of its properties over the next few years. In FY 08, the DFW completed a revised draft assessment for the Connecticut River Valley eco-region of Massachusetts. This draft assessment identifies a series of forest management issues and opportunities that impact both public and private forestlands, and will undergo a public review and comment process during FY 09.

DFW foresters completed a draft Allowable Harvest (AH) analysis in FY 08 that will be an important component of all landscape-level Forest Management Zone (FMZ) plans, as well as property-specific Site Plans. FMZ plans describe current forest conditions, establish a desired future condition, and describe active and passive management practices intended to achieve the desired condition on DFW lands within the ecoregion context. Site Plans describe planned and completed harvesting activities at individual WMAs. The AH analysis insures that forest management practices applied on DFW lands are sustainable.

Forest Inventory & Analysis

DFW foresters and contracted vendors completed inventory points to determine forest cover types on about 500 acres of recent acquisitions in FY 08. This information was added to the comprehensive forest inventory geo-database that consists of >2,300 sample points representing >92,500 acres and completed in FY 07. The forest inventory provides a comprehensive assessment of wood products, as well as an inventory of shrub and herbaceous cover on DFW lands.

Forest Harvesting Operations & Management Activities

DFW foresters completed 132 total acres of treatment at four sites in FY 08. Timber sale activities at all four sites (Phillipston, Birch Hill, Herm Covey, and Montague Plains WMAs) had been initiated in previous fiscal years. DFW completed the entire 30-acre treatment at the Herm Covey WMA (214 MBF [1,000 board-feet] of sawtimber, 155 cords of firewood, and 150 tons of pulpwood) in FY 08, and completed 20 acres of a 30-acre treatment at the Phillipston WMA in FY 08 (10 acres of the 30-acre treatment at Phillipston had been completed at the very end of FY 07 [June 2007]. Volume for the entire 30 acres included 284 MBF of sawtimber, 82 cords of firewood, and 550 tons of pulpwood). Both the Phillipston and Herm Covey treatments converted pasture pine (white pine growing on abandoned pasture land) into young forest habitat composed of a diverse mixture of native hardwoods and white pine, with retention of 10-20% of the original forest overstory to provide structural habitat diversity. The Phillipston operation was a single-entry seed-tree cut, while the Herm Covey operation was the second harvest of a modified two-cut shelterwood system designed to create young forest habitat by releasing established regeneration of white pine, red oak, and white oak that was established after the first shelterwood cut was applied to this site in the year 2000.

The DFW also completed 42 acres of a 62-acre treatment at the Birch Hill WMA in FY 08, and 40 acres of a 130-acre treatment at the Montague Plains WMA in FY 08 (20 of 62 acres at Birch Hill, and 90 of 130 acres at Montague Plains were completed during the winter of 2006-07). The Birch Hill operation converted white pine and red pine plantations into young forest habitat composed of diverse, mixed stands of native hardwood and white pine (total volumes from all 62 acres included 356 MBF of sawtimber, 24 cords of firewood, and 934 tons of pulpwood). The Montague Plains operation was a cooperative effort between the DFW Forestry Program and the Natural Heritage Ecological Restoration Program to establish relatively open habitat characterized by dispersed, mature pitch pine trees over scrub oak and native grasses that can be maintained with prescribed

burning (total volumes from all 130 acres included 550 MBF of softwood timber plus 2,200 tons of pulpwood). Both the Birch Hill and Montague Plains operations were single-entry seed-tree harvests.

Three of these four operations (Montague Plains WMA, Birch Hill WMA, and Herm Covey WMA) occurred in rare species habitat, and all activities at these sites were carried out in full compliance with mitigation for rare species conservation supplied by the NHESP.

A 22-acre treatment at the Stafford Hill WMA in Cheshire designed to regenerate young aspen forest habitat that was contracted in FY 07 and planned for harvesting in FY 08 remained inactive because of excessive winter snow depths (3-4 feet) during the winter of 2007-08 (this operation includes 33 MBF of northern hardwood sawtimber and 200 cords of aspen pulpwood). No rare species concerns were identified within the Stafford Hill aspen harvest area during a review of the forest cutting plan for this site by NHESP staff, and this operation will likely be conducted in the summer of 2008.

Timber sale preparation includes marking of trees to be cut; marking of trees to be retained (including mast-producing trees such as Black Cherry, American Beech, and Northern Red Oak to enhance wildlife habitat after the cut); location of wetland resource areas, rare species habitat, and priority natural communities; lay-out of temporary access roads; placement of water bars and other erosion control structures; and preparation of Chapter 132 Forest Cutting Plans. All sales are prepared in compliance with the DFW'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. Planned harvests are typically designed to regenerate mixed stands of white pine, red and white oak, and high-quality northern hardwoods including black cherry and white ash.

Following sale preparation, DFW foresters supervise logging activities (e.g., insure that small diameter, unmerchantable stems are cut to facilitate regeneration of quality hardwoods, insure that retained trees are protected from damage by logging machinery, insure that logging slash is reduced throughout the cut to facilitate public access, and insure that erosion control measures are maintained). A portion of the monetary value for all sales is realized in the form of "In-Kind" services on the WMAs. Services often include grading, liming, fertilizing, and seeding of landing areas, improvement and subsequent stabilization of existing woods roads using Massachusetts Best Management Practices (BMPs), and felling and slash reduction of non-merchantable trees to encourage regeneration of desired tree species and 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 90% balance is due prior to the start of cutting or within one year of the contract award, whichever comes first. Vendors are given up to two years to complete cutting so that they can take advantage of variable market conditions.

Biological Monitoring

Breeding bird surveys were conducted on portions of the Hiram Fox WMA in Chester and the Fox Den WMA in Worthington in June 2008. Data analysis indicated that a diverse and relatively stable breeding bird community occurs at the Hiram Fox site, and that young forest habitat established at Fox Den over ten years ago continues to provide beneficial habitat for native songbirds that use early-successional forest. In addition, a cooperative research project with the U.S. Forest Service's Northeastern Research Station and the Massachusetts Audubon Society investigated breeding bird diversity as well as bird nesting success, continued at previously-harvested sites on the Fox Den and Montague Plains WMAs.

Vascular plant surveys are conducted at all timber sale sites, both before and again after harvesting is completed. The relative abundance of all vascular plants in the forest understory and overstory is noted during these surveys, and special attention is given to identifying invasive, exotic plant species for subsequent control efforts, and to identifying any rare plants that were not previously known on the site, in order to design appropriate mitigation during harvesting activities. Post-harvest surveys are scheduled for the Herm Covey, Phillipston, Birch Hill, and Montague Plains sites in FY 09. Results for previous timber sale sites are available at: http://www.mass.gov/dfwele/dfw/habitat/management/bdi/forest_mgt/plant_surveys.htm.

The Upland Habitat Management Program

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

The goals of the Upland Program are to:

1) Foster and apply the best available science to identify appropriate sites for management of declining early-successional habitats (e.g. abandoned agricultural fields, aspen forest stands, abandoned orchards) while maintaining extensive, unfragmented forest lands.
2) Implement strategies and techniques to manage and restore declining early-successional habitats

to ensure they continue to support native flora and fauna.

3) Systematically monitor the effects of habitat management on plant and animal communities to ensure that managed habitats continue to support the native biodiversity of Massachusetts.
4) Identify habitats where Upland Program objectives are complementary with Ecological Restoration Program objectives and pursue joint endeavors with that program.

Project Accomplishments

Abandoned Field Reclamation

Martin Burns WMA: In January-April 2008, a total of 98.4 acres of abandoned pastureland was cleared of invading trees. Most of this acreage (63 acres) had originally been reclaimed in 1996. The remainder (29.4 ac) was mowed for the first time under DFW ownership. An excavator-mounted disc mower was used to mulch or cut-and-pile stems <4 inches DBH (diameter at breast height) throughout the 98.4 acres. A second treatment to remove occasional trees >4 inches DBH will be conducted in FY 09.

Francis Crane WMA, South: Between November 2007 and February 2008, 89.5 acres of abandoned fields and hedgerows were cleared to create savannah habitat. A Fecon mowing head mounted on an ASV-100 loader was used to mow smaller trees and shrubs <4" dbh in preparation for a feller-buncher, grapple skidder, and whole-tree chipper that cut and removed larger trees (>4" dbh). In coordination with the DFW Ecological Restoration Program, future maintenance of this savannah habitat will be done using prescribed burning.

Francis Crane WMA, North: In February 2008, 1.5 acres of former hedgerow within the 172-acre grassland had stumps flush-cut and downed woody debris removed to facilitate future mowing and/or prescribed burning.

Muddy Brook WMA: In January-February 2008, invading trees up to 4 inches DBH were cleared from 53 acres of abandoned field. Larger trees along field edges, in hedgerows between fields, and occasional larger trees within reclaimed fields will be removed during FY09.

Poland Brook WMA: In order to complete a 17 acre mowing project completed during summer 2007, an additional 1.4 acres were treated to remove red maple trees from a wetland area that supports alder and other native shrubs.

Hiram Fox WMA: In February of 2008, 13 acres of abandoned pastureland was reclaimed adjacent to 32 acres that had been reclaimed previously. Apple trees were planted in a 3-4 acre portion of the 13 acres.

Stafford Hill WMA: A total of 55.5 acres of abandoned pastureland was reclaimed in 2008 adjacent to 66 acres that was reclaimed in 2005. A combination of an excavator-mounted mulching mower, and tree-shear/grapple-skidder/chipper was used to remove invading trees <4 inches DBH, and ≥4 inches DBH, respectively. Native shrubs and young cherry trees were retained during this work.

Stafford Hill WMA: A 22.2-acre aspen-dominated stand was regenerated in 2008 using a tree-shear, grapple-skidder, and whole-tree chipper. This work should result in a vigorous stand of seedling aspen coppice that will complement other young aspen 4-10 years old nearby on the WMA.

Project Accomplishments

Invasive Plant Control

Crane WMA, North: In summer 2008, contract licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, and other invasive woody plants over 16.2 acres of abandoned field area.

Crane WMA, South: In summer 2008, contract licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, and other invasive woody plants over 5.9 acres of abandoned field area.

Westborough WMA: Two invasive herbs were selectively treated with herbicide over 5 acres of abandoned field by a licensed applicator in May of 2008.

Hiram Fox WMA: In summer 2008, 44.8 acres of abandoned pasture land that was previously reclaimed by DFW was treated by licensed pesticide applicators who selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, and other invasive woody plants.

Poland Brook WMA: A total of 56.1 acres were treated for invasive plants in 2008 in two separate efforts. Contract licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, and other invasive woody plants over 46.1 acres of abandoned field area. In addition, prescribed grazing was conducted over an additional 10 acres to control invasive plants within rare species habitat.

Stafford Hill WMA: A total of 79.9 acres were treated to control invasive plants in 2008 in two separate operations. Contract licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, and other invasive woody plants over 69.9 acres of abandoned field area. In addition, a biological control effort was conducted on about 10 acres to control invasive leafy spurge by the permitted release of exotic lady beetles that have had demonstrated success on other sites in Massachusetts.

Biological Monitoring

To determine the success of habitat treatments over time, a long-term monitoring program of birds, butterflies, and vegetation was implemented during the

summer of 1999 on Upland Program sites across the state. During summer 2008, breeding bird surveys occurred on 13 different sites. In a cooperative project with the U.S. Forest Service, vegetation and bird surveys occurred on 10 of the 13 sites, while the remaining three sites were surveyed for breeding birds by independent contractors.

Site	District	Survey Type*	Acres
Martin Burns WMA	Northeast	B	100
Frances Crane WMA	Southeast	B	120
Muddy Brook WMA	Central	B, V	34
Winnimusett WMA	Central	B, V	60
Raccoon Hill WMA	Central	B, V	25
Southampton WMA	CT Valley	B, V	35
Westborough WMA	Central	B	70
Eugene Moran WMA	Western	B, V	45
Fox Den WMA	Western	B, V	55
Green River WMA	Western	B, V	33
Stafford Hill WMA	Western	B, V	132
Taconic Trail St. Forest	Western	B, V	56
Haley Farm St. Forest	Western	B,V	35
TOTAL			800

*B = Breeding bird survey, V = vegetation survey

Keystone Program

The Upland Program once again provided $12,000 to fund the Keystone (formerly "Coverts") Program, a three-day forestry and wildlife habitat conservation workshop for individuals who are in a position to impact conservation in their communities (keystone individuals). These individuals may, for example, serve on local Conservation Commissions and/or land trusts, or may own undeveloped property available for wildlife habitat management. The 25 community leaders who participated in the Keystone workshop in the spring of 2008 are responsible for the stewardship and management of more than 18,000 acres of private, land trust, or municipal lands. Dr. David Kittredge, the UMass Cooperative Extension Forester, and Mr. Paul Catanzaro, Extension Forestry Specialist, organize the workshop and invite knowledgeable speakers to discuss topics including Massachusetts land use history, the Forest Cutting Practices Act, elements of wildlife habitat, habitat management techniques, and habitat types including early-successional habitats.

Landowner Incentive Program

(Although the Landowner Incentive Program is not administratively part of the Wildlife Section, it is included here because of its close relationship to the Forestry and Upland Habitat programs.)

The Massachusetts Landowner Incentive Program (LIP) was created to address the need for conservation and restoration of wildlife habitat on private lands throughout the State. Eighty percent of the land base in Massachusetts is privately owned with limited funding available for on-the-ground wildlife habitat management. LIP focuses on the management of private lands identified by the BioMap project as being essential for the conservation of species-at-risk and has played an integral role in restoring and conserving wildlife habitat on a diverse array of private lands across the state since its implementation in 2005.

Given the small percentage of land in Massachusetts that is publicly owned, private landowner involvement is fundamental to successful management and conservation of fish and wildlife in in the state. The LIP was established to create partnerships between state biologists and private landowners to identify common land management goals; it also provides financial assistance to achieve those management goals. This is a cost-sharing program that provides funding to private landowners to pro-actively and responsibly manage wildlife habitat, conserve natural communities and species-at-risk, and promote biological diversity across the state.

Funding for this program was allocated by Congress through the USFWS to support the efforts of state fish and wildlife agencies. States must compete to receive these funds. The DFW has been successful in receiving LIP grant funds in every year that they have been available.

With the rapid alteration of many natural habitats, the increase of human encroachment across the landscape, and the ever-changing anthropogenic impacts on wildlife, land stewardship is increasingly important in Massachusetts. The diversity of habitat types is decreasing and dynamic habitats like grasslands and young forests are being lost. There is a scarcity of early-successional habitats across the Massachusetts landscape, which has resulted in a decline in species that depend on these habitats for survival.

Figure 1. 2007-2008 Landowner Incentive Program (LIP) Projects

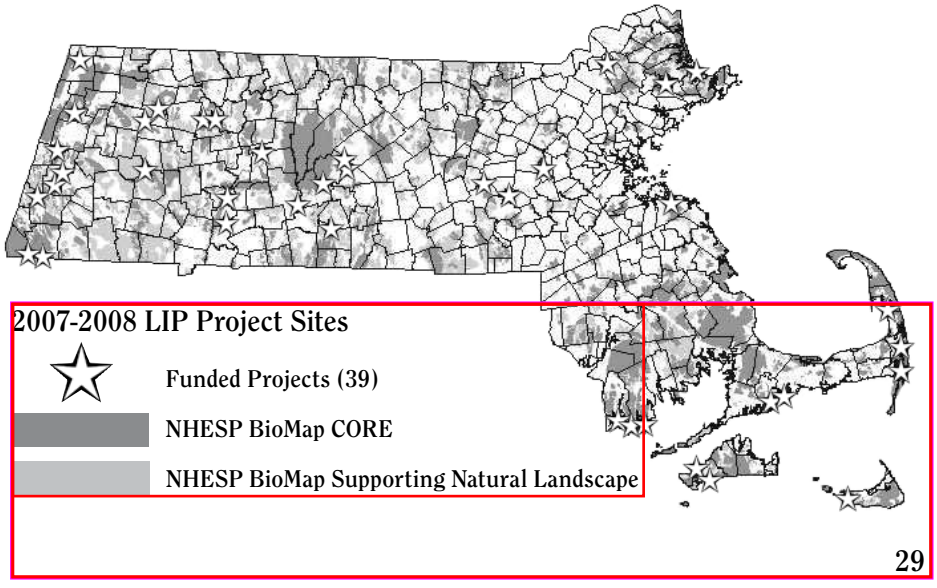


Figure 2. Projects by Ownership

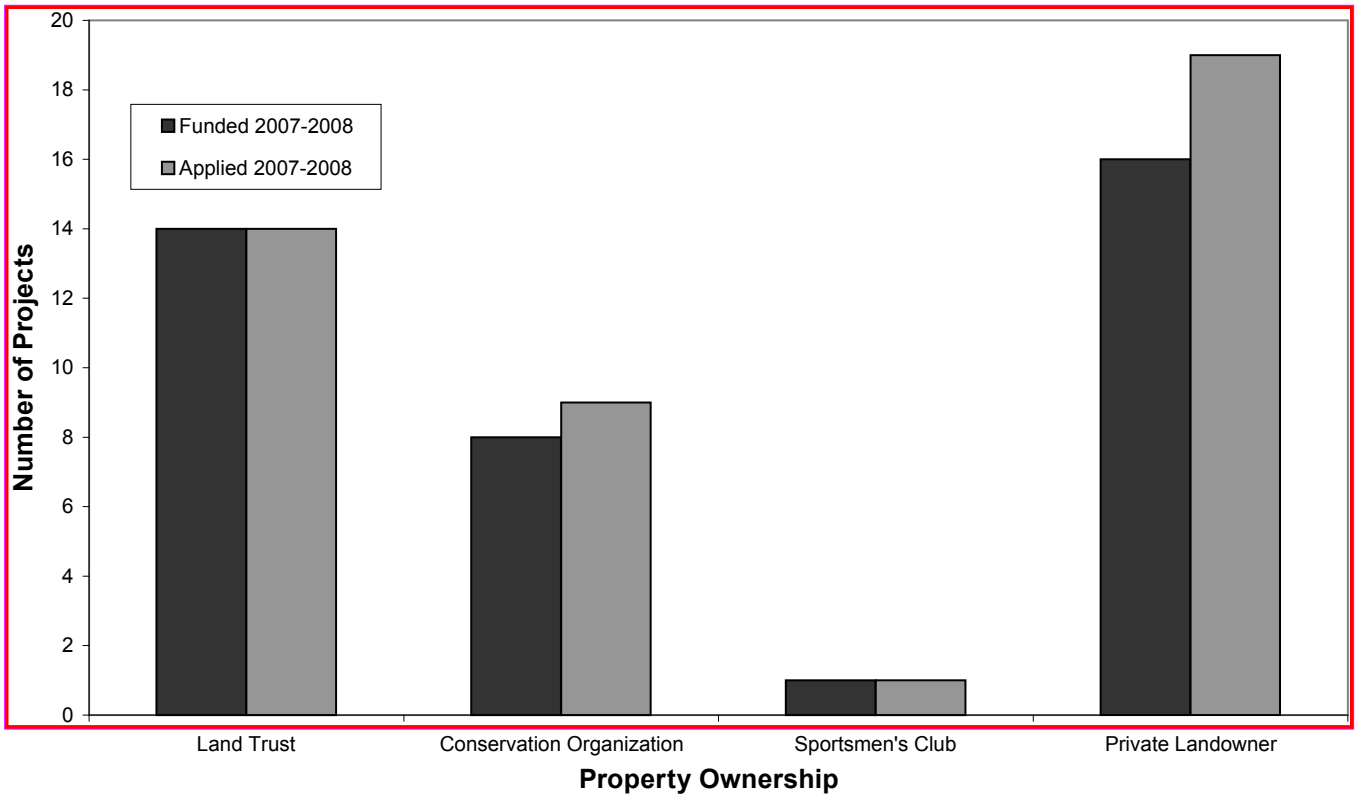


Figure 3. Acres by Habitat

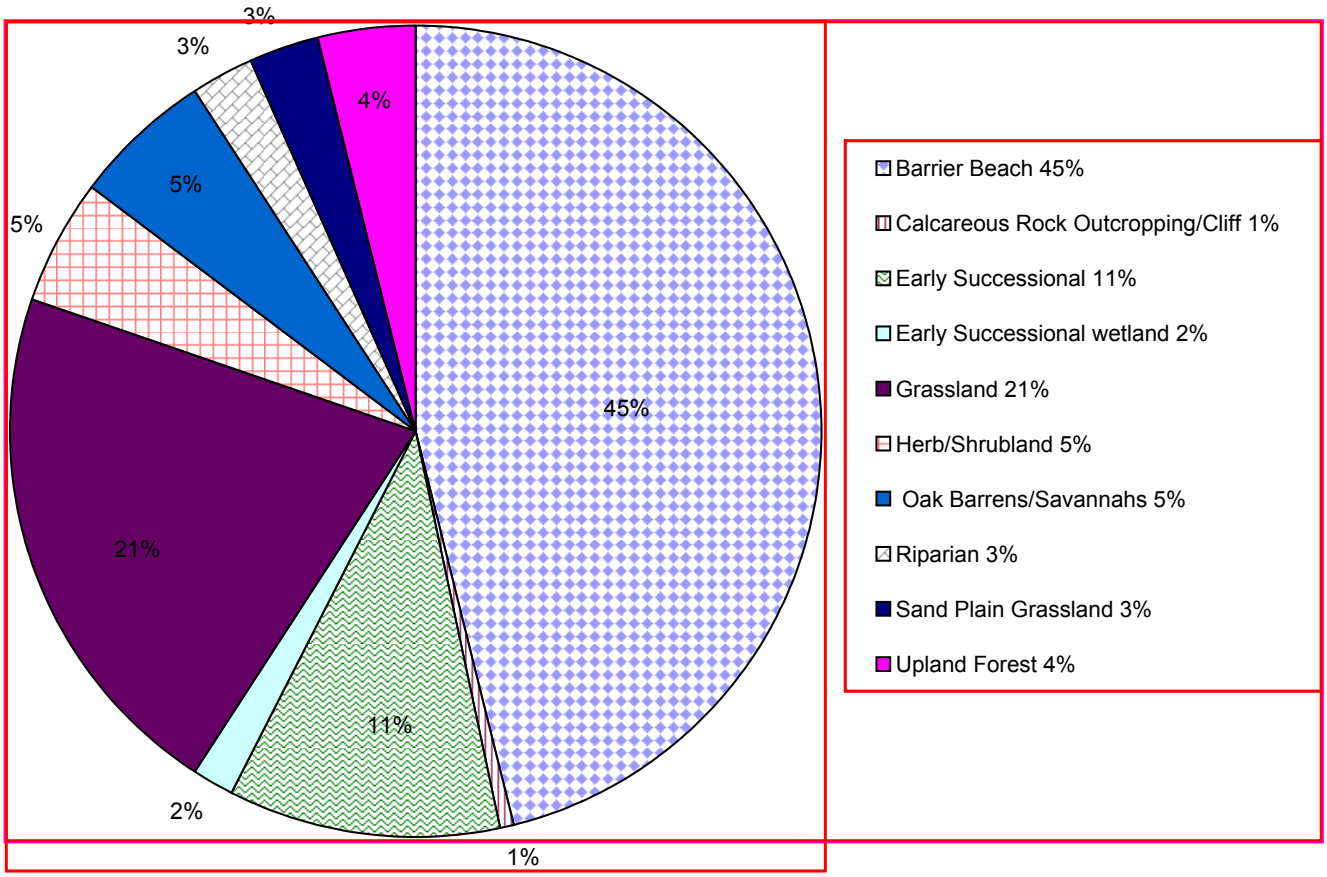


Figure 4. A 42-acre grassland restoration project in South Dartmouth, Massachusetts

The goals of this program are to:

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

During FY 08, LIP received applications for 43 species-at-risk habitat improvement/restoration projects on about 2,400 acres of private lands. Of these applications, 39 were selected for funding in FY 08 (Figure 1). The DFW partnered with these private landowners on 2,540 acres, funding projects for $765,000:

Of the 39 projects awarded, 14 went to land trusts, eight to conservation organizations, one to a sportsmen's club, and 16 to other private landowners (Figure 2);

Of the 2,540 acres involved in the projects awarded, 1,168 acres were in coastal habitats, 275 acres were in early successional upland, 47 acres were in early successional wetlands, 533 acres were in grasslands, 129 herbaceous/shrubland, and 137 acres were in oak savanna or oak barrens (Figure 3);

Of the projects awarded, 90% had permanent protection, 8% were enrolled in Chapter 61, and 3% had no conservation protection. The projects without land protection were required to sign a land covenant that binds the landowner to keep the project area as wildlife habitat for a minimum of 10 years;

Of the projects awarded, 89% applied for manual restoration, 87% applied for invasive/exotic plant removal, 28% applied for seeding or planting in their project area, and none applied for a prescribed burn.

The 2007-08 Massachusetts LIP projects will benefit hundreds of native plant and animal species. At least 161 species-at-risk of statewide importance have been identified to benefit from this year's projects (34 invertebrates, 93 vascular plants, and 33 vertebrate animals).

To date, the DFW has funded 100 LIP projects and has provided technical assistance to private landowners across the state, from Cape Cod to the Berkshire Mountains. Through this program the DFW has contributed close to $1.7 million to the conservation of wildlife species-at-risk on private land over the program's three-year history.

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The Box Turtle, a Species of Special Concern in Massachusetts, is one of many upland species that will benefit from habitat management work funded under the Landowner Incentive Program.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

Thomas W. French, Ph.D.
Assistant Director

Priority & Estimated Habitat Maps

In FY 08, the DFW's Natural Heritage & Endangered Species Program (NHESP) continued to delineate habitat "footprint" polygons for each new observation point for the 442 rare plant and animal species listed under the Massachusetts Endangered Species Act (MESA). The NHESP also revised and updated existing species-specific habitat maps based on new information including new aerial photography and new research into individual species' habitat utilization. These species-specific habitat areas will be used in the creation of the 13th Edition of the Natural Heritage Atlas, to be completed in FY 09. By the end of FY 08, most of the species mapping necessary to revise the Atlas had been completed.

DCR Biodiversity Stewardship Initiative

In FY 08, NHESP staff worked with the Office of Natural Resources in the Department of Conservation and Recreation (DCR), continuing to develop ways to provide biodiversity data products and technical assistance for the management of Massachusetts' forests, parks, and reservations. Specifically, this effort was part of DCR's Resource Management Planning project.

Eight DCR properties were evaluated in FY 08: Nickerson State Park; Hawks Nest State Park; Bash Bish Falls State Park; Jug End State Reservation; Mt. Everett State Reservation; Mt. Washington State Forest; Gilbert A. Bliss State Forest; and Lower Spectacle Pond in Sandisfield. For each property, the NHESP prepared an in-depth report containing information and maps relating to state-listed species, natural communities, and vernal pool locations and descriptions; property biodiversity inventory needs; educational opportunities; adjacent areas important for additional land protection; and boundaries of Priority and Estimated Habitats of Rare Species. Most important, for each property the NHESP also delineated state-listed species habitat management units, which comprise areas of state-listed species habitat and other resources that require similar management, and provided DCR with prioritized management recommendations for each unit.

2007 Field Season Summary

Birds

Common Loon

In summer 2007, a network of cooperators monitored Common Loons (*Gavia immer*) in northern and central Massachusetts. The number of nesting pairs (11) was comparable to most years in the past decade. The number of territorial pairs declined, however. Twenty territorial pairs were observed on eight waterbodies, compared to 27 pairs on eight waterbodies in 2005 (loon monitoring in 2006 was not comprehensive). Only five chicks were presumed to have fledged in 2007, compared to 16 in 2005 and 13 in 2004.

Coastal Waterbirds

Nesting Colony Survey

The DFW coordinated the second year of a 2-year inventory of all coastal colonial waterbird nesting colonies in Massachusetts during May and June 2007.

Target species were Double-crested Cormorant (*Phalacrocorax auritus*), Herring Gull (*Larus argentatus*), Great Black-backed Gull (*L. marinus*), Great Egret (*Ardea alba*), Snowy Egret (*Egretta thula*), Black-crowned Night-Heron (*Nycticorax nycticorax*), and Glossy Ibis (*Plegadis falcinellus*). (Breeding colonies of terns (*Sterna* spp.), Laughing Gulls (*L. atricilla*), and Black Skimmers (*Rhynchops niger*) are censused annually in Massachusetts; see separate heading below).

Census protocols in 2007 were generally the same as those followed in the 1977, 1984-85, 1994-95, and 2006 surveys. Most colonies were monitored by means of complete ground counts of nests, with the exception of nesting gulls on South Monomoy Island, Chatham, which were monitored via ground counts of nests in a systematic sample of approximately 15% of available nesting habitat. Colonies on islands that could not be accessed safely on foot were checked by means of counts of adult birds made from a boat. Known or potential coastal colony sites that were not visited in 2006 were checked during May or early June 2007. These included Great Brewster Island, Rainsford Island, and Peddocks Island in Boston Harbor; North and South Monomoy islands in Chatham (Monomoy National Wildlife Refuge); Cape Pogue on Chappaquiddick Island in Edgartown; and Sarson Island and Gravel Island in Oak Bluffs.

Piping Plover

A coast-wide network of cooperators reported breeding pairs of Piping Plovers at 113 sites in Massachusetts during May and June 2007. An additional 85 potential nesting sites were surveyed, but no breeding pairs were detected. The *Index Count* (statewide census conducted June 1-9) was 550 pairs, and the *Adjusted Total Count* (total number of breeding pairs statewide estimated over the entire season) was 558 pairs. Two regions harbored 62% of the total breeding pairs in the state: the Lower Cape (38%) and the Upper Cape (24%). Individual sites with the largest numbers of pairs were South Beach, Chatham (50 pairs); Sandy Neck, Barnstable (35 pairs); Crane Beach, Ipswich (25 pairs); South Monomoy Island, Chatham (20 pairs); Nauset Spit, Orleans (17 pairs); Sampson's Island-Dead Neck, Barnstable (17 pairs); Little Beach/Barneys Joy, Dartmouth (16 pairs); and Coast Guard Beach, Eastham (15 pairs). Although the 16 largest sites, i.e. those with ≥10 pairs, supported 51% of all pairs in the state, the smallest sites (one to three pairs) were also important, collectively accounting for 18% of the total number of pairs. Overall productivity for the Massachusetts breeding population was 1.25 chicks fledged per pair, based on data reported for 98% of the pairs (546 of 558).

American Oystercatcher

Massachusetts' coast-wide census of American Oystercatchers, conducted during May and June 2007, produced preliminary totals of 200 breeding pairs at 60 sites. No oystercatchers were detected at approximately 160 additional sites that were surveyed.

Terns, Laughing Gulls, Black Skimmers

Cooperators in Massachusetts surveyed 132 coastal sites in 2007 for the presence of breeding Roseate Terns (*Sterna dougallii*), Common Terns (*Sterna hirundo*), Arctic Terns (*Sterna paradisaea*), Least Terns (*Sterna antillarum*), Laughing Gulls, and Black Skimmers. Seventy-nine sites were occupied by nesting birds of one or more of these species. Roseate Terns increased 4.8%, to 1,727 pairs. Common Terns decreased 5.9%, to 15,055.5 pairs. Least Tern numbers jumped 18.9%, to 3,110 pairs. Laughing Gulls were stable at 1,512 pairs. Including late-season pairs, five pairs of Black Skimmers and 3.5 pairs of Arctic Terns nested. The half pairs of Common Tern and Arctic Tern come from Penikese Island, where an Arctic Tern nested with a Common Tern and successfully raised chicks.

Buzzards Bay Tern Restoration Project

Collectively, Bird, Ram, and Penikese islands supported 1,682 "peak season" pairs of Roseate Terns (compared to 1,622 in 2006; +3.7%) and 4,966.5 "peak season" pairs of Common Terns (compared to 4,751 in 2006; +4.5%).

Bird Island: Common Terns numbered 1,863 pairs, almost identical to last year, and productivity was 0.81 fledglings/pair, an improvement over 2006 (0.55). There was a drop in numbers of Roseate tern pairs, from 1,111 to 919 (-21%). As predation pressure has eased at Ram Island following intense pressure in 2005, birds are probably moving back there. Roseate tern productivity was again very good at 1.26 fledglings per pair. A raccoon discovered on the island in early May was finally trapped in mid-May. It had killed at least five adult Common Terns and fourteen adult Roseate Terns. Fortunately, it was trapped before very many tern eggs were on the ground.

Ram Island: A severe mid-April storm completely overwashed Ram Island and caused significant substrate erosion. With its low profile and lack of armoring, Ram is the most storm-susceptible of our three islands. Common Tern numbers were up slightly (2,214 compared to 2,129 pairs; +4.0%). Productivity (0.66 fledglings per pair) was about the same as last year. It is probably those Roseate Terns that had returned from a year or two of nesting on Bird Island that contributed to an increase in numbers on Ram, from 463 to 661 pairs (+43%). Great Horned Owl predation continued at a moderate level (similar to last year): this year at least 10 Common Tern adults and four Roseate Tern adults were taken by the owl. Roseate tern productivity was very good, at 1.16 fledglings per pair.

Roseate Tern productivity skyrocketed on Penikese Island this year.

Penikese Island: There was a satisfying jump in Common Tern pairs this year, from 756 pairs to 889.5 pairs (+17.7%). The reason for this is uncertain, but it may be at least partially related to micromanaging the habitat – mainly, distributing more clumps of dead eelgrass (used for nesting substrate) throughout the very rocky nesting beach. Productivity was good at 1.40 fledglings per pair. Roseate Tern numbers shot upward to 102 pairs (from 48; +113%). In 2006, a similar number of nests were laid, but half of the pairs had deserted their nests by the census period. This year, desertions were relatively few compared to past years (but still much higher than on Bird or Ram islands). Because of fewer desertions and high chick survival, productivity skyrocketed to 1.54 fledglings per pair (up from 0.44). This is by far the best productivity documented for Roseate Terns on Penikese, and it surpasses all productivity estimates for Bird and Ram islands at least back to 1999.

Ram Island Habitat Restoration

New Bedford Harbor Trustee-funded habitat restoration on Ram Island is a three-phased project: (1) controlling *Phragmites*, (2) filling low spots on the island, and (3) revegetating.

Phase I: In fall 2006, *Phragmites* control began. This year, there was significantly less *Phragmites* on the island. Another round of treatment was conducted in September 2007.

Phases II and III: A Project Management Team selected The Garrett Group (TGG) to conduct the alternatives analysis, design, and permitting work. We identified the preferred alternative and TGG completed a Feasibility Report. Next steps are to work on permitting and put the construction out to bid.

Public Outreach

In 2006, NHESP partnered with Burr Brothers Boatyard and the Town of Marion to set up a live web camera on Bird Island so that the public could view the nesting terns (www.birdislandterns.org). This service was well-received, so the web-cam was installed again in 2007.

A Buzzards Bay Tern Restoration Project website was added to the DFW's NHESP website (http://www.mass.gov/dfwele/dfw/nhesp/conservation/birds/tern_restoration.htm). This site contains information on the life history, ecology, and past and current status of terns in the state and region. History, funding source, and progress of the project on Bird, Ram, and Penikese islands are discussed. This website should help the public understand why terns are in jeopardy (both locally and regionally), what is involved in trying to restore terns to the New Bedford Harbor environment, and how successful the methods have been.

Marsh Birds

Sandhill Cranes

A new species was added to Massachusetts' list of breeding birds in 2007 when a pair of Sandhill Cranes (*Grus canadensis*) nested in a wetland in New Marlborough, Berkshire County. The discovery of the nest by a DFW biologist on April 25, 2007, came as the result of information provided by a local landowner, and represents the first documented breeding by this species in Massachusetts. At least one of the two eggs hatched on May 10 or 11, and the single chick fledged in August. The chick and its parents continued to be seen sporadically in nearby agricultural fields and pastures until early December.

Nesting by Sandhill Cranes in Massachusetts was not unexpected, as Maine's first breeding record was reported in 2000 and New York's in 2003. Core breeding populations in Wisconsin, Minnesota, Michigan, and Ontario have increased substantially over the past 50 years, and these increases have likely provided the impetus for an eastward range expansion. Sandhill Cranes now nest regularly in Ohio, Pennsylvania, eastern Ontario, and western Quebec, and more nest records from new locations in Massachusetts and elsewhere in the Northeast are likely in the next few years.

Male Sandhill Crane turning an egg in the first nest documented for this species in Massachusetts.

Raptors

Bald Eagle

During the summer of 2007, there were 25 known territorial pairs of Bald Eagles in Massachusetts. Of these, 24 pairs laid eggs and 22 pairs successfully fledged 32 chicks. In 2006, there had been the same number of territorial pairs, with six fewer successful pairs (16) that fledged one more chick (33). This is the 18th year that Bald Eagles have raised young in Massachusetts since their restoration. During those 18 years, 257 chicks are known to have fledged from wild nests.

During the 18 years that Bald Eagles have raised young in Massachusetts, 251 chicks are known to have fledged from wild nests. At least 22 pairs were successful in raising one or more young this year.

Peregrine Falcon

Fourteen territorial pairs were present in 2007. Of these, 13 pairs are believed to have laid eggs, 11 pairs hatched eggs, and these pairs successfully fledged 25 chicks (10 female, 12 male and three of unknown sex). This is compared to the nine successful pairs that fledged 22 chicks in 2006. A new territorial pair was located this year in a quarry just north of Boston. The number of pairs of Peregrine Falcons has slowly increased, from nine in 2003, to 11 in 2004, to 13 in 2005, to 13 again in 2006.

Grassland Birds

Westover Air Reserve Base Census

Staff from the DFW and Westover Air Reserve Base (Westover ARB) carried out a bi-annual census of grassland birds at the Westover ARB in Chicopee, Massachusetts, on June 11-15, 2007. Birds detected included totals of 122 adult Upland Sandpipers (*Bartramia longicauda*) and 200 singing male Grasshopper Sparrows (*Ammodramus savannarum*). Also tallied were 60 adult Killdeer (*Charadrius vociferous*), 125 Eastern Meadowlarks (*Sturnella magna*), 115 Horned Larks (*Eremophila alpestris*), 98 singing male Savannah Sparrows (*Passerculus sandwichensis*), and 84 male Bobolinks (*Dolichonyx oryzivorus*). No Vesper Sparrows (*Pooecetes gramineus*) or American Kestrels (*Falco sparverius*) were detected. Species detected that pose potential risks to aircraft included two Great Blue Herons (*Ardea herodias*), three Mallards (*Anas platyrhynchos*), two Turkey Vultures (*Cathartes aura*), four Red-tailed Hawks (*Buteo jamaicensis*), 312 Mourning Doves (*Zenaida macroura*), and nine American Crows (*Corvus brachyrhynchos*).

In addition to participating in the census, Drew Milroy of the Westover ARB staff facilitated access to the base and escorted the census team each morning while it was on the airfield. Mitch Hartley, USFWS, assisted with substantial portions of the census. The DFW thanks the U.S. Air Force Reserve for allowing staff access to Westover ARB for purposes of monitoring breeding populations of rare grassland birds.

NHESP Senior Zoologist Scott Melvin provided technical assistance to Drew Milroy , who is also a graduate student at the University of Massachusetts at Amherst, in the preparation of his M.S. thesis titled *Impacts of Mowing on Bird Abundance, Distribution, and Bird/Wildlife Aircraft Strike Hazards at Westover Air Reserve Base, Massachusetts*. Drew completed and successfully defended his thesis in May 2007.

Reptiles and Amphibians

Red-bellied Cooter

In summer 2007, a total of 63 nests were located by July 7 at the primary nesting pond by contractor John Crane. These nests contained 866 eggs (average 13.75 eggs per nest, range 8-20), of which 690 hatched, 10.95 per nest). Thirty-two eggs were found with dead embryos (1.96 per nest) and 144 eggs did not develop (2.28 per nest). Of the 690 hatchlings, 155 were kept for headstarting and 535 were released directly into the wild where they hatched. Twenty of the 63 nests (32%) were dug up and moved because they were originally in the way of cranberry bog operations. An additional 14 nests were found to have been predated, mostly by Red Fox, before they could be caged.

Plants

Rare Plant Inventory

A citizen-scientist led NHESP to the rediscovery/confirmation of the third currently-known Massachusetts population of Purple Milkweed (*Asclepias purpurascens*) (E), in Ware. A new population of Bush's Sedge (*Carex bushii*)(E) was also discovered in Ware.

Searches for Northern Bog Violet (*Viola nephrophylla*) were all negative and this taxon was subsequently delisted and re-ranked "H" (historic).

Arthur Haines and Wendy Culbert rediscovered Cockspur Hawthorn (*Crataegus schizophylla*) (H), at a site on Martha's Vineyard.

Three watch list species were targeted for inventory, and a total of five dedicated field surveys were conducted.

Special Projects

Protecting the Globally Imperiled and Vulnerable Plants of Massachusetts

This 5-year USFWS-funded project has three primary objectives: 1) To assess which of the 38 globally imperiled and vulnerable (G1–G3G4) plant taxa in Massachusetts are in greatest need of a conservation plan; 2) to develop succinct, action-oriented conservation plans for the species that do not yet have one (that will clearly prioritize conservation needs for these species in Massachusetts, including inventory, monitoring, population recovery, habitat management, and land protection); and 3) to utilize existing federal, regional, and state conservation plans to direct conservation actions in Massachusetts.

During FY 06, the first objective was completed. In FY 07, work continued on the second objective of developing the state conservation plan. The "model" state conservation plan for Nantucket Shadbush (*Amelanchier nantucketensis*) was completed and followed by four others: Bayard's Green Adder's-mouth (*Malaxis bayardii*), Hall's Bulrush (*Schoenoplectus hallii*), Wright's Spike-rush (*Eleocharis diandra*), and Bicknell's Hawthorn (*Crataegus bicknellii*), in keeping with the schedule developed in FY 06. Plans were not developed for the two delisted species, Basil Mountainmint (*Pycnanthemum clinopodioides*) and Spreading Tick-trefoil (*Desmodium humifusum*).

Work began on the third objective, to carry out conservation actions already identified in federal and regional conservation plans. By the end of the fiscal year, 17 regional conservation plan actions were completed for

seven species. Most actions took place outside of the field season, and included suggesting habitat locations as potential DFW "focus areas" for future purchase, tracking down missing element occurrence information (e.g., landowner information, past survey details, past management history), planning habitat needs assessment surveys, and making contact with landowners.

In addition, the following actions were accomplished for the three federally listed plants:

Sandplain Gerardia (*Agalinis acuta*): Population census or sampling procedures were conducted at all known population locations (four on Martha's Vineyard and four on Cape Cod). The drought of 2007 seemed to contribute to the lower population numbers (or a high percentage of dead plants) at all population locations.

Small Whorled Pogonia (*Isotria medeoloides*): Three populations were censused, one during fruiting time in August 2007, and three during flowering time in June 2008. The two largest populations had increased in size between 2007 and 2008. The number in flower had increased dramatically at the Leominster location. The small population in Gloucester had only two plants in 2008.

Northeastern Bulrush (*Scirpus ancistrochaetus*): A NHESP botanist accompanied USFWS, DCR, and Vermont Nongame and Natural Heritage staff on *de novo* searches of open wetlands on the Prescott Peninsula at the Quabbin Reservation. Eight sites were searched but no Northeastern Bulrush (*Scirpus ancistrochaetus*) was found. In addition, a NHESP botanist compiled data on Massachusetts locations that have been searched by botanists for Northeastern Bulrush (*Scirpus ancistrochaetus*) over the past 15 years. This effort is intended to help guide future searches for the species in the state.

Habitat Management of Imperiled Plants on State Land

A NHESP botanist identified high priority sites for state-listed plant habitat management on state-owned land. Nine sites were chosen, and each was evaluated for habitat management need. Of these, one population was not re-located; three were determined to be relatively secure; one was determined to have limited habitat management options; and four were identified as high priority for habitat management. Plans have been developed for three of the sites; implementation of management began in early June 2008 at one site, Mount Tom State Reservation. NHESP staff (in cooperation with The Trustees of Reservations, USFWS, and DCR), have extended previous control efforts for the non-native invasive plant, Pale Swallowwort (*Cynanchum rossicum*), on federal land nearby to a hickory-hop hornbeam woodland on DCR land, which supports at least three state-threatened plant species.

Other Projects

NHESP funded a field study of Nantucket Shadbush (*Amelanchier nantucketensis*) to update records in Nantucket and Barnstable counties. NHESP also provided funding to the Nantucket Conservation Foundation to study the relative success of different management techniques to encourage Nantucket Shadbush.

List Changes

During the year, seven species were removed from the list of Endangered, Threatened, and Special Concern Species, and the status of three species on the state list was changed. In addition, the scientific names of 12 species were updated in order to conform to recent changes in taxonomy. These changes of listing status are as follows:

Coastal Plain Apamea Moth – deleted from list
Four-toed Salamander – deleted from list
Spreading Tick Trefoil – deleted from list
Variabled-leaved Pondweed – deleted from list
Basil Mountain Mint – deleted from list
Fibrous Bladderwort – deleted from list
Northern Bog Violet – deleted from list

Zebra Club Tail – changed from Endangered to Special Concern
Bailey's Sedge – changed from Endangered to Threatened
Bristly Buttercup – changed from Threatened to Special Concern

Regulatory Review

The following table summarizes the environmental reviews conducted during FY 08.

Review Type	Count
Conservation & Management Permits	17
Data Releases	101
MESA Information Requests	495
Forest Cutting Plans	155
MESA Project Reviews	1,116
MEPA Reviews	158
Notices of Intent	1,265
Scientific Collection Permits	142
Other	84
Total	**3,533**
Vernal Pools Certified	193

Data Management And Data Products

FY 08 Totals	New Records	Updates to Existing Records
Vertebrates	94	320
Invertebrates	47	104
Plants	68	238
Communities	6	2

Land Protection

In FY 08, the DFW spent about $11.3 million to protect 6,205 acres of land across the state, bringing the DFW's total land holdings to approximately 170,350 acres.

Several of this year's acquisitions were of particular relevance to protection of state-listed rare species and exemplary natural communities, as noted below.

Northeast District: Fifty-four acres at the confluence of the Squannacook and Nashua Rivers in Shirley, habitat for Blanding's Turtle (Threatened), Wood Turtle (Special Concern), and three rare dragonflies, were protected. This property helps connect the Squannacook WMA with the Ayer Game Farm and the recently-acquired Surrenden Farm property in Groton along the Nashua River.

Southeast District: Protection of the Endangered Gypsywort was aided by acquisition of 54 acres along Black Brook in Middleborough. In Mashpee, the DFW acquired a conservation restriction on 78 acres with frontage on Wakeby Pond, habitat for three rare freshwater mussels and Terete Arrowhead (Special Concern).

Central District: Two hundred forty acres were added to the Mine Brook WMA in Webster and Douglas, aiding protection of the Threatened Marbled Salamander.

Valley District: A cross-border effort between Massachusetts and Connecticut resulted in the acquisition of a total of 450 acres, 254 acres of them in Southwick, protecting habitat for the Threatened Grasshopper Sparrow. Seventy-two acres were protected on Mt. Toby, including habitat for Adder's-tongue Fern (Threatened), Pale Green Orchis (Threatened), and Eastern Box Turtle (Special Concern).

Western District: One hundred sixteen acres were added to the Hawley Natural Heritage Area, protecting important breeding pools for Jefferson Salamanders (Special Concern). Protection of the Westfield River continued with acquisition of 325 acres in Cummington, Plainfield, and Windsor, habitat for Lake Chub (Endangered), Riffle Snaketail (Threatened), and Longnose Sucker (Special Concern).

Natural Heritage And Endangered Species Advisory Committee (NHESAC)

Full members are: Kathleen Anderson (Chair), Marilyn Flor, Joseph S. Larson, Mark Mello (Vice Chair), Glenn Motzkin, Thomas Rawinski and Jonathan A. Shaw (Secretary)

Associate members are: William Brumback, Andy Finton, Timothy Flanagan, Wayne Petersen, Mark Pokras, and Bryan Windmiller.

During FY 08, the NHESAC held nine scheduled meetings; August has been a traditional vacation month, and the December 2007 and February 2008 meetings were cancelled due to bad weather. All of these meetings were held at the Westborough Field Headquarters.

Business of the Committee included:

- The NHESAC Annual Reports for FY 06 and FY 07 were approved.

- The document, "Listing Endangered Species in Massachusetts: The Basis, Criteria, and Procedure for Listing Endangered, Threatened, and Special Concern Species" was endorsed.

- The NHESAC voted to recommend changes to the Massachusetts List of Endangered, Threatened, and Special Concern Species (see the previous summary of the changes).

- The NHESAC heard presentations from DFW staff on the following issues:

"An Overview of Upland Game Bird Conservation and Management"; David Scarpitti (DFW Upland Game Bird Biologist)

"What is an 'Occurrence' in the Heritage Data base?"; Sarah Haggerty (NHESP Information Manager)

"Headstarting as a Restoration Tool for the Redbellied Cooter"; Thomas W. French (Assistant Director, NHESP)

"Exotic Animal Possession in Massachusetts"; Thomas W. French

"Natural Heritage's Housatonic Inventory Work 2008: A Brief Update"; NHESP Staff

Other presentations to the NHESAC included:

"Understanding the Proposed Housatonic River PCB Cleanup"; Kathy Sferra (Director of Stewardship, Massachusetts Audubon Society)

Natural Heritage and Endangered Species Program Staff

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

Henry Woolsey, *Program Manager*

Lindsay Addison, *Bird Island Tern Assistant (seasonal)*
Kim Ausmus, *Administrative Specialist*
Kristen Black, *Endangered Species Review Biologist (part-year)*
Katie Blake, *Penikese Island Site Assistant (seasonal)*
Kelly Boland, *Spotted Turtle Biologist (seasonal)*
Tara Boswell, *GIS Manager*
Christopher Buelow, *Restoration Assistant*
Corentin Chaillon, *Volunteer Ram Island Site Assistant (seasonal)*
Amy Coman, *Endangered Species Review Assistant*
Jenny Cunningham, *Ram Island Site Assistant (seasonal)*
Karen Dolan, *Finance and Projects Administrator*
Melissa Dow Cullina, *Botanist*
Jonathan Ebel, *Intern (seasonal)*
Lori Erb, *Turtle Conservation Biologist*
Lindsay Flieger, *Intern (seasonal)*
Heather Foley, *Conservation Data Specialist*
Marea Gabriel, *Aquatic Ecologist*
Jennifer Garrett, *Conservation Planning Botanist*
Sarah Haggerty, *Natural Heritage Information Manager*
Lynn Harper, *Habitat Protection Specialist*
Emily Holt, *Endangered Species Review Assistant*
Winslow Houghton, *Penikese Island Site Manager (seasonal)*
Tara Huguenin, *Natural Heritage Database Manager*
Holly Jensen, *Spotted Turtle Biologist (seasonal)*
Sarah Luecke, *Bird Island Tern Site Manager (seasonal)*
Kim Justham, *Conservation Data Assistant*
Jacob Kubel, *Forest Conservation Management Practices Zoologist*
Sarah Maier, *Conservation Data Assistant*
Misty-Anne Marold, *Endangered Species Review Biologist*
Scott Melvin, Ph.D., *Senior Zoologist*
Carolyn Mostello, *Tern Project Leader*
Michael Nelson, *Invertebrate Zoologist*
Lisa Plagge, *Vernal Pool Biologist*
Jonathan Regosin, Ph.D., *Regulatory Review Manager*
Melanie Sabourin, *Ram Island Site Manager (seasonal)*
Eve Schluter, *Endangered Species Review Biologist*
Rebecca Skowron, *Endangered Species Review Biologist*
Tim Simmons, *Restoration Ecologist*
Paul Somers, Ph.D., *Botanist (part-year)*
Deborah Stevens, *Finance and Projects Administrator (part-year)*
Chloe Stuart, *Conservation Planning Projects Manager (part-year)*
Patricia Swain, Ph.D., *Natural Community Ecologist*
Amanda Veinotte, *Regulatory Review Administrator*
Kathy Wilensky, *Plant Watch List Coordinator*
Derek Yorks, *Bog Turtle Biologist (seasonal)*

INFORMATION & EDUCATION

Ellie Horwitz
Chief, Information and Education

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

Information and Outreach

Website Visitation

The website has become the primary portal through which members of the public seek information from the DFW. Visitors seek out the website for information posted there and use the agency mailbox for other queries.

Portalization: After a year of having the newly redesigned website online, the DFW was notified in spring 2008 that the state's Information Technology Division (ITD) is moving forward to portalize EEA agency websites, as part of a general move to standardize all state agency websites. A preliminary meeting was held in May, with portalization of some EEA websites (though not the DFW's) scheduled to begin sometime in the fall. Once implemented, portalization could reduce the agency's ability to collect information from website users and, based on initial information DFW staff gathered from the meetings, it would result in a loss of agency identity. We anticipate that more information will be forthcoming in the next fiscal year as there was no more information or communication about this issue through June.

Email Inquiries: Staff processed 7,450 agency email messages that came to the agency mailbox via the website. The heaviest volume occurred in spring and fall as inquiries related to fishing and hunting seasons. Email inquiries received by month were:

July	713	January	570
August	1,125	February	472
September	860	March	392
October (incomplete)	314	April	886
November	635	May	552
December	401	June	530

MassWildlife News Newsletter

Fourteen issues of the DFW's newsletter were published this year. The mailing list for hard-copy versions of this publication is down to around 1,300, as many people are now receiving the newsletter by email. Plans are underway to review the hard-copy mailing list and to discard discontinued addresses for the upcoming fiscal year. The number of email subscribers to the *MassWildlife News* continues to grow. There were 4,800 subscribers at the beginning of July 2007 and 5,639 subscribers by June 2008.

Advisories: Advisories are sent out as stand-alone pieces through the *MassWildlife News* email list to alert various publics to new regulations, special events, or other events to which the public is invited. (Numbers in parentheses indicate numbers of people attending an event.)

- **Freetown** (August): An event announcing the addition of lands to the Copicut WMA (25 people);
- **Montague Plains WMA** (May 6): A site walk with DFW foresters and biologists to discuss forest management implementation in this sand plain community (~50 people);
- **Plymouth** (May 28): a Cooter (*Pseudemys rubiventris*) marking and release event (40 to 50 people; excellent media coverage);
- **Walden Pond State Reservation** (July 1): An event launching the new Outdoor Recreation Map developed in cooperation with the DCR.

Increasingly, other organizations are contacting the DFW in response to the *MassWildlife News* and writing specific articles for their own newsletters and publications as a result. The following list reflects of a few of the organizations that have used DFW information in this way:

- **The Trustees of Reservations *Special Places* publication** featured an article on turkey restoration, based on an interview with Turkey Project Leader James Cardoza and photos from the files of the DFW (40,000 printed for members).
- **Massachusetts Municipal Association**, provided a link on the front page of its website to a brief article explaining the new coyote hunting regulations and on Problem Animal Control (PAC) Agents' ability to address coyote issues.
- **MVMA Newsletter (Massachusetts Veterinary Medical Association)** carried "Turtle Conservation Tips," May /June 2008 (1,250 members receive their newsletter: member veterinarians, 20 state veterinary associations, 15 industry sponsors, and veterinary students).

- **Massachusetts Forestry Association** carried a number of items:

  November: A mention of LIP grant availability and some calendar items from *MassWildlife News*

  February: A mention of a Barred Owl study featured in *MassWildlife News* asking that injured and dead owls be brought to Tufts Wildlife Clinic.

  June: forest management site tours, Count Turkey Broods, Report Loon Sightings, Invasive Plant Guide Reprinted, Calendar items: Project WILD workshop; Worthington landscape talk
- **Knox Trail Sno-Riders Newsletter (December/January)** This snowmobile group, based in Otis, included ice safety information from the DFW website in its newsletter (150 subscribers)
- **Wachusett Greenways Winter Newsletter 2008** ran an article, "A Question of Hunting," with quotes from DFW's Central District Supervisor Bill Davis and Publications Coordinator Pete Mirick on hunting and rail trail compatibility (Circulation 2,000)
- **Edible Boston Magazine, Winter 2008** printed "Ruffled Feathers," a story on urban turkeys, focused on turkeys in Brookline. Distributed in Essex, Middlesex, Suffolk, Norfolk, and Worcester counties (20,000 copies printed)
- **Animal Control Officers Association of Massachusetts Newsletter June 2008** ran features including "Call MassWildlife about Potential Bites"; a biography on the new DFW Furbearer Biologist; "Bats in the Belfry"

Media Services

The DFW received 148 phone calls from media representatives, mostly from newspapers and some television. This is down somewhat from 2007 and may be due to the administrative requirement that all press contacts must first be cleared by the EEA press office, which then contacts DFW staff directly.

TV and Radio Interviews

The following media interviews were arranged following approval from the EEA press office:

Radio: WUML (Lowell) in February: Assistant Director Thomas French on bats;

TV: Channel 4, WBZ-TV (Boston) in September: Director Wayne MacCallum on hunting license sales decline;

Cable TV: (Grafton) in September: Animal Adventures program; Outreach Coordinator Marion Larson on "Who is MassWildlife?"; information about the Westborough WMA.

Newspaper Clippings

A total of 2,871 news clippings were received from the clipping service. Once again, the Outreach Coordinator was unable to enter newspaper clipping information into the database due to lack of time. News clippings are now being sent from all editions of the same paper, so some numbers are inflated. Last year, there were 2,465 clippings, but this number must be seen in light of the fact that in 2007 the news clipping service only sent one clipping per paper, whereas in 2008 they sent one clipping for each edition of the same paper.

Newspaper Clipping Summary by Month: July: 264; August: 311; September: 251; October: 206; November: 230; December: 157; January: 247; February: 210; March: 217; April: 276; May: 210; June: 292.

Although these figures are similar to those reported in 2007, this is actually, because of the change in clipping policy, a decrease in coverage

Production of Annual Materials

Licenses and Abstracts

Production of licenses, abstracts, and stamps ran smoothly, with all materials arriving at Field Headquarters on schedule. The Abstracts of Fish and Wildlife Laws and Regulations (Abstracts) were expanded to 24 pages to enhance legibility and allow the inclusion of additional material. In addition to the Abstracts, abstracts were prepared of the regulations pertaining to the hunting of migratory birds and of the regulations pertaining to the trapping of furbearers. The Section Chief once again worked with the DFW's financial staff to update the license sellers' manual.

Waterfowl Stamps

Selection of the artwork for the following year's waterfowl stamp is always an involved process. In February, notices are sent to a growing list of artists. Artwork, received at the end of June, is carefully screened to ensure that each entry meets the rigorous standards of the competition: each entry must depict a species not used in the previous five years and the artwork must show a decoy made by a deceased Massachusetts decoy maker. After the art has been verified, a panel of judges reviews the artwork. Art for the 2008 waterfowl stamp was selected in a competition held in September 2007. The five judges selected a painting of a Black Duck carved by Russ Burr of Hingham (1887-1955) submitted by artist Gregg Coppolo of Pocasset. Following the competition, the artwork was exhibited at the Peabody Essex Museum in Salem. In celebration of this event, the museum hosted a special reception honoring Mr. Coppolo and celebrating the memory of long-time stamp program advisor Jackson Parker. The artwork remained on public display at the museum through the end of September and was much enjoyed by visitors.

Archery and Primitive Firearms Stamps

The design for the 2008 Archery and Primitive Firearms stamps was once again selected in open competition. For this year, the judges selected a painting of two deer silhouetted against a crimson sky by Paul Michetti, of Nantucket, for the archery stamp. Artwork for the Primitive Firearms stamp was the action of a flintlock pointed at a distant buck and painted by Leo Ross, of Ashby.

Publications

Massachusetts Wildlife Magazine

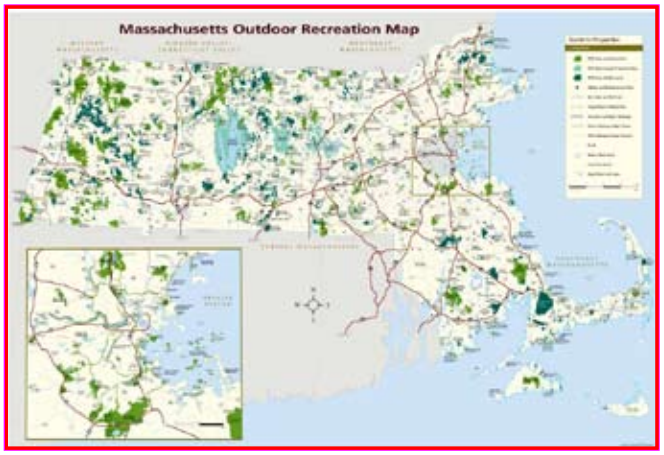
The Division's most visible publication is *Massachusetts Wildlife*, a 40-page, full-color quarterly magazine that is sent to more than 22,000 paying subscribers, a rate that appears to be holding steady. The four issues produced this year (#3, 2007-#2, 2008) covered a wide variety of fisheries, wildlife, and outdoor-related subjects, including resource management, education, habitat enhancement, rare and endangered species, history, law enforcement, general nature interest, and "how-to" articles for the hunter, fisherman, and nature observer. Articles that promoted DFW programs included a first-hand account of how the Landowner Incentive Program works, a feature on the Junior Duck Stamp Program, and another on the results of our decades-long research project on park ducks. We also offered a botanical "field guide" article with photos and identification of each of the Commonwealth's rare, state-listed ferns. For sportsmen, there were feature articles on how to use a tree-stand safely and how to hunt from one successfully, an article on how to hunt squirrels with a dog (with a recipe for squirrel), and an article describing a simple system for picking just the right fly for trout fishing. There were also feature articles on the Peregrine Falcons nesting in Worcester, the history and current research on River Herring populations in Massachusetts, environmental education in vocational schools (from a student's perspective), the need to safeguard our water resources, and the natural history and current status of the Plymouth pine barrens. From a historic perspective, *Massachusetts Wildlife* featured an article on a family of three Environmental Police Officers, an uncle and two nephews; and another that was a tribute to the contributions to deer management and wildlife research of the late Edgar Gould and the late Eric York, respectively. From an environmental perspective, there were two feature articles that focused on the dangers of lead and how to reduce it; and another on the extraordinary success of "wildlife passage" tunnels under Route 2, which many had thought wildlife would never use. In addition to all this, we had the usual correspondence pages, book reviews, and a philosophical piece on whether or not it is ethical to help a wild animal that is suffering due to natural environmental conditions.

Other Publications

In addition to the annual materials and the magazine, the Section produced and printed (or reprinted) a variety of materials needed for the smooth operation of ongoing programs, including:

- Bear, Turkey and Antlerless Deer Permits and associated notification cards
- Deer check station cards
- The Division of Fisheries & Wildlife's Annual Report
- Manuals and certificates for the Project WILD, Angler Education, and Massachusetts Junior Duck Stamp programs
- Animal track cards (used as handouts for public programs)
- "Living with Wildlife" information sheets
- Handout sheets with information on waters stocked with trout, areas stocked with pheasants, lists of maps of Wildlife Management Areas, new land acquisitions, best bets for bass, waters stocked with Northern Pike and Tiger Muskellunge, and the sport fishing award affidavit form.

The major publication of the year was the revision and publication of the third edition of the DFW's popular Outdoor Recreation Map. This was a major undertaking that included a full update of both the DFW lands and the areas held by the DCR. This was a partnership effort, spearheaded by the DFW Outreach Coordinator that included DCR, DFW, the Office of Fishing and Boating Access, and the Hunter Education Program, which all contributed information and funding. The new design resulted in a larger map with more information, outdoor safety and ethics tips, and links to EEA and to tourism agencies offering outdoor information. The map provided a statewide listing of DFW and DCR lands and the recreation opportunities available on those lands, as well as the latest information on Fishing and Boating Access sites. For the first time a message from a governor was included in the map. A public event to announce the map was planned for July 1 of the next fiscal year.



Exhibits & Displays

As in past years, the DFW provided staff, displays and/or handout materials in a variety of venues. [Asterisk (*) indicates new venue as of this year.]

- August*: Trail Blazer Event, Treasure Valley Boy Scouts, Rutland
- August: Marshfield Fair, Marshfield
- August 8: Peter Rabbit's Animal Day, Sandwich
- August 18: Hatchville Day Coonamessit Farm Celebration, Falmouth
- September: Tufts Veterinary School Open House, Grafton
- September-October: Topsfield Fair, Topsfield
- September: Franklin County Fair, Greenfield
- September 16*: Fall River Rod and Gun Club Field Day, Westport

Exhibits & Displays, continued

- September 30: 11th Annual Massachusetts Outdoor Exposition for Families, Sturbridge
- October*: MAPAC Recertification Seminar, Marlboro
- October 13*: Sachem Rock Farm Fall Festival, East Bridgewater
- November 14*: BassProShop, Foxboro (ribbon cutting and grand opening)
- January 25-28*: Fly Fishing Show, Marlboro
- February 7-10: Worcester Fishing and Outdoor Expo, Worcester (estimated 35,000 attendees)
- February 9*: Wildlife Rehabilitators Annual Conference, Grafton
- February 15-18: Springfield RV and Camping Show, West Springfield (with DCR; +31,000 attendees)
- February 21-24: Springfield Sportsmen's and Boat Show, West Springfield (70,000 attendees)
- March: Massachusetts Association of Conservation Commissions Conference, Worcester (exhibit put together by DFW's NHESP)
- March 15-16*: -Annual Birder's Conference, Waltham (co-sponsored by the DFW and the Massachusetts Audubon Society)

Photography

Senior Photographer Bill Byrne continues to provide images in support of agency programs. His recurring photography assignments include the awards ceremonies at the Massachusetts Junior Conservation Camp in Chesterfield, the Freshwater Sport Fishing Awards in Worcester, the Junior Duck Stamp Awards ceremony in Hadley, and the Massachusetts Outdoor Exposition (Big MOE) in Sturbridge. This last event attracts a huge crowd anxious to sample the dozens of coached outdoor activities, and consistently yields appealing images of kids having a great time and learning new skills.

Massachusetts Wildlife magazine continues to be the highest priority for photography. Photography for feature articles is often planned over a concentrated period of time, such as the body of work on winter mallards found in "Park Ducks" (#1, 2008). Concentrated effort during the coldest days of winter was key to the success of this shoot. Other articles, like Tree-stand Safety (#2, 2008), were photographed in a few hours on a balmy afternoon.

After guiding image selection for the magazine articles, Bill works closely with the magazine's editor, Publications Coordinator Peter Mirick, during the layout process to insure maximum visual impact. Bill inspects color proofs of all images (many from authors and guest photographers) and calls for specific corrections by the contracted printer. After the final proofs are accepted, Bill attends the initial press check to insure the best possible image and color quality for the subscribers of *Massachusetts Wildlife* magazine.

Shooting the images is just the beginning. Bill is now shooting 100% digital format, so capturing the images is followed by a labor-intensive process that includes downloading, culling rejects, organizing selected images into folders, and processing each image to optimize quality for future use by DFW staff, including the website team. Drawing from these image banks, Bill also provides small, topic-specific collections of images to individual staff members to supplement their PowerPoint presentations and other special projects.

Peregrine Poster

Because of an increase in public interest in black bears in the suburban environment, Bill worked closely with District field biologists to document some interactions of bears with people in congested areas, as well as the relocation of individual bears that could not stay out of backyard trouble. Some images were used by the press; others will be used in updates on black bear for future magazine articles and website additions.

One memorable shoot, in June 2008, was the incredible hatch/emergence of the 17-year cicada on Cape Cod. Crane WMA in Falmouth was a good site to witness the spectacle of these ruby-eyed, 2-inch-long insects that emerge by the thousands per acre.

Bill pursued wildlife field photography whenever possible and provided photographic support to biological and outreach staff throughout the year.

Education Programs

Public Education Programs

Staff members of the I&E Section offered programs to civic, community, conservation, and sportsmen's groups on a variety of wildlife-related topics. Outreach by the Education Coordinator focused on groups of educators, students, and youth gatherings, but was also highlighted at other public events. Other staff members presented programs for both youth and adult audiences on wildlife and wildlife management.

Through these wildlife education programs (general wildlife, wildlife in backyards, endangered species, living with wildlife, etc.), public appearances at conferences,

community reading days, and workshops, we continue to reach suburban and urban youth, international students, scouts, Department of Youth Services secure-treatment residents, pre-service teachers, undergraduate and graduate college students, formal and non-formal students, and other adult audiences.

Formal or School-based Education Programs

Pam Landry, Coordinator

Project WILD: Twenty-four Project WILD facilitators offered 25 workshops (nine WILD, one Aquatic WILD, and 13 combination WILD/Aquatic WILD [two workshops were cancelled due to under-enrollment]). These workshops reached a total of 378 K-12 educators statewide. Project WILD was also represented at the well-attended Boston Flower Show Educators Night and Girl Scout Cookie Kick-off event, reaching an additional 800 educators and children. Workshop participants included undergraduate and graduate college students, formal and non-formal educators, nature center staff, home-schooling educators, librarians, student conservation alliance volunteers, scout leaders, summer camp staff, land trust volunteers, Latino human service staff, and a legislative aide.

The annual facilitators' gathering was held at the MetroWest YMCA in Hopkinton. Nineteen facilitators and one guest enjoyed a day of camaraderie, updates, recognition, and a presentation on Wildlife Diseases in Massachusetts.

Junior Duck Stamp (JDS) Program: Students in grades K-12 from across the Commonwealth submitted 363 pieces of artwork to this "Conservation through the Arts" program. Entries were received from public, private, and home-schooled students; scouts; individuals; and pupils in private art studios. Judging by a panel of five wildlife artists took place at the USFWS Great Meadows National Wildlife Refuge. The awards ceremony, attended by students, families, teachers, and sponsors, was held at the USFWS Region 5 Headquarters in Hadley. The artwork of a drake mallard by Sabrina Palanza (Bishop Feehan High School, Attleboro) 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 exhibit that appeared at 11 different venues. The Buttonwood Park Zoo and Great Falls Discovery Center each hosted a waterfowl drawing workshop for students. Sponsors of the JDS Program in Massachusetts include the DFW; the USFWS; Massachusetts Waterfowlers, Inc.; and the Massachusetts Wildlife Federation.

Massachusetts Envirothon: The DFW continues to be actively involved in this natural resource program that reaches over 500 urban and rural high school students annually through teacher and student workshops. The I&E Education Coordinator plans and presents teacher and student workshops, prepares the wildlife examination, and provides wildlife related information for the current issue question. She serves on the group's education committee and attends monthly meetings of the Envirothon steering committee. Other I&E staff are involved in the examination stations on the culminating day of this program and in the judging of the current issue presentations. The 2008 Envirothon was held at Hopkinton State Park, a site that highlighted the current issue of "Recreation and the Impact on the Environment."

Secretary's Advisory Group on Environmental Education: The I&E Section Chief represents the DFW on the Secretary's Group for Environmental Education (SAGEE), an advisory group that serves the Secretary of EEA and the Commissioner of Education. In her capacity as a member of the group's higher education committee, the I&E Section Chief developed and offered an online course on the "Fundamentals of Environmental Education," offered through Framingham State College. This course is based on a course of the same name developed by the University of Wisconsin, Stevens Point, and the Environmental Education Teaching and Assessment Program (EETAP), but has been modified to connect students to materials specific to Massachusetts, including the Massachusetts Learning Standards, Benchmarks on the Road to Environmental Literacy, The Massachusetts Environmental Education Plan, and to a network of Regional Environmental Education Associations.

Environmental Police Officer Training: In February 2008, DFW staff provided instruction and training for new recruits to the Environmental Police at the Environmental Police Academy.

Problem Animal Control Agent Training: I&E Section staff worked closely with members of the DFW's Wildlife Section to prepare a training class and an examination for licensed Problem Animal Control Agents interested in extending their licenses to allow them to deal with problem coyotes.

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 resource, and encourage a greater appreciation of the environment through education. The Hunter Education Program is a public education effort providing instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. Funding is derived from the sale of hunting and sporting licenses, and from federal excise taxes on firearms and archery equipment. Massachusetts offered its first hunter safety course in 1954, and to date has

* 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.

graduated more than 169,000 students. The program is administered by the DFW and courses are taught by certified volunteer instructors. All courses are given free of charge.

Courses: A total of 4,348 students participated in the Hunter Education Program in FY 08. The participation level increased 6% from FY 07 (4,072 students) and is consistent with the five-year average of 3,452 students. Courses were offered in six disciplines. 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-nine courses were offered. Courses were 12-20 hours in length. A total of 3,292 students participated; 3,040 successfully completed the course, 13 failed, and 242 students did not complete the course. Participants are asked to volunteer information on age, gender, and ethnic background on their registration forms; 515 students were minors (10-14 years old), 562 were 15-17-year-old minors, and 57 were minorities. Three hundred and ninety participants were women.

Bow Hunter Education Courses are designed for both the experienced and novice hunter. Course topics include the selection of equipment, safety, ethics, bow-hunting methods, and the 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.

Twenty-six courses were conducted. Course length ranged from 8-12 hours. A total of 674 students participated; 671 successfully completed the course; three did not complete the course. Ninety-six students were 10-14 years of age and 69 were 15-17 years of age. Twelve minorities and 36 women were identified.

Trapper Education is mandatory for all first-time trappers. This course includes both classroom work and field training. Students learn the proper use of traps and how to set them. They learn the identification of fur-bearing animals and their habitat, trapping laws and ethics, and landowner relations.

Five courses were offered with a total of 158 participants. Courses were 9-12 hours in length. One hundred fifty-five successfully completed the course; one failed the course and two did not complete the course. Fourteen women participated. Two minorities, five minors (10-14 years 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.*

Two courses were conducted. Course length was 10 hours. Thirty-five students participated. Thirty-two successfully completed the course; four did not complete the course. Three minorities; two minors (10 –14 hyears old), and one minor of 15-17 years old attended.

Map, Compass, & Survival, a 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.

Eight courses were conducted (two in Pittsfield, six in Westminster). Courses range from 8-10 hours in length. A total of 172 students participated; all successfully completed the course. Two minorities, 34 women, 23 minors aged 10-14, and eight minors aged 15-17 attended.

Waterfowl Identification teaches the identification of migratory waterfowl, but also covers the shooting characteristics of steel shot, hunting safely from boats, and the proper use of decoys.

One 11-hour course was held with 17 students participating. Fourteen students successfully completed the course; one failed and two did not complete the course. One minor (15-17 years old) attended.

Shooting Range Development and Enhancement: This program's objective is to increase public access to range facilities for hunter education and shooting sports purposes by funding shooting range development and improvement activities at sportsmen's clubs and shooting ranges. A total of $50,000 was made available to clubs for Shooting Range Maintenance and Enhancement projects in FY 08. A total of seven clubs responded with 15 project proposals. Five individual project proposals from five clubs were accepted for funding and the selected clubs were notified of the awards. Three clubs responded and began work on the projects after all contracts and supporting documentation were finalized; the other two were unable to participate. Paid invoices were submitted by the clubs and reimbursed for approved costs associated with the projects. Follow-up site visits are being conducted by DFW staff.

Angler Education Program

Jim Lagacy, Coordinator

The Angler Education Program is the primary component of Massachusetts' Aquatic Resource Education Program. The other component is Aquatic Project WILD, overseen by the I&E Section's Education Coordinator (see the Project WILD report, above). The Angler Education Program offers programs in several categories that are all designed to introduce people to fishing and the outdoors, including Family Fishing Festivals, Basic Fresh-Water Fishing classes, Fishing Clinics, and a Fishing Tackle Loaner Program.

DFW Angler Education is primarily volunteer-driven. Currently there are 110 volunteer instructors, as well as 17 instructors-in-training, in 11 workshop groups.

Of the 127 instructors in the program, 74 were active during the year. Recruitment was conducted through an Instructor Training course held at the BassProShops in Foxborough in May. The program advertises for instructors through news releases, in person at various winter sportsmen's shows, and by word of mouth. Staff and volunteers of this program participated in two sportsmen's shows during FY 08, the Worcester Sportsmen's Show, Worcester, and the Springfield Sportsmen's Show, West Springfield. Once prospective instructors have expressed their interest they receive basic Angler Education program information by way of an Instructor Training Course or by apprenticing within an existing workshop group.

Family Fishing Festivals and Derbies: There were 16 Family Fishing Festivals during the year. These festivals ranged in size from approximately 50 people to as many as 700 people for a total of approximately 4,390 people in FY 08. These events are set up as an introduction to fishing, where rod and reel combinations, terminal tackle, and bait are available without charge. Volunteers also provide basic instruction in casting, fish identification, and knot tying. The Program Coordinator and volunteers participated (i.e., provided volunteers and equipment on-site) in four fishing derbies, including two special-needs derbies (Disabled American Veterans events at Marlboro Fish and Game and at the Riverside Rod and Gun Club), with all four serving approximately 675 participants. Total estimated participation for Festivals and Derbies for FY 08 was 5,065 people.

Basic Fresh-Water Fishing Courses: Five courses were held during the year, serving approximately 100 participants. These courses are 8 hours in length and were hosted by the Greater Worcester, MetroWest, and Pioneer Valley groups. This program has experienced a decline in both numbers and participation in our classes over the past 10 years, and FY 08 was the leanest yet. At the same time, we have witnessed a significant increase in interest in the fishing clinics that are only two hours in length (see following).

Fishing Clinics and other short programs: These programs, while short in duration (generally 2 hours), seem to be the most popular ones. They include 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 educational talks on fishing for scout groups and others. Handouts are generally provided, and class sizes are kept small enough to allow the instructors to work with participants one-on-one. There were 50 of these programs during the year in various parts of the state, conducted by the Coordinator and numerous volunteer instructors. Approximately 1,628 people (mostly children) participated.

Tackle Loaner Program: The Angler Education Program maintains fishing equipment for loan to various groups throughout the state. This equipment was loaned out on 21 separate occasions during the year, totaling 563 rod and reel combinations loaned. Equipment was loaned to various groups/agencies including the Massachusetts Department of Conservation and Recreation, U.S. Army Corp of Engineers, US Fish & Wildlife Service, various Sportsmen's clubs, and others. Along with the rod and reel combinations, the DFW also provides the necessary terminal tackle, and various fishing education materials. The numbers were slightly lower this segment due to the fact that after many years of borrowing, the Department of Conservation and Recreation (DCR) has acquired rods and reels of their own.

Cooperative Programs: The Angler Education Program also provided instruction and guidance for the Massachusetts Junior Conservation Camp, Becoming an Outdoors-Woman, and the Massachusetts Envirothon.

Communications: The program newsletter, *Shortcasts*, was produced once, in fall 2007, and mailed to program volunteers. In addition, communications by mail, email, and telephone kept volunteer instructors informed and up to date.

Becoming an Outdoors-Woman

Ellie Horwitz, Coordinator

Becoming an Outdoors-Woman (BOW) is a program designed for women ages 18 and older, providing basic skills instruction to women who have expressed an interest in participating in outdoor activities and field sports. Because of gender, cultural barriers, and lack of suitable equipment, women have been, and are, underrepresented among persons who enjoy and feel a commitment to the natural resources of the Commonwealth. A survey released in November 2006 by the National Sporting Goods Association (NSGA) documented the fact that the number of women hunting had increased

The I&E Section is involved in several programs designed to introduce novices to traditional outdoor sports.

by 75% between 2001 and 2005. NSGA attributed this increase in large part "to programs designed to introduce females to hunting and shooting." To address this emerging opportunity, the DFW offers a program coordinated by a staff member and conducted by volunteer instructors. The program provides a relaxed and comfortable venue for basic instruction in a variety of outdoor skills. Because this program is expected to be self-supporting, a good deal of the Coordinator's time is spent raising funds to underwrite the costs involved in presenting these workshops.

Over the course of the year, 12 workshops were offered as follows:

Date	Topic	Number of Participants
July 07	Fly Fishing	23 (full)
August 07	Coastal Discovery	15 (full)
October 07	Canoeing the Connecticut River	24 (full)
November 07	Deer Hunting Seminar	10 (no limit)
December 07	Deer Hunt	20 (full)
January 08	Women's Wellness Weekend:	
	Ice Fishing	14
	Tracking	29
February 08	Instructor Workshop	20*
March 08	Maple Sugaring	15 (full)
April 08	Turkey Hunting Workshop	13
May 08	Turkey Hunt	10 (full)
May 08	Introduction to Shooting Sports	40 (full)
June 08	BOW Weekend (37 w'shop options)	66
Total Attendees		**279**

*not included in the total number of participants as these are instructors only.

Instruction is provided by specialists who volunteered their time and services in order to share their expertise and their passion for outdoor activities with newcomers. The participants evaluate all the sessions, and productive feedback is used to enhance subsequent programs. As in past years, shooting and hunting workshops filled extremely rapidly, underscoring the need for additional introductory programs of this type.

Following a policy established in 2005, all workshop sites are reviewed for handicapped accessibility, workshop flyers alert individuals with handicaps that special arrangements will be made to accommodate their needs, and workshops are advertised through "All Outdoors" (a program that reaches individuals with physical disabilities.)

Junior Conservation Camp

In August 2007, the Massachusetts Junior Conservation Camp held its fifth session, at the Chesterfield Boy Scout Reservation. A total of 125 youngsters attended the program, which serves campers on a "one-time" basis. As in the past, DFW staff assisted in the development of an instructional schedule and coordinated arrangements with instructors. DFW staff and other volunteers offered Basic Hunter Education and Bow Hunter Education courses to the campers; gave instruction in wildlife management, fisheries management, game preparation and cooking skills ("From Field to Table"); conducted an Information Quiz that evaluates the participant's absorption of outdoor information and skills; and participated in the graduation ceremonies.

Special Events

"Changing Climate of Conservation": In July 2007, the DFW, working through the I&E Section, hosted the Annual Conference of the Association of Conservation Information (ACI), a national organization of professionals who deal in wildlife and communications. This meeting was held in Lenox, with 102 attendees from 28 states and provinces. The focus of the program was on the "*Changing Climate of Conservation*" and it dealt with the biological effects of climate change, changes in public attitudes, and changes in the technologies and avenues available for outreach.

BassProShops Opening: A major benefit to sportsmen across the state was the opening in November 2007 of BassProShops' latest megastore in Foxborough. Designed as a destination as well as a full-service store, no efforts were spared to make the opening a gala event. DFW staff worked closely with a team from BassProShops, providing them with information, photographs both current and historic, historic sporting artifacts, and fish for a huge aquarium that is central to the store.

"Teaming With Wildlife" Summit: I&E Section staff worked with the Environmental League of Massachusetts to present a Wildlife Summit that was open to members of the "Teaming with Wildlife" Coalition and to other conservation leaders in Massachusetts. The Summit was held in January 2008 at the Warren Conference Center in Ashland. Approximately 100 people attended.

"Massachusetts Birds: Our Common Wealth and Natural Heritage": I&E Section staff also worked closely with a team from the Massachusetts Audubon Society (MAS) to reposition its annual Birder's Conference. Co-sponsorship of the meeting was predicated on the fact that the two organizations share a number of common goals and objectives, especially in the areas of bird conservation and avian habitat protection. Called "*Massachusetts Birds: Our Common Wealth and Natural Heritage*," planning for this event began in November 2007 and the conference was held in March 2008. DFW staff joined other presenters to offer a variety of seminars and workshops. Public response to the event proved to be extremely positive, as evidenced by an enthusiastic audience of 267 people, including speakers, vendors, and registered attendees. According to a report of the MAS, total attendance was notably better than it has been in many years, and there was considerable interest in co-sponsoring the meeting again.

DFW Visibility

Agency Clothing

In an effort to increase public identification of DFW staff, T-shirts, polo shirts, dress shirts, field jackets, caps, and coveralls were purchased, embroidered with the DFW logo and/or the agency nickname (*MassWildlife*), and made available to DFW staff members.

Tourism

Tourism cultivation was not given high priority this year due the fact that the Massachusetts Office of Travel and Tourism has many new staff and concentrated on international travel activities. In an effort to promote wildlife-watching across the state directly to the public, 67 Wildlife Viewing Sites from the Massachusetts Wildlife Viewing Guide were posted on the DFW website on the "Outdoor Recreation" page.

Despite continued efforts to add state wildlife lands to the *Massachusetts Getaway Guide*, this has not occurred. There is a section for "Hiking and Wildlife," but it contains no information about the DFW. Efforts to rectify this will continue.

Assistance to Other Programs

The I&E Section Chief worked with administrators from other conservation education programs in support of key programs in the state, including the Advisory Group of the Environmental Program of Minuteman Regional Vocational/Technical High School; the Environmental Leadership Program in Lawrence, a segment of a national initiative to train young urban conservation leaders; and "Lean on Me," an urban environmental awareness program for youth in Chicopee.

Information & Education Staff

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

* 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.

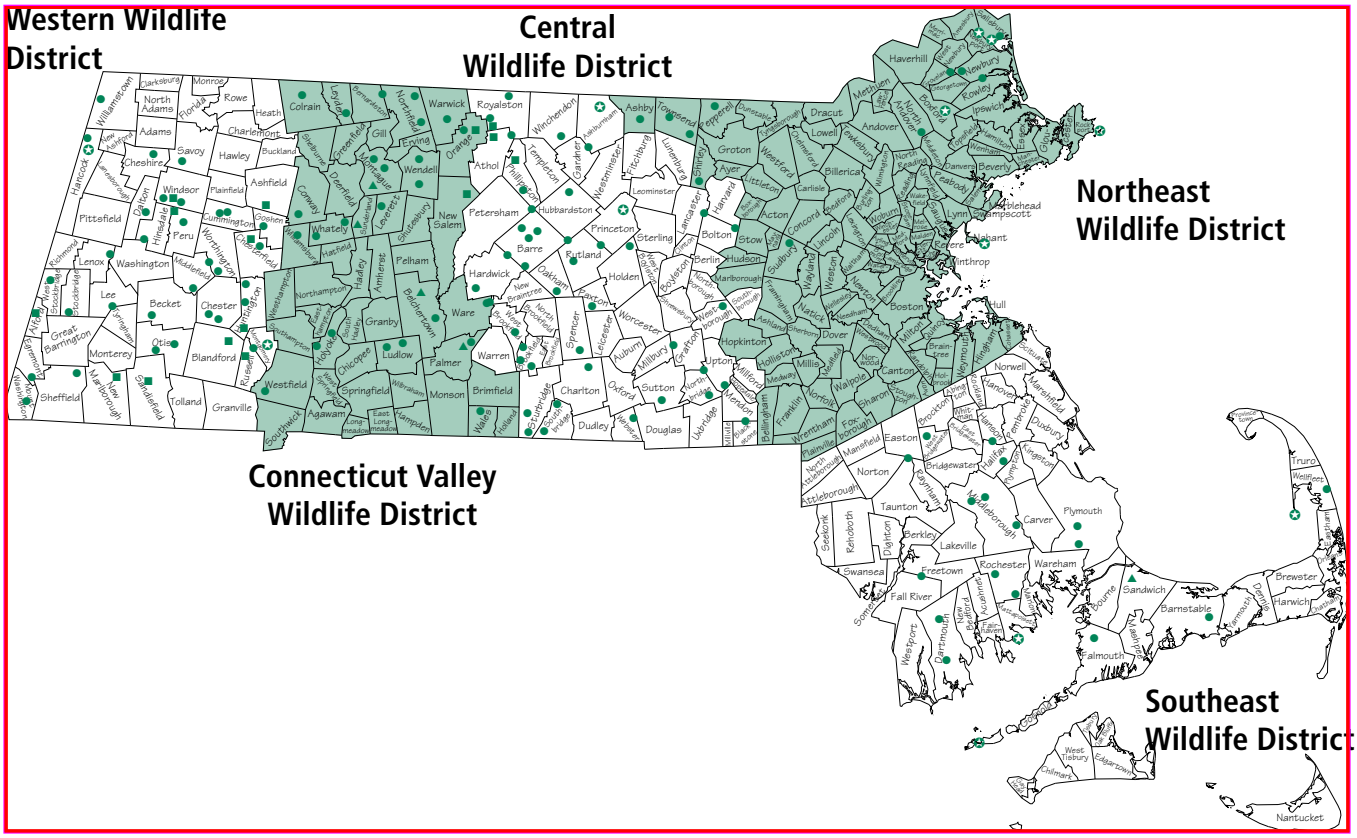
DISTRICT REPORTS

Northeast Wildlife District, Patricia Huckery, *Supervisor*
Southeast Wildlife District, Jason Zimmer, *Supervisor*
Central Wildlife District, Bill Davis, *Supervisor*
Connecticut Valley Wildlife District, Ralph Taylor, *Supervisor*
Western Wildlife District, Andrew Madden, *Supervisor*

Most people who contact the DFW do so through one of the state's five Wildlife Districts. The District offices are this agency's field stations, administering wildlife lands, conducting on-site management, enhancing recreational opportunities, and addressing the wildlife issues pertinent to their individual regions. District personnel sell hunting, fishing, and trapping licenses; stamps and selected permits out of the field offices; and they distribute licenses, abstracts, stamps, and other materials related to the sale of hunting, fishing, and trapping licenses to vendors throughout their District. They assist officers from the Office of Law Enforcement (OLE) to support public adherence to wildlife laws and regulations, and they assist the staff of the Wildlife Lands Section in selecting lands to be acquired; locating titles, landowners, and boundaries; and in making other necessary arrangements for the acquisition of lands for wildlife.

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

District staff members enhance recreational opportunities throughout the state by stocking Brown Trout, Brook Trout, Rainbow Trout, Tiger Trout, Northern Pike, Tiger Muskellunge, and broodstock salmon into waters scheduled to receive them. They also release pheasants on Wildlife Management Areas (WMAs) and in open covers. They monitor and maintain the WMAs in their region, cutting brush, mowing, trimming trails, assisting with forest cutting operations, planting shrubs, and maintaining roads and parking areas. They emplace gates, erect signs, and make other arrangements related



to the protection and management of the agency's lands, buildings, and vehicles. They also build and maintain nesting boxes for wood ducks, bluebirds, and bats, and establish cooperative agreements with farmers who raise crops on DFW land. District staff members operate check stations, where sportsmen register deer, bear, turkeys, and furbearers taken during the designated hunting and trapping seasons.

District Supervisors serve as the agency's "point persons," spending many hours with civic and conservation groups, including sportsmen's clubs and county leagues, and responding to inquiries from interested citizens. They provide technical advice on wildlife matters, particularly on the handling of nuisance animals. In this context, District staffers deal with a large number of beaver complaints, deer damage complaints, bear damage complaints, questions about coyotes, and other issues concerning the impact of wildlife on human activities and vice versa.

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

Northeast Wildlife District

Administration

In January 2008, Travis Drudi joined the staff of this District as a Wildlife Technician.

Staff members attended a variety of meetings and classes, including Hunter Education classes, Trapper Education classes, Vernal Pool Association board meetings, deer-aging class, chain saw training, climbing training, ARCView training, and the annual conference of the Massachusetts Association of Conservation Commissions.

Fall license delivery proceeded smoothly, with all deliveries completed by Thanksgiving. The mid-winter license pick-up was also completed on schedule and without problem. Controlled hunts were offered at Martin Burns and Delaney WMAs.

Many hours were spent plowing snow this year. Garage and attic cleaning operations proceeded in anticipation of a possible move to Ayer. Major purchases included a F550 stocking truck and a replacement Smith-Root backpack shocker for stream surveys. Five farmer license agreements were reviewed and updated as necessary.

The District Supervisor's land acquisition activities included reviewing parcels for their ecological and recreational significance on properties in Groton, Dunstable, Townsend, and Shirley. Central District land agent Phil Truesdell assisted long-time District land agent Dennis McNamara, who has been afflicted with Lou Gehrig's Disease (ALS). The District hosted an appreciation luncheon for Dennis at which staff presented him with a beautiful map showing the highlights of his land acquisition career. The event was held on the former Bellerman land, now part of the Squannacook River WMA, a recent Townsend acquisition of ecological and recreational significance.

Research and Conservation

Wildlife

Staff regularly monitored nine radio-collared deer throughout the year. By the end of the tracking period they were down two deer: one was hit by a car, and the other one's collar was found under ice. Staff assisted Environmental Police Officers (EPOs) in immobilizing a young buck caught in the Lowell Bus Station. A road-killed moose was found in Townsend and tooth samples were taken for aging.

District staff conducted springtime waterfowl surveys in the Northeast and Central Districts where six waterfowl breeding plot surveys were checked, and banding was conducted from the airboat in August and September. There were no swan surveys this year. Northeast District staff assisted with the Canada goose population study on 15 sites by collaring geese and assisting with avian influenza data collection on 120 geese between four Essex County sites, six Middlesex County sites, three Norfolk County sites, and two Suffolk County sites. Later in the summer, staff conducted field observations of collared geese.

District staff ran one dove, five grouse, and two woodcock routes for the Annual Breeding Bird Surveys. Fifty different sites were monitored for the park mallard surveys. Twenty-five wood duck sites were maintained, with 100 boxes checked. Wood duck surveys were hampered by the January thaw, which created soft ice conditions unsuitable for safe box checks. Staff cut and prepared over 100 cedar poles for future use on the wood duck project and built 35 wood duck nesting boxes.

Beaver plot surveys were suspended during this fiscal year. Beavers continue to be of interest throughout the District, from Gloucester to Woburn to Carlisle. District staff responded to concerns about the interruption of herring migration on Alewife Brook in Essex due to a beaver dam. Based on communication with fisheries experts at the Division of Marine Fisheries (DMF), the agency did not issue a breach permit to the interested party. District staff also advised the EPA on beaver management at the infamous Industri-Plex hazardous waste site in Woburn.

Educating the public about backyard wildlife remains a primary responsibility of the districts. Staff members respond to numerous calls about living with wildlife, particularly coyote, turkey, fisher, bear, and deer. Baby bird, baby rabbit, and fawn calls were also frequent this year, and bear calls increased in the town of Townsend. Staff members helped citizens understand the difference between problem and normal behavior of wildlife; what to do to protect their cats, dogs, and property; and why they should leave young wildlife alone.

The Upland Habitat Program finished Phase I restoration work at the Martin Burns WMA using a "bronto-

saurus-type" vegetation harvester. After early problems related to deep snow, the project was completed successfully within the specified time frames. Butterflies and deer are reported to be flourishing. During the next fiscal year, this District will harvest over 19 acres of forest connecting early successional communities.

District staff attended a routine site visit with the Pepperell Conservation Commission to review requirements of the Pepperell Spring CE, including access, trails, forestry, and ORV damage. The District Supervisor attended monthly meetings with the Groton Conservation Commission and other interested parties to lay out the long-term, adaptive management plan for the Surrendon Farm West CE. An issue arose regarding an area where the Groton Trails Committee had cut trails, set-up a trail head, and posted signs, without seeking DFW approval. The parcel is within Priority Habitat for state-listed species. It has over 2,000 linear feet of frontage on the Nashua River, and about 20 acres of early successional hayfields.

Dogs dominate the reported conflicts at Delaney WMA (Stow, Bolton, and Harvard). The two primary complaints are off-leash dogs jumping on and charging at adults, children, and other dogs; and excessive dog waste. The Harvard Board of Health petitioned the District to secure the Delaney House on Finn Road, based on reports that local teens had been using the house. Staff boarded up doors and windows with plywood, and posted more "No Trespassing" signs. Based on neighborhood complaints, the house was placed on the demolition list maintained by the Massachusetts DCR (property owner). Cooperator Vin Antil, a Stow resident, mapped the existing trail system at Delaney for use in management of the property, and Pat Swain, Community Ecologist with the Natural Heritage & Endangered Species Program, provided an assessment of plant communities.

District staff worked with the Shirley and Lunenburg conservation commissions to construct a rough bridge for tractor passage; Lunenburg provided telephone poles and the DFW provided boards for the platform. In addition, a partners' meeting was held to review the management plan. Boulders provided by the DFW's Upland Habitat Program were placed along Turnpike Road in Townsend, to protect a turtle nesting area on the Squannacook River WMA (Townsend, Shirley, and Groton) from ORV damage. Planning for the Ox Pasture Brook dam removal project on the William Forward WMA (Rowley and Newbury) continues to move forward. District staff met with NHESP Restoration Ecologist Tim Simmons and Coastal Zone Management staff to review salt marsh restoration sites, including a critical look at improving flow at the Kent's Island Bridge. Management Plan committee meetings for the Mt. Watatic Reservation (Ashby and Ashburnham) continued throughout the fiscal year, leaving snowmobile use as the remaining issue to be resolved.

Fisheries

Staff assessed 23 brooks and rivers in seven drainages: Blackstone River (two sites), Charles River (one site), Concord River (six sites), Ipswich River (five sites), Nashua River (eight sites), and Taunton River (one site). This was the first time the DFW has surveyed waters within the Devens area. Neither snakeheads nor fish kills were found.

The planning, permitting, and restoration of the Sucker Brook (Nissitissit River WMA) stream bank proceeded in coordination with the Squannatissit Chapter of Trout Unlimited. The stream bank damage had been caused by illegal off-road vehicle (ORV) use. A Saturday kick-off work party was attended by about 15 adults and youth associated with Trout Unlimited. The volunteers formed a bucket brigade to remove accumulated sediment from the stream, and hauled in fill and loam to recreate the bank. A full DFW crew spent two work days completing work on two of three bank restoration areas and building a fence to close an ORV trail. An ORV drove into one of these restoration sites within a week of completion.

Natural Heritage and Endangered Species Projects

The Merrimack River bald eagle pair came back to the West Newbury nest, where they successfully raised and fledged two chicks. Central District staff helped to band the well-feathered chicks. This "back-yard banding" operation is always well-attended by folks from the neighborhood, which this year included a 4-H group. Central District also joined us at a new nest site on DFW's Carr Island Sanctuary. where they banded one eaglet. Interestingly, this eagle pair had adopted a site where DFW staff started a nest four years ago. Five bald eagles were seen during the mid-winter Bald Eagle survey. Helicopter surveys were canceled at the last minute due to inclement weather. The District had a successful third year of participation in the Third Annual Merrimack River Eagle Festival, sponsored by the Massachusetts Audubon Society (MAS). The Eagles cooperated by diving and feeding on fish within picture-taking distance of Deer Island in Newburyport. People love this event, and kids enjoy looking through the spotting scope to get a close view of these magnificent birds.

Three new Peregrine Falcon boxes were installed, in Lowell, Lawrence, and at Boston's Logan Airport. One adult pair took to the University of Massachusetts/Lowell box immediately and laid four eggs, which did not hatch. A runt chick from the Lawrence nest was fostered to the Lowell pair, where it fledged successfully. University staff set up a video camera to monitor peregrine activity. Staff assisted with banding at the Boston Custom's House, and at an old abandoned mill building in Lawrence. A participant in the MAS's Breeding Bird Atlas project discovered a peregrine pair nesting in an active quarry in Melrose.

A Blanding's Turtle nesting project was initiated at the Squannacook River WMA with eight female turtles that had been fitted with radio transmitters. The proj-

A DFW property was found to provide significant habitat for the Threatened Blandling's Turtle.

ect moved forward with help from cooperators and an intern from Franklin Pierce College. In the course of this project the District staff was excited to find the most significant over-wintering, feeding, and breeding wetland for Blanding's Turtles within DFW property boundaries. Collected data will be used to determine locations to enhance and create additional nesting habitat for Blanding's Turtles.

DFW staff, working with a local conservationist, surveyed rattlesnakes and copperheads at the Blue Hills Reservation in Milton. District staff also provided guidance and comments to NHESP staff regarding freshwater mussel site prioritization for Environmental Review, as well as comment on a small horse farm proposed adjacent to the Nissitissit River and Wildlife Management Area.

Enhancement of Outdoor Recreation

Twenty sportsmen applied for waterfowl permits at the Delaney WMA. Twelve field trial permits, five camping permits, and 242 range permits were issued. The U.S. Coast Guard began using the range at the Martin Burns WMA this year, as did the Peabody Police Department.

Ten deer check stations operated within the District. The District office in Acton checked deer six days a week, with a total of 470 deer checked during the deer hunting seasons. Northeast District staff collected 90 Chronic Wasting Disease (CWD) samples, and confiscated one severely emaciated doe for sampling; she tested negative for CWD. We sold over 2,150 over-the-counter Antlerless Deer Permits (ADP), with hundreds of hunters lining up on the first day of permit sales to buy a Zone 9 ADP. Nine hunters took a total of four deer at the DFW-sponsored special hunt for paraplegic sportsmen held at the Devens Reserve Forces Training Area. The District tagged 26 coyotes, 231 beaver, 75 fisher, two gray fox, one red fox, no otter, two mink, and no bobcats.

Five thousand pheasants were released onto five WMAs and 11 open covers. Five Special Pheasant Stocking Permits were issued for the Martin Burns WMA, to be used between January 5, 2007 and March 31, 2008. Concord Rod and Gun Club, Harvard Rod and Gun, and Danvers Fish and Game Club ran successful Youth Pheasant Hunts at Bolton Flats WMA and at the Martin Burns WMA. District Supervisor Pat Huckery conducted the Youth Hunt Seminar sponsored by the Danvers Fish and Game Club.

This District stocked 357 salmon in nine ponds throughout the Northeast District in FY 08. Combined spring and fall trout and salmon stocked numbered 136,627 fish. In the fall, anglers saw a total of 13,150 Brown, Rainbow, and Brook trout released into two rivers and 19 ponds, followed in the spring by 123,120 trout in 45 ponds, five major rivers, and 68 brooks and minor rivers.

The District is working to establish angler access to two Great Ponds within Norfolk County as, under an ordinance dating back to colonial times, anglers and waterfowlers may fish or fowl on Great Ponds. To this end, District personnel met with town officials for Lake Pearl in Wrentham and Lake Massapoag in Sharon. Both towns presently operate access ramps at which they charge high fees for public access.

Information and Education

The District Supervisor gave the keynote speech on "Emerging Issues in Wildlife Management in Essex County" to over 100 people at the annual meeting of the Parker River Clean Water Association. Conservation and management tips were provided for dealing with deer, coyote, beaver, and state-listed turtles. "How Many Is Too Many?" was the topic of the workshop led by Outreach Coordinator Marion Larson and District Supervisor Huckery at the Massachusetts Bird Conference. A yearly favorite is the Carlisle Conservation Breakfast talk, which covers whatever is of wildlife concern to residents at the time. Last year, bears were of concern, this year it was deer and beaver. Several residents were concerned about the over-abundance of deer and the increasing incidence of deer ticks and Lyme Disease. District staff also led a vernal pool workshop for the fifth-grade class at Bolton's Florence Sawyer School.

Topsfield Fair coordination, collection of materials, scheduling, and booth coverage were handled by District personnel, with booth assistance from Westborough staff. Staff also worked at the Wilmington and Worcester Sportsmen Shows, and contributed their services to the annual Massachusetts Outdoor Exhibition ("The Big MOE") at the Hamilton Road and Gun Club in Sturbridge.

Technical Assistance

A film entitled "Living with Coyotes" was produced in coordination with the Hull Animal Control Officer (ACO). The Town of Hull runs this film on Local Access cable channels and distributes copies of the DVD to people with questions about coyotes. Hull ACO Deni Goldman also distributes the DVD to other ACOs in an effort to further the public's understanding of coyotes.

The Town of Malden contacted the District about a problem coyote, habituated to receiving food from humans (i.e., bowls of dog food present). We met the Local Access cameraman in the town cemetery to talk about urban coyotes. District staff also assisted town selectmen and conservation commissions in Carlisle, Framingham, Braintree, and North Andover with deer management issues, concentrating on opening conservation and municipal lands to hunting to help control populations. District staff spoke at a West Roxbury forum after a small dog was killed, to discuss the natural history of coyotes and how to live with them.

The District Supervisor reported to monthly meetings of the League of Essex County Sportsmen's Clubs, Norfolk County League of Sportsmen's Clubs, and Middlesex County League of Sportsmen's Clubs. Senior Staff and monthly District Supervisors' meetings kept staff up-to-date on matters of management and operational concern, such as snowmobile use, rail trail proposals, and compensation time. The monthly District Supervisors' meetings are very productive for finding solutions to management issues of district-wide interest.

Southeast Wildlife District

Administration

Several staff members received training that will enhance the District's ability meet its goals. Dan Fortier successfully completed the Intermediate Wildland Fire Behavior and the "Look Up, Look Down, Look Around" fire training courses at the New York Wildfire and Incident Management Academy. District Supervisor Jason Zimmer successfully completed the Introduction to the Incident Command System, Firefighter Training, the Introduction to Wildland Fire Behavior, and a course in Human Factors on the Fireline. Fisheries Manager Steve Hurley and Jason Zimmer also participated in the DFW's ArcGIS training sessions. Aaron Best passed the examination to receive his Commercial Driver's License learner's permit.

Capital improvements completed this year include the installation of a new septic system and an energy-efficient furnace at the District Headquarters, as well as replacement of the ceiling in the main public office at the Headquarters. The roof on the metal storage facility at the Burrage Pond WMA was also repaired, to protect equipment and materials stored at that site. District staff renovated the wood shop by installing a new workbench and building new equipment and clothing lockers to make better use of space. Further, the District obtained many pieces of essential equipment, including foam-filled tractor tires, trout pit-tagging equipment for Salter Brook Trout research, firefighting equipment for use in controlled burns for habitat management on WMAs, welding equipment and other tools used for maintaining equipment and conducting habitat management projects, telemetry equipment used in rare species research projects, and boundary marking equipment. Capital and equipment improvements completed during the past few years have greatly increased the District's ability to effectively, efficiently, and safely protect and conserve our native flora and fauna for the benefit of the general public.

The Southeast District continued its close working relationship with the Sandwich Fish Hatchery, with both installations benefiting from the cooperation and assistance of the other. For example, Southeast District staff assisted the Hatchery by rebuilding a wooden pump house that had deteriorated over time, pruning limbs and cutting trees that had become a hazard to staff and visitors at the facility, unloading shipments of trout feed, and assisting with trout spawning activities. Hatchery staff assisted the District crew on a number of fish and wildlife projects, including operating biological deer and turkey check stations and assisting with the administration of the Otis/Camp Edwards controlled hunt opportunities.

Research and Conservation

Wildlife

District staff assisted other DFW personnel; federal, state, and local agencies and organizations; and members of the general public to accomplish a wide variety of projects that protect and conserve native wildlife populations and their habitats. District staff also provided technical assistance and field support to municipalities, law enforcement personnel, and the general public relative to dealing with wildlife issues, particularly nuisance or damage complaints and reports of sick or injured wildlife.

Several major habitat improvement and restoration projects were developed and/or completed during this fiscal year. The District continued to work closely with the Upland Habitat Management Program and Ecological Restoration Program on habitat projects and the development of a long-term management plan for the Frances A. Crane WMA in Falmouth. District staff provided oversight and technical assistance to contractors who completed an additional 88 acres of savannah habitat restoration treatments at Crane South and 2.5 acres of hedgerow treatment at Crane North. In addition, District staff completed approximately five acres of hedgerow treatments at Crane North and continued the District's efforts to convert field openings to native grassland species by plowing, harrowing, and seeding approximately five acres of fields with native, local ecotype big bluestem and switchgrass.

Other wildlife habitat projects that District staff completed on or near the Frances A. Crane WMA included participating in controlled burns on the WMA and the adjacent MMR. The Department of Fish and Game (DFG) has care, custody, and control of the northern 15,000 acres of the MMR and annually assists in many wildlife and habitat management activities in accordance with the Integrated Natural Resource Management Plan (INRMP) that is required under the SIKES Act. As one of the three partners on the INRMP, the DFW assisted in the 5-year review and revision of the document,

which guides military training activities on the MMR to ensure proper management of natural resources. The District again cooperated with the MMR Natural Resources staff and other organizations to plan and operate controlled deer and turkey hunting opportunities. These controlled hunting efforts ensure the proper management of healthy deer and turkey populations on the MMR and provide an important source of recreational hunting on Cape Cod, where development and local restrictions have greatly reduced the amount of legal hunting land.

The District Supervisor and District Wildlife Technician Dan Fortier worked with Restoration Ecologist Tim Simmons and Waterfowl Project Leader H Heusmann to develop a management plan for the Burrage Pond WMA. As a part of this process, we designed a habitat restoration project that will be submitted for review and potential funding under the North American Wetlands Conservation Act Small Grants Program in FY 09. The project's goal is to repair several water control structures and remove portions of dikes and cranberry bogs in the existing 300-acre old bog complex on the property, which will enable us to restore a more natural and consistent water regime to the site and create, through a combination of wet soils management and seeding, a variety of native wetland habitats supporting higher levels of biodiversity than the man-made monoculture typical of cultivated cranberry bogs.

District staff completed many other habitat improvement activities on wildlife management areas including the hand removal of invasive species and mowing of old cranberry bogs at Burrage Pond WMA, replacement of a gate to prevent illegal vehicle and ORV use at the Rocky Gutter WMA, and the review and issuance of License Agreements that allow mutually-beneficial agricultural activities at Erwin Wilder WMA, Dartmoor Farms WMA, Burrage Pond WMA, and Frances A. Crane WMA. The District Supervisor also administered License Agreements at the Old Sandwich Game Farm WMA and old East Sandwich Fish Hatchery property with non-profit environmental organizations allowing for trails, habitat improvement projects and environmental education programs.

District Technicians installed a gate and assisted in creating a parking area on the Town of Hanson's Smith-Nawazelski Conservation Land, which abuts the Burrage Pond WMA (across Elm Street from the entrance to the Stillman Farm section). Later in the fiscal year, Southeast District Land Agent Joan Pierce negotiated the purchase of a conservation easement (CE) covering the 101-acre property, adding to the already-impressive 1,860 acres of open space protected by the Burrage Pond WMA. The importance of land acquisitions to the long-term protection and conservation of biodiversity cannot be overstated. The District staff plays an important role in cooperating with the Land Agent on projects, helping to identify potential acquisitions, evaluate habitats on the parcels, and plan future public access opportunities and management activities on the properties. This year we were successful in protecting over 340 acres through both fee acquisitions and CEs.

District staff completed Annual Breeding Bird Surveys for Ruffed Grouse, Northern Bobwhite, Woodcock, Mourning Dove, and various waterfowl species as assigned by DFW Wildlife Section biologists. District staff operated biological check stations for White-tailed Deer and Wild Turkey throughout southeastern Massachusetts. They also performed routine inspection and tagging of furbearers. A total of 94 deer, 49 turkeys, 32 coyotes, and 83 other furbearers were checked at the Southeast District office.

The District Supervisor assisted the DFW Wildlife Section by conducting routine inspections of commercial deer farms with the assistance of EPOs. Deer farm inspections are very important, both to ensure that the animals are being kept in suitable facilities and are in good overall health, and to safeguard our native White-tailed Deer and Moose populations from illnesses such as CWD. District staff also assisted with annual Canada Goose banding and Avian Influenza sampling efforts. Nest boxes were built, maintained, and monitored for Wood Ducks, Eastern Bluebirds, and American Kestrels on various state and private properties.

Fisheries

As part of the statewide stream survey effort, surveys were completed on 21 streams in the District and several new wild trout waters were documented. Temperature and dissolved oxygen profiles were conducted on 24 ponds, primarily trout ponds. In September 2007, a triple pass survey to evaluate wild Brook Trout population responses to stream habitat improvement projects was completed on the Quashnet River.

In fall 2007, a trout tagging program using Passive Integrated Transponder (PIT) tags was initiated on the Quashnet River, Red Brook, and the Mashpee River in cooperation with the Waquoit Bay Estuarine Research Reserve, Trout Unlimited, and the USGS. As part of this project, a fixed-antenna system was installed on the Quashnet River, just above the tidal waters of Waquoit Bay, to monitor Salter Brook Trout movements into the estuary. Stream temperatures were monitored with recording thermographs placed in the Quashnet, Mashpee, Childs, Coonamessett, Santuit, Eel, Jones, Indianhead, and Weir rivers. In May 2008, fish sampling assistance was provided to the Massachusetts DEP when District staff collected fish from three ponds on the Cape Cod National Seashore for contaminant analysis.

A natural fish kill was reported at Schoolhouse Pond in Barnstable during the summer of 2007 and was attributed to low dissolved oxygen levels. Two fish kills reported in spring 2008 were attributed to natural disease outbreaks. The District Fisheries Manager and Technicians closely monitored an alum treatment at Long Pond in Brewster to ensure that there were no negative impacts to fish or other aquatic organisms.

The Fisheries Manager was actively involved in monitoring MMR groundwater cleanup activities as a member of the Plume Containment Team (PCT) and served as the DFW's representative to the Santuit Pond Preserve management team. District staff assisted DMF staff during their annual Striped Bass tagging project. The Fisheries Manager was also involved in providing technical assistance on potential stream restoration activities on town-owned cranberry bogs on the Eel, Quashnet, and Coonamessett rivers, as well as on Red Brook at the Theodore Lyman Reserve of The Trustees of Reservations.

Natural Heritage and Endangered Species Projects

District staff worked closely with NHESP staff on a variety of projects during this fiscal year and assisted in several enforcement actions and project reviews under the Massachusetts Endangered Species Act (MESA). As in previous years, the District worked with Tern Project Manager Carolyn Mostello to help meet the goals of the Tern Restoration Project, assisting with boat and equipment maintenance, habitat improvements on Bird and Ram islands, and nest/chick monitoring. In addition, the District Supervisor served as a project team member throughout the design, planning, and permitting stages of the Ram Island Restoration Project. District staff assisted NHESP in enforcement actions and project compliance reviews, as well as rare species surveys in Brewster and Marshfield.

District staff, primarily Aaron Best, assisted NHESP and MAS in protecting Piping Plover nesting habitat on the Fox Island WMA in Wellfleet by installing symbolic fencing and signage. Further, in accordance with the "Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers, Terns, and their Habitats in Massachusetts," once a nest was established on the WMA, District staff provided many hours of on-site monitoring to escort shellfishermen to their oyster grants on the tidal flats nearby. Because of these collective efforts and the cooperation of the shellfishermen, the nesting pair was successful in fledging four healthy chicks.

Biological inventories, including rare species surveys and vernal pool surveys, were completed at Freetown Swamp WMA, Meetinghouse Swamp WMA, and Frances A. Crane WMA. In addition to this, the District worked with Turtle Conservation Biologist Lori Erb to design and complete a rare turtle research project at Burrage Pond WMA. District staff placed and monitored over 20 traps from early May to late June, capturing a total of 109 Spotted Turtles, including 79 new and 30 recaptured individuals, and thereby providing valuable data to NHESP on the local population.

The District Wildlife Manager installed signage and floats to protect the active Bald Eagle nest at Pocksha Pond in Middleboro. District staff assisted in monitoring three known bald eagle nesting territories and banded a total of five eagle chicks at two active nests. Aaron Best assisted Assistant Director Tom French in his efforts to band and relocate four healthy peregrine falcon chicks at the Braga Bridge in Fall River. District staff also assisted with the annual mid-winter Bald Eagle count, recording a total of 10 individual eagle observations.

Enhancement of Outdoor Recreation

Southeast District staff provided birds for another safe and successful upland gamebird hunting season, stocking 7,904 pheasant and 3,500 quail on seven WMAs and over 12 open covers throughout the District. Eight-week-old pheasants were delivered to the Samoset Rod and Gun Club, a continuing participant in the club bird program. These birds are raised by members of the club and stocked on open covers during the pheasant season. The District also provided pheasants to the Carver Sportsmen's Club and Falmouth Rod and Gun Club for use in the DFW's Young Adult Pheasant Hunt. District personnel were on hand to assist with both hunts.

District Clerk Camie Marsh and other members of the staff provided opportunities for sportsmen to purchase hunting, fishing, and trapping licenses at the District office. Special thanks are due to the staff of the DCR's Myles Standish State Forest for their help and for the use of their headquarters during the first week of ADP sales in the District. After the first week, ADP sales were moved to the District office for the remainder of the season.

District staff stocked its fall 2007 allocation of 12,800 trout into 25 ponds and stocked its spring 2008 allocation of 103,420 trout into 45 ponds and 39 streams. Fish-stocking demonstrations were given to groups of Hanover and Hingham Cub Scouts. The Southeast District stocked its allocation of Atlantic Salmon into Long and Little ponds in Plymouth, Peters Pond in Sandwich, and Cliff and Sheep ponds in Brewster in December 2007.

In preparation for the hunting seasons, District personnel mowed and maintained roads, trails, parking areas, and fields within our WMA's, to provide safe and effective access and hunting opportunities to the general public. Signage was installed or maintained at Burrage Pond WMA and Frances A. Crane WMA. Parking lots were created, maintained, or improved at Burrage Pond WMA, Frances A. Crane WMA, Haskell Swamp WMA, Erwin Wilder WMA, Rochester WMA, the MMR, and at the Smith-Nawazelski CE. Safety Zone signs were placed and boundaries were marked at many properties, including Sly Pond NHA, South Triangle Pond NHA, Triangle Pond Access, Cooks and Harlow Pond NHA, Taunton River Access, Church Homestead WMA, Rochester WMA, English Salt Marsh, Rocky Gutter WMA, Haskell Swamp WMA, Grassy Pond NHA, Mashpee Pine Barrens WMA, and Frances A. Crane WMA. Boundary marking is important for Green Certification of our lands, for guiding outdoor recreational users, and for identifying illegal encroachments. Illegal encroachments were identified and resolved at several properties, including the Frances A. Crane WMA, Copicut WMA, and the Sandwich Fish Hatchery.

District staff issued permits for 23 winter pheasant hunts at the Erwin Wilder WMA under the DFW's Special Winter Pheasant Hunting program, which provides sportsmen with additional opportunities to pursue upland game birds through the winter and keep their hunting dogs in good shape. Additionally, the District Supervisor reviewed and issued permits for eight hunting dog field trials to be held at the Frances A. Crane WMA. These field trials provide an opportunity for serious upland game bird hunters and sporting dog trainers to participate in a controlled field competition on the WMA.

The District operated and managed controlled-access hunting opportunities for White-tailed Deer, Wild Turkey, and Eastern Coyote on the MMR. This effort provided 550 deer hunters and 38 turkey hunters with the opportunity to access roughly 12,000 acres of habitat on the MMR. A total of five, 37, and three deer were killed during the archery, shotgun, and muzzleloader seasons, respectively. Six male turkeys were taken during the spring turkey season. Combined, these two controlled-access hunting opportunities provided a total of 1,393 days of hunting recreation.

The District Supervisor cooperated with Westborough staff to review and provide comments on the Cape Cod National Seashore's (CCNS) Environmental Impact Statement pertaining to hunting. Several meetings were attended on this topic and technical comments were provided in written form. The final decision on the matter passed in October 2007, allowing pheasant stocking to resume on the CCNS for the first time since a court injunction in 2002. The District released pheasants on the CCNS, allowing lower Cape hunters the opportunity once again to pursue pheasant in an area that has a long history of pheasant stocking and a rich hunting tradition.

Information and Education

District personnel continued to provide information and educate the general public, as well as a wide variety of other agencies and organizations, through publications, presentations, and attending meetings and events throughout the region.

Southeast District personnel prepared and staffed displays for the Thornton Burgess Animal Day, Waquoit Bay National Estuarine Research Reserve Watershed Block Party, Hatchville Days in Falmouth, the Cape Cod Rabies Task Force's Rabies Awareness Event in Yarmouth, Freetown State Forest Fun in the Forest Day, and Standish Sportsmen's Association Show. Unstaffed displays with publications and educational materials were provided for the Marshfield Fair and the Eastern Mountain Sports Club Day. The Wildlife Manager gave a presentation on "Beaver Management in Massachusetts" at the Massachusetts Audubon Society's Duxbury Beach Walk. The District Supervisor gave a presentation on wildlife at the Marshfield Steeple School and a presentation on "Coyote Management in Massachusetts" to a meeting of the Cape and Islands Senior Environmental Corps.

District staff assisted I&E Section staff from Field Headquarters in collecting historical material related to the history of DFW fisheries and management. These materials were given to the I&E Section for use by Bass Pro Shops in special displays for the grand opening of the new store in Foxborough.

Technical Assistance

District staff provided technical advice and support to many local ACOs, Police departments, Boards of Health, and Conservation Commissions, as well as to EPOs on issues dealing with fish, wildlife, and their habitats. Many of these issues related to the review of the potential impacts of proposed development projects on fish and wildlife. Others dealt with suburban wildlife and conflicts with humans and with other public health and safety concerns related to fish and wildlife. The entire staff assisted with the many calls received each year, particularly in the spring and early summer, pertaining to coyotes, foxes, Canada Geese, and other common suburban species. The "Living with Wildlife" publication series and educational message was provided to many individuals and organizations, to help them deal with these human-wildlife conflicts.

The District Supervisor worked with DFW Furbearer Project Leader Laura Hajduk to provide technical advice to residents and local law enforcement personnel in West Yarmouth relative to coyotes that had exhibited bold behavior in a residential area. The information that DFW staff provided to residents included ways of making yards less attractive to coyotes and methods of harassing the animals to re-establish their natural fear of humans, which had relaxed due to direct feeding activities and lack of threats. The situation was resolved through continued harassment and the elimination of unnatural food sources in the neighborhood.

Southeast District personnel were actively involved with the Cape Cod Rabies Task Force, the Mashpee National Wildlife Refuge Management Team, the Southeastern Massachusetts Bioreserve Management Team, and the Assawompsett Pond Complex Management Team.

Technical presentations were given by the Fisheries Manager at the ninth "Cape Cod Ponds in Peril" workshop and the Assonet River event. The District Supervisor attended the annual trout stocking event at Jamaica Pond in Boston and the Massachusetts Beach Buggy Association's Spring Meet, and served as a member of the Off-Highway Vehicle Enforcement and Education Working Group.

The District Supervisor regularly attended meetings of the Barnstable, Bristol, and Plymouth County Leagues of Sportsmen and the Monomoy and No Man's Land Island National Wildlife Refuges Comprehensive Conservation Planning Team meetings.

Annually, a considerable amount of time is spent in providing technical assistance to the Air Force Center

American Chestnut seedling on part of an orchard surrounding the Central District Headquarters.

for Environmental Excellence and their contractors in relation to the MMR cleanup. Construction impacts on the Frances A. Crane WMA from the treatment systems and investigational wells were monitored and recommendations were made for reducing impacts on flora, fauna, and public use.

Central Wildlife District

Administration

Jessi Manty was promoted from Technician I at the McLaughlin Trout Hatchery to Technician II at the Central District.

A 300-seedling chestnut orchard was maintained at the Central District Headquarters in cooperation with the American Chestnut Foundation and DCR. Several seedlings flowered and were bagged for pollination as part of the research to develop blight-resistant trees.

Infrastructure improvements were made to the District office including siding, entrance doors, garage doors and interior insulation.

Three District staff members participated in chainsaw safety and use training offered by the DCR.

Staff worked on the maintenance of 14 WMAs with efforts directed at mowing fields, maintaining roads and parking lots, securing gates, discouraging dumping, and installing ATV deterrents. Twenty-five miles of boundaries were marked and signed. Vegetation control was conducted at Phillipston, Winimusset, Bolton Flats, Moose Brook, and Westborough WMAs. A total of 15 acres of woody growth were cut to reclaim fields and enhance early successional vegetation.

Research and Conservation

Wildlife

Canada Goose leg-banding continued statewide for ongoing survival and harvest studies. Approximately 1,000 geese were banded in this effort. Cloacal and oral swabs were taken from a sample of the birds to detect the presence of Avian Influenza. Waterfowl breeding plots were surveyed, as were waterfowl found in association with parks. Ruffed Grouse, American Woodcock, and Mourning Dove censuses were also completed. Turkey brood reports were submitted during the annual study period.

A total of 328 Wood Duck nesting boxes were checked and 53 new boxes were erected at various wetland sites.

Beaver, Otter, Coyote, Fisher, Bobcat, and Fox pelts were tagged and recorded.

Boxes for Bluebirds, Kestrel, and other cavity nesters were constructed and erected on WMAs.

Radio telemetry studies were continued, focusing on tracking collared White-tailed Deer (six), Moose (two), and Black Bear (two). Two sow Black Bears each produced three cubs and a large boar was ear-tagged.

Active Osprey nests were documented at two new sites in Sturbridge, both on cell phone towers. The known nests in Westborough and Grafton were also active.

License Agreements were renewed with a snowmobile club and three groups of model airplane hobbyists. Other agreements were maintained with 17 central Massachusetts farmers, primarily for growing hay and corn.

Fisheries

Central District staff surveyed 50 streams to assess fish populations and water conditions, focusing on the Nashua, Blackstone, and Ware river basins. Two waterbodies were sampled to determine trout survival potential during the summer months. A "Hydroscout" lab unit was used to measure temperature and dissolved oxygen levels at 0.5-meter intervals.

Broodstock salmon were stocked in Asnacomet Pond and Quinsigamond, Whalom, Wallum, and Webster lakes. Salmon were obtained from the DFW's Roger Reed Hatchery in Palmer and the White River National Fish Hatchery in Bethel, VT.

Natural Heritage and Endangered Species Projects

District personnel assisted in the annual Midwinter Bald Eagle Survey. The Bald Eagle nesting territory at Wachusett Reservoir in Boylston was active and produced two chicks. The nest blew over prior to banding and one chick was collected, rehabilitated, and fostered

into an active nest on the Connecticut River in Hadley. The Quaboag Pond eagle pair failed to produce young, likely due to interference from a third adult bird. Additional assistance was provided to the Southeast and Northeast Districts for eagle banding in Middleboro, Fall River, Salisbury, and West Newbury, with a total of six eaglets banded.

Peregrine Falcons were noted as present in downtown Worcester, but no nests were documented.

Common Loon nesting rafts were floated at Quabbin and Wachusett Reservoirs by DCR staff, and a loon nesting attempt at Paradise Pond in Leominster State Forest was again safeguarded by posting signage invoking Massachusetts General Law Chapter 131, Section 86. The District compiled statewide loon nesting data for the NHESP database.

Enhancement of Outdoor Recreation

District personnel oversaw the operation of 16 deer check stations, 12 Turkey check stations, two Eastern Coyote check stations, and one Black Bear check station.

Three thousand Ring-necked Pheasants were released and 5,580 seven-week-old pheasants were distributed to 12 sportsmen's clubs and two correctional institutions for rearing. Pheasants were released on 15 WMAs, five town coverts, and participating club properties. Bolton Flats was available for the winter pheasant hunting opportunity in Central District. One application for a winter pheasant hunting permit was received.

Hatchery-raised trout were stocked in 37 ponds and lakes, as well as 22 rivers and 29 streams in the Central District. Stocking participants included Cub Scouts, school groups, Trout Unlimited, and a number of central Massachusetts legislators.

Staff repeatedly visited and removed trash from six boat launching sites. A license was issued to the town of Brookfield to authorize their use of DFW property as a public swimming beach at South Pond. The town also voted to discontinue a section of the former Lake Road to allow the Office of Fishing and Boating Access (OFBA) to properly engineer parking, boat launching, and drainage. Public access sites were investigated with representatives from the OFBA, including Asnacomet Pond, South Pond, Leadmine Pond, South Meadow Pond, and Chauncy Pond.

Information and Education

Central District personnel set up and helped staff the Eastern Fishing and Outdoor Expo at the Worcester DCU Center. District personnel also staffed activity stations and otherwise assisted with the Big MOE in Sturbridge.

The Tags and Trout program was continued by Fin, Fur and Feather Sports of Upton and by the Blackstone Recreation Department, which sponsored tagged fish at Pratt Pond, Upton; Lake Quinsigamond, Worcester; West River, Uxbridge; and Mill River, Blackstone.

Technical Assistance

Nuisance animal reports were addressed and recorded. Technical assistance was provided and site visits conducted where necessary. The majority of reports related to beaver, coyote, bear, fisher, and fox. Reports of suspected illegal activity were forwarded to EPOs.

Several moose-vehicle collisions were documented and data was collected from those specimens that could be salvaged. Large Animal Response Team (LART) actions were undertaken by District staff for moose and bear in a number of towns.

The District Supervisor attended meetings and functions of the Worcester County League of Sportsmen's Clubs. The District Supervisor, Biologists and Technicians attended meetings with various federal, state and local agencies and private organizations including the Audubon Society, Fisherville Redevelopment LLC, Blackstone River National Heritage Corridor Commission, the American Chestnut Foundation, the Ecotarium, MidState Trail Committee, Wachusett Greenways, East Quabbin Land Trust, Northboro Trails Committee, Central Mass. Regional Planning Commission, Westboro Trails Committee and Friends of the Upton State Forest. Presentations were given to various sporting and civic organizations.

The District Supervisor was elected to the Board of Trustees of the Worcester County Horticultural Society.

Connecticut Valley Wildlife District

Administration

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

Infrastructure improvements were made to the new storage facility by installing electrical service and a security system. New lighting was provided to all work stations at the District Headquarters. A new phone system was installed at the District Headquarters, giving access to all buildings on the facility. New equipment this year included a John Deere 550 tractor with a heavy-duty, 6-foot brush-cutter. Existing signs and access were maintained at all WMAs in the Valley District.

District staff cleared a total of 86 acres of early succession habitat at two WMAs (10 acres at Herm Covey WMA, 76 acres at Leyden WMA) with the District brush-cutting, milling head. An additional 39 acres were mowed with the District tractor and rotary brush cutter (2 acres at Poland Brook, 8 acres at Southampton WMA, 10 acres at Herm Covey, and 19 at Leyden WMA).

District Staff distributed hunting and fishing licenses to 60 vendors throughout the Valley District. The District Clerk sold several hundred licenses, ADPs, bear permits, and turkey permits during the year. One-day licenses for fishing at the Quabbin Reservoir were sold at $5 each for a total of $15,720 in revenue.

The District office received requests for permission to use the Herman Covey WMA for a variety of purposes. Over the course of the past year the District issued 31 camping permits for the area along the Swift River, and three field trial permits. In addition to these permits, the District Supervisor approved six permits for special winter upland bird hunts. Valley District staff also prepared for and hosted the 2008 Annual DFW Employees Conference at the District Headquarters in Belchertown in August.

Research and Conservation

Wildlife

Valley District staff completed a series of spring Ruffed Grouse drumming routes, assisted with Fall Grouse Transect Surveys, the mid-winter Bald Eagle survey, and the Wild Turkey brood survey.

Staff monitored the survival and reproduction of 21 radio-collared female bears during the reporting period. A 1-year-old female bear was hit by a car. A 5-year-old bear was shot during the hunting season. Nine female bears were checked in their den sites during February and March to determine reproductive success and first-year cub survival. Four bears had 12 newborn cubs, 3 males and 9 females. Of the five females expected to have a total of 12 yearling cubs, it was found that only 10 yearlings had survived their first year. Staff set three barrel traps to recapture two 2-year-old females. We successfully captured these two bears plus an additional seven bears (five females and two males).

District Staff assisted in radio-collaring and monitoring six moose during the reporting period. Staff banded 100 geese at four sites. They also maintained 180 wood duck nesting boxes at 48 sites. Bird and kestrel nesting were maintained at several WMAs, as well.

Fisheries

District Fisheries Staff conducted stream surveys throughout the District during the summer of 2008.

Over 120,000 Eastern Brook, Brown, Rainbow, and Tiger trout were stocked in Fall, 2007 and Spring, 2008 by Valley District staff. In addition, 375 surplus broodstock salmon were stocked in Lake Mattawa (Orange), Lake Metacomet (Belchertown), Five-Mile Pond (Springfield) and Lake Congamond (Southwick); the fish were acquired from the White River Junction Federal Hatchery and the DFW's Roger Reed Hatchery in Ware.

Valley District personnel joined Westborough and Central District staff in a day of electro-fishing on the Oxbow of the Connecticut River to provide fish for Bass Pro Shop's aquaria prior to the grand opening of their new store in Foxborough.

Natural Heritage and Endangered Species Projects

The Valley District monitors all eagle breeding territories and leg-bands all eaglets from the Quabbin Reservoir west to the New York state line. District staff climbed to 12 eagle nests and banded 19 chicks statewide. The District Wildlife Biologist assisted in the mid-winter eagle survey (aerial survey) at the Quabbin Reservoir and the Connecticut River. He also assisted in compiling and summarizing statewide data on eagles and on Peregrine Falcons.

Staff banded Peregrine Falcon chicks in the District; three at the UMASS Library, Amherst; and four at Mt. Sugar Loaf, Deerfield. Staff also attempted to access a new nest at Mt. Tom in Easthampton that produced at least one chick, which was not banded.

Three Common Loon rafts were maintained at the Quabbin Reservoir.

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

Enhancement of Outdoor Recreation

The District wildlife biologist was responsible for coordinating the checking of all harvested deer, bear, turkey, and furbearers in the district. The District office is staffed to check all species. In addition, there are 10 deer, nine turkey, two bear, and two furbearer checking stations throughout the Connecticut River Valley District. Staff members work at five biological deer check stations during the first week of deer shotgun season, as well.

Staff stocked 10,000 pheasants on 34 town covers and 19 Wildlife Management Area covers during the six week pheasant hunting season. Five sportsmen's clubs within the Valley District participated in the Club Pheasant Program; District staff distributed 1,400 seven-week-old pheasants to these clubs in June.

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

Staff helped to organize the clean-up of the Montague Plains WMA utilizing the Source-to-Sea Volunteer Crew in the Montague/Greenfield area, and provided a 30-yard dumpster to facilitate trash removal. District Staff also maintained two boat launch sites, one at Lake Rohunta and the other at the Herm Covey WMA.

Information and Education

District staffers took a leading role in representing the DFW at both the Franklin County Fair and the Springfield Sportsmen's Show. In preparation for the Franklin County Fair, staffers gathered fish from local waters for display at the fair, updated display materials, and then spent 4 days working the DFW booth at the Fair, where they met the public and responded to questions relating to wildlife and wildlife management.

Public presentations were offered at monthly meetings of the local County Leagues of Sportsmen's Clubs. The District Supervisor provided a presentation to students at Holyoke Community College on "Eagles of Massachusetts," and gave another talk on "Massachusetts Black Bears" at the Arcadia Wildlife Sanctuary. The District Wildlife Biologist offered presentations to the UMass/Amherst Animal Science Department (Black Bears) and to the UMass/Amherst Forestry Department (Upland Game Management)

Technical Assistance

The Valley District responded to Large Animal Response Team (LART) requests from Environmental Police to assist with moose and black bear in inappropriate locations. LART requests in FY 08 resulted in staff chemically immobilizing and relocating five moose and three bear.

District Staff provided technical support, manpower, and repair capability for the McLaughlin Trout Hatchery, Westborough Field Headquarters, and District equipment as requested. The District also provided manpower and equipment to repair raceways at the Sunderland State Trout Hatchery.

Western Wildlife District

Administration

Jacob Morris-Siegel joined the District staff in November 2007 as a Wildlife Technician.

Important improvements were made to Western District headquarters in FY 08. Electrical service and an energy efficient radiant heat system were installed in the new storage facility. A damaged roof was replaced on a small storage garage and an underground storage tank was removed from the Hinsdale Flats WMA. These improvements, in combination with projects completed in FY 07, increase the capability and efficiency of the District in efforts to serve the public and conserve the natural resources of the region.

Research and Conservation

Wildlife

District staff participated in ongoing research programs such as goose banding and nest box monitoring and production. The Wildlife Biologist and technicians serviced, repaired, and established new wood duck boxes throughout the District. They also constructed and installed nest boxes for kestrels and bluebirds. The Wildlife Biologist and technicians conducted breeding bird censuses for woodcock, grouse, and mourning dove.

District personnel continued to monitor the movement of radio-collared deer and moose. The Wildlife Biologist and District wildlife technicians participated in the 23rd Annual Breeding Bird Survey at the Hiram Fox WMA.

The Wildlife Biologist and other district personnel spent considerable time addressing the threat to bats from White Nose Syndrome (WNS). These efforts included conducting bat counts and assessments, providing support for researchers, and collecting specimens. Bats in Massachusetts have been found to be WNS positive and have suffered high levels of mortality. The Western District is home to some of the state's largest and most significant bat hibernacula. Additional research will be conducted in FY 09 as biologists attempt to enhance professional understanding of this condition. The District Wildlife Biologist represented the DFW at a regional meeting of experts to address the issue.

District staff provided support for many wildlife section projects. District staff also participated in habitat management projects and helped project leaders with CWD sampling and other data collection efforts.

District personnel responded to reports of injured wildlife. This often required transportation to rehabilitators or veterinary clinics for treatment. Numerous hawks and owls were stabilized and transported to sites where they would be rehabilitated and released.

The District Supervisor and Wildlife Biologist participated in land meetings and reviewed and ranked potential acquisitions. The Wildlife Biologist and District Supervisor issued and renewed license agreements for land use on WMAs consistent with DFW conservation objectives.

Considerable effort was put forth to reduce the resource damage associated with off-road vehicle use. Boulders were placed at Tekoa WMA, Hiram Fox WMA, and Fox Den WMA. Gates were installed and boulders placed at Chalet WMA and Moran WMA. The efforts at Chalet WMA, which were done with the support of the Forestry Program, were particularly intensive and included the creation of berms to prevent off road vehicle access as well as the repair of previously damaged roads and trails. Unfortunately, despite the time and effort expended, off-road vehicle use continues to be a major problem on many District properties.

Fisheries

The Aquatic Biologist and District staff conducted fish surveys on streams, rivers and ponds throughout the District. They also deployed and collected data from thermographs placed to monitor temperature in headwater streams and larger rivers. The Aquatic Biologist and Technicians investigated and documented fish kill reports.

The Aquatic Biologist worked with fisheries section staff to develop guidelines for the protection of coldwater resources. These guidelines are part of an effort to educate the public and conservation groups about the importance of coldwater fisheries resources. The Aquatic Biologist presented these guidelines at meetings with New England Association of Environmental Biologists and with Trout Unlimited.

The Aquatic Biologist and District Supervisor participated in meetings related to dam removal and aquatic habitat restoration. District staff, under the guidance of the Aquatic Biologist, conducted surveys for fish and invertebrates as a baseline assessment of resources in the vicinity of potential dam removal projects.

Natural Heritage and Endangered Species Projects

The District Supervisor and biologists provided technical assistance to the NHESP on review projects in the Western District. District staff monitored the eagle nest on Onota Lake in Pittsfield and participated in the annual Mid-Winter eagle count. The District Wildlife Biologist supported NHESP's Bog Turtle assessment and management efforts. District staff also provided support for the NHESP's efforts to enhance knowledge of rare species in the Housatonic River. The District Supervisor worked with the environmental review staff reviewing proposed alternatives for the river.

District staff also worked with NHESP staff in finding and documenting rare plant locations, and attended the annual New England Plant Conservation Program meeting. District personnel also submitted records of rare and endangered species identified during fisheries and vegetation monitoring.

Enhancement of Outdoor Recreation

The District Wildlife Technicians managed vegetation on 12 WMAs under the guidance of the Wildlife Biologist and staff from the Division's Field Headquarters. District staff posted road frontages and boundaries on both new acquisitions and existing lands. These efforts occur annually. Although they require considerable staff time and effort, they provide important benefits to wildlife and to recreational opportunities.

Trout were stocked into 24 lakes and ponds and 56 streams and rivers to enhance recreational fishing. Both the Aquatic Biologist and Wildlife Technicians also participated in stocking of broodstock salmon. Staff members drove to Vermont to pick up salmon and deliver them to Massachusetts for the enjoyment of recreational anglers.

Pheasants were released on WMAs and local covers. Deer, turkey, and bear check stations were staffed and open to the public. District staff also provided support for the annual deer hunt for paraplegic sportsmen.

Western District technicians created new signs for management areas, fishing access sites, and catch-and-release areas, to better inform the public about available recreational opportunities.

Information and Education

Staff presented information and gave presentations to a wide variety of groups, including the Berkshire Humane Society, the Berkshire Fly Fishing Association, the Student Conservation Association, and the local chapter of Trout Unlimited. The District Supervisor regularly attended and presented information at meetings of the Berkshire and Hampshire County Leagues of Sportsmen.

District staff represented the agency at the Springfield Sportsman Show, the Westfield Watershed Symposium, the Lakes and Pond Association of Western Massachusetts Annual Meeting, and the New England Association of Environmental Biologists Annual Meeting. District personnel conducted classes at the Becoming an Outdoorswoman (BOW) winter program and summer workshop and assisted with wildlife classes at the Massachusetts Junior Conservation Camp.

Technical Assistance

The District Clerk fielded hundreds of calls asking for technical assistance. District staff, particularly the Clerk, District Supervisor, and District biologists, responded to these inquiries with professionalism and expertise. The Clerk also addressed the needs of walk-in visitors and issued permits and licenses to hundreds of sportsmen. In addition to advising members of the public at large, District staff members were often called upon to provide technical assistance to other agencies or user groups.

The District Supervisor devoted considerable time to issues surrounding the mitigation of contamination of the Housatonic River. He attended Citizens Coordinating Committee (CCC) meetings on the cleanup effort as the DFW's representative. In this capacity he spent considerable time reviewing documents and proposals. He also assisted in fisheries sampling efforts related to the cleanup and participated in numerous interagency meetings on the subject.

The Aquatic Biologist provided technical expertise to such agencies as the USFWS, Natural Resource Conservation Service, DCR, and the Massachusetts Riverways program. District personnel assisted or advised on aquatic habitat restoration projects, including modifications to fish migration barriers and dam removals. The Aquatic Biologist also provided technical expertise as part of the environmental review process for the NHESP. She also participated on a multi-agency team to assess resource damage from storm events.

The Wildlife Biologist responded to numerous calls seeking advice on dealing with black bear and other wildlife species. Many inquiries were handled by phone, but, when necessary, the Wildlife Biologist and District Supervisor also met on-site with land owners having problems with bears. Remedies included installation of electric fencing and other site-specific behavior modifications.

District Personnel

Northeast Wildlife District
Patricia Huckery, *District Manager*
Dennis McNamara, *Land Agent*
Erik Amati, *Wildlife Manager*
John Sheedy, *Fisheries Manager*
Bob Desrosiers, *Wildlife Technician*
Michael Huguenin, *Wildlife Technician*
Travis Drudi, *Wildlife Technician*
Steve Wright, *Wildlife Technician*
Sue Ostertag, *Clerk*

Southeast Wildlife District
Jason E. Zimmer, *District Supervisor*
Steve Hurley, *Fisheries Manager*
Dick Turner, *Wildlife Manager*
Ed Kraus, *Wildlife Technician*
Jeff Breton, *Wildlife Technician*
Daniel Fortier, *Wildlife Technician*
Aaron Best, *Wildlife Technician*
Camie Marsh, *Clerk*
Joan Pierce, *Land Agent*

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

Connecticut Valley Wildlife District
Ralph Taylor, *District Supervisor*
David Fuller, *Wildlife Manager*
David Basler, *Fisheries Manager*
Barbara Bourque, *Clerk*
Gary Galas, *Wildlife Technician*
Kevin Peloski, *Wildlife Technician*
Walter Tynan, *Wildlife Technician*
James Wright, *Wildlife Technician*
Sam Lovejoy, *Land Agent*

Western Wildlife District
Andrew Madden, *District Supervisor*
Anthony Gola, *Wildlife Manager*
Dana Ohman, *Fisheries Manager*
Nancy Dewkett, *Wildlife Technician*
Dale Beals, *Wildlife Technician*
Jacob Morris-Siegal, *Wildlife Technician*
Tammy Ciesla, *Wildlife Technician*
Elna Castonguay, *Clerk*
Peter Milanesi, *Land Agent*

WILDLIFE LANDS

William J. Minior
Chief of Wildlife Lands

What was originally expected to be a rather quiet land protection year because of limited funding was greatly enhanced through EEA assistance in the form of authorization and capital bond money. The Secretary's office, with the assistance of the EEA land protection agencies, established 10 Habitat Reserves throughout the Commonwealth, toward which the Secretary wished to see 50% of our acquisition funds directed. The acquisition team responded favorably and developed numerous parcels of quality habitat for review, approval, and completion, both in Habitat Reserves and other locations as well. By year's end, 55% of the acreage DFW protected in FY 08 was located in designated Habitat Reserves.

DFW/DFG completed 54 acquisitions in FY 08, helping to protect and preserve 6,205 acres at a cost of approximately $11.26 million. Although acquisitions occurred statewide, 45 of the projects were in Worcester County and further west. Parcels ranged in size from a 0.5-acre pond access to the 2,300-acre Westfield Watershed conservation easement (CE). Conservation easements played a big role in our FY 08 protection efforts. Seven CEs provided protection to 3,657 acres at a cost of $2.9 million. These CEs accounted for 59% of this year's acreage total but only 26% of the total cost. The primary reason for this disparity was the 610-acre East Brookfield land gift and the 2,300-acre Westfield Watershed property.

FY 08 acquisitions occurred in 41 towns and on 39 different DFW areas. Nine new areas were established, with four in the Connecticut Valley, two in each of the Southeast and Western Districts, and one in the Central District. Four of these new areas are the result of CEs that will prevent future development and allow for compatible public access.

Non-profit environmental organizations provided valuable direct assistance in the protection of approximately 875 acres. This included conveyances of fee interests from the Franklin Land Trust, The Conservation Fund, and the Friends of the Williams River, and CE interests from the Monterey Preservation Land Trust and the Mattapoisett Land Trust. Indirect assistance from various other non-profits continued to be an important asset to our land protection program.

Four municipalities also played a large role in our FY 08 land protection efforts. The Town of Southampton conveyed the fee interest in a 40-acre tract; the City of Westfield and the Town of Hanson conveyed CEs on large, valuable open space parcels; and the Town of Mashpee acquired the fee and DFG acquired a CE in a cooperative effort to protect a relatively large tract of highly developable waterfront property.

Land Acquisition in FY08

Western Wildlife District	
Expended	$3,400,000.00
Acreage	3,561.5
Cost/acre	$954.65
Connecticut River Valley Wildlife District	
Expended	$2,905,350.00
Acreage	930.0
Cost/acre	$3,124.03
Central Wildlife District	
Expended	$3,617,000.00
Acreage	1,264.8
Cost/acre	$2,859.74
Northeast Wildlife District	
Expended	$373,000.00
Acreage	106.7
Cost/acre	$3,495.78
Southeast Wildlife District	
Expended	$967,020.00
Acreage	342.6
Cost/acre	$2,822.59
Total Expended:	**$11,662,370.00**
Total Acreage Acquired:	**6,205.6**
Average Cost Per Acre:	**$1,814.87**

The above figures include Departmental acquisitions. It should be noted that the acreage figures and costs of those properties acquired with FY08 funds and RECORDED for FY08 between 7/20/07 and 7/1/08 are included herein. Ancillary costs are not included.

Overall, FY 08 was a successful land protection year for DFW/DFG, with approximately 6,200 acres protected with the expenditure of $9.89 million in bond funds and $1.37 million in Land Stamp funds.

Western Wildlife District

The Western District was extremely busy, completing 17 acquisitions in FY 08. Parcels ranged in size from the 6.1-acre developable inholding on the Moran WMA to the 2,300-acre Westfield Watershed CE. Five acquisitions exceeded 100 acres in size, and most of the acquisitions would be considered sizeable by eastern Massachusetts standards. Perhaps the most notable acquisition because

of its size is the above-mentioned Westfield Watershed property, located primarily in Montgomery. This $1 million CE will prevent development and insure compatible public recreation on this previously closed (although not enforced) area abutting DFW's 1,422-acre Mount Tekoa WMA. It has high resource value, rare and endangered species, and recreational values, including hunting, fishing, and scenic vistas.

The 458-acre Hudson/Monterey Preservation Land Trust CE acquisition was a cooperative effort that nearly doubled the size of the Tyringham WCE and was an extreme bargain sale. The Friends of The Williams River conveyed a 25-acre addition to our 345-acre Maple Hill WMA at a bargain price as well. The new 36-acre Rowe Natural Heritage Area (NHA) is the seed acquisition for a valuable rare and endangered resource. A combination fee/CE acquisition of 116 acres nicely complemented and nearly doubled the Hawley NHA. Approximately 325 acres of Westfield River access property was acquired in the Towns of Cummington, Plainfield, and Windsor, providing valuable riparian protection and recreational opportunities. Significant additions were also made to the Peru, Fox Den, Day Mountain, Hinsdale Flats, and Powell Brook WMAs.

A total of 3,562 acres in 14 towns and 12 separate areas were protected in the Western District at a cost of $3.4 million, making FY 08 a very successful land protection year.

Connecticut Valley Wildlife District

Despite the retirement of the District's longtime land agent two-thirds of the way through the fiscal year, 13 projects were completed in the Valley District. Four new areas were established, ranging in size from the 0.5-acre Packard Pond access in Orange to the 254-acre General Cigar property acquisition in Southwick. The General Cigar project was a coordinated effort to preserve an approximately 450-acre tract of primarily grassland in the Towns of Suffield, Connecticut, and Southwick, Massachusetts. The Conservation Fund pre-acquired the property, which was ultimately purchased by the respective states. Other new areas are the 191-acre Mount Esther WMA in Whately and the 214-acre Brewer Brook WMA in Williamsburg.

Notable acquisitions include the 72-acre addition to the now-360-acre Mt. Toby WMA, and the 46-acre addition to the 1,522-acre Herm Covey WMA, which has been of interest to this agency for several decades. Sizeable and resource-rich tracts were also added to our Whately, Poland Brook, Palmer, and Southampton WMAs, as well as to the Whately Pond Fish & Wildlife Area.

The Valley total of 930 acres includes land abutting 12 different DFW areas in 10 towns, and was acquired at a cost of approximately $2.9 million. A new land agent was hired late in the fiscal year and proved to be quite effective at negotiating and closing the remaining District projects.

Central Wildlife District

Fourteen fee acquisitions and one CE combined to protect 1,265 acres in the Central District in FY 08. The single CE represented a 610-acre gift in East Brookfield, which is the seed of the Hitchcock Mountain focus area. Public access is currently not allowed; however, the subject property will be protected from development in perpetuity and is the base for additional land protection in this vicinity. Another acquisition of note is the 240-acre Webster Sheet Metal property, which abutted DFW's 780-acre Mine Brook WMA and the 5,000-acre Douglas State Forest. This parcel was completely permitted for an 83-unit subdivision prior to its purchase, which warranted its $2.5 million consideration. In a cooperative effort to protect property within the Secretariat of EEA's Douglas Habitat Reserve, DCR also completed two major acquisitions to the south of the subject parcel in FY 08.

Multiple acquisitions or additions were made to our Merrill Pond, Millers River, Muddy Brook, and Mine Brook WMAs. Single additions were also made to our Raccoon Hill, Winimusset, and Birch Hill WMAs. FY 08 land acquisitions were conducted in 10 Worcester County towns on eight different DFW areas, with a total expenditure of $3.62 million. The Central District now has over 38,500 acres under DFW management.

Northeast Wildlife District

The Northeast District is the most difficult area in the Commonwealth in which to assemble meaningful land protection projects because of the small, fragmented parcels and the relatively high cost of land. Additionally, DFW's longtime Northeast District land agent was in the middle to late stages of a terminal illness in FY 08, which impacted his capabilities. Nonetheless, three fee acquisition projects and one fee/CE combination project were completed in the Northeast District, providing protection for 107 acres of land at a cost of $373,000.00.

The 54-acre Farnsworth property, located at the confluence of the Squannacook and Nashua Rivers in Shirley and across the river from DFW's Ayer Game Farm land is an exemplary resource acquisition. This tract has extensive stream frontage and road frontage, providing excellent access and riparian protection. It serves as a connector to the recently protected Surrenden Farm property, the Groton Town Forest, the Shirley Rod & Gun Club, and DFW property. Two additions to the Salisbury Marsh holdings, including a 33-acre acquisition with 15 acres of upland, bring the Salisbury Marsh total to approximately 660 acres. A 5-acre Rowley Salt Marsh parcel was gifted to DFW in conjunction with the DFW purchase of an approximately 23-acre tract in Royalston. Several projects, including a few Salisbury Marsh parcels, were negotiated and developed and will hopefully be acquired in FY 09.

Southeast Wildlife District

Five land protection projects were completed in the Southeast District in FY 08. Two fee projects added 54 acres of rich, wooded wetland to the 230-acre Black Brook WMA in a multi-group effort to protect the entire Black Brook Watershed, a major component of water-quality protection in the Middleboro area. Three CEs rounded out the District's completed land projects.

The new 110-acre Brandt Island Cove WCE is a valuable coastal project completed in conjunction with the Mattapoisett Land Trust at a considerable bargain sale. The 101-acre Town of Hanson CE adds valuable habitat to the 1,860-acre Burrage Pond WMA while insuring compatible public access. This purchase also relieves DFW of any perceived roll-back taxes associated with the original Northland Cranberry acquisition.

In a cooperative effort, the Town of Mashpee acquired the fee interest, and DFG the CE, on an approximately 78-acre parcel in the northerly part of Mashpee. The subject property, a former day camp, abuts the MMR and a small parcel of DFW property, and contains several hundred feet of frontage on Wakeby Pond. It is primarily mature wooded upland with a couple of cleared areas associated with former camp use. The town has rights for day use of the property but no permanent structures are allowed. This parcel will offer recreational opportunities, including fishing, canoeing/kayaking, and perhaps limited hunting.

Southeast FY 08 efforts resulted in the protection of 343 acres at a cost of $967,000.

Land Agents

Peter Milanesi, *Western District*
Bill Steinmetz, *Connecticut Valley District*
Brandon Kibbe, *Central District*
Dennis McNamara, *Northeast District*
Joan Pierce, *Southeast District*

Note: Some property boundaries span two District boundaries; where a letter [(W) for Western, (V) for Connecticut Valley, (C) for Central] appears after a property name in the following tables, it indicates that the numbers listed reflect only the property acreage that falls within that District.

Western Wildlife District

Wildlife Management Areas: 29	**Acres**	**Tract**
Agawam Lake	779.8	254
Becket	239.6	60
Chalet	7,080.3	86
Cummington	194.0	240
Day Mountain	382.4	264
Eugene Moran	1,669.9	91
Farmington River	1,760.3	211
Fisk Meadows	1120.8	88
Fox Den	4,884.6	100
Green River	489.2	125
Hancock	411.0	123
Hinsdale Flats	1,554.3	89
Hiram H. Fox (formerly Canada Hill)	3,381.8	48
Hop Brook	424.8	112
Housatonic Valley	817.9	67
John J. Kelly	267.0	85
Jug End*	1,233.8	191
Knightville	721.0	244
Lilly Pond	349.7	255
Maple Hill	370.1	148
Mount Tekoa	1,422.0	231
Otis	83.5	124
Peru (includes Tracy Pd.)	5,195.9	30 & 113
Powell Brook	368.5	115
Savoy	1,540.8	64
Stafford Hill	1,591.6	56
Taconic Mountain	157.3	232
Three Mile Pond	1,127.1	181
Walnut Hill	812.0	190
	40,435.2	

*Jointly owned and managed with DCR

Wildlife Conservation Easements: 12		
Alford Spring	640.0	269-1
Ashfield	101.0	247-1
Blanford	986.0	249-1,2&3
Chesterfield	491.0	248-1&2
Dalton Fire District	2,754.0	253-1
Huntington	78.0	250-1
Mount Plantain	1,337.4	241
New Marlborough	239.0	246-1
Sandisfield	692.0	245-1,2&3
Tyringham	1,136.0	252-1
Westfield Watershed	2,300.0	312
Wright/Mica Mill	1782.0	243
	12,493.4	

River Access: 5		
Green River (Egremont)	21.5	292
Hoosic River	5.9	213
Housatonic River	129.5	103
Konkopot River	8.8	114
Westfield River (W)	785.0	94
	950.7	

Wildlife Sanctuaries: 2		
E. Howe Forbush	268.0	16
Grace A. Robson	69.5	24
	337.5	

Wildlife District: 1		
District Headquarters	2.1	13

Natural Heritage Areas: 9		
Bullock Ledge	15.5	212
Dolomite Ledges	198.3	227
Fairfield Brook	203.3	226
Hawley	284.7	277
Jug End Fen	38.8	147
Kampoosa Fen	72.0	173
Lanesboro	88.6	233
Nordeen Marsh	22.9	102
Rowe	36.4	310
	960.5	
TOTAL WESTERN DISTRICT	**55,179.4 acres**	

Connecticut Valley Wildlife District

Wildlife Management Areas: 31	**Acres**	**Tract #**
Brewer Brook	214	309
Catamount	413.0	119
Coy Hill (V)	211.6	221
East Mountain	347.9	202
Facing Rock	1,556.1	179
Herman Covey**	1,521.5	49
Honey Pot/Westfield	227.0	174
Lake Warner	94.8	180
Leadmine (V)	344.0	170
Leyden	759.0	200
Millers River (V)	65.84	A62
Montague	1,588.8	118
Montague Plains	1,493.0	234
Mount Esther	191.0	307
Mount Toby	359.5	222
Orange	1,605.2	229
Palmer	1,052.1	178
Pauchaug Brook*	161.3	74
Poland Brook	679.4	70
Satan's Kingdom	1,992.0	107
Shattuck Brook	156.1	293
Southampton	170.6	262
Southwick	254	311
Tully Mountain	1,187.4	225
Tully River (V)	59.0	272
Wales	207.1	172
Warwick	379.0	126
Wendell	585.7	144
Whately	380.7	182
Whately Great Swamp	441.4	235
Williamsburg	88.0	127
	18,786.3	

*WMA and Connecticut River access

**Combination: Hatchery (McLaughlin), WMA, and District HQ

Wildlife Conservation Easements: 3		
Amherst/Pelham ALA	36.9	274
Ludlow Reservoir	1750.0	271
North Quabbin CEs		257
New Salem	59.0	N/A
Tully River	250.0	N/A
	2,095.9	

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

Fish Hatcheries: 4		
Bitzer	150.6	7
McLaughlin (incl. in Herman Covey WMA)		
Reed	301.0	8
Sunderland	47.7	9
	499.3	

Game Farm: 1		
Wilbraham*	137.2	4

*Turned over to Town in FY 99; CE 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	13.4	152
Tully Brook	77.0	177
Ware River (V)	14.0	A63
Westfield River (V)	76.8	111
	416.2	

Pond Access: 4		
Little Alum Pond	0.5	128
Lake Lorraine (PAB/OFBA)	0.3	129
Lake Rohunta	2.5	209
Packard Pond	0.5	306
	3.8	

Fisheries & Wildlife Areas: 1		
Whately Ponds	76.6	294

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	234.1	175
	465.0	
TOTAL VALLEY DISTRICT	**22,504.3**	

Central Wildlife District

Wildlife Management Areas: 41	**Acres**	**Tract #**
Ashby	48.5	134
Bennett	281.2	A77
Birch Hill	3,855.4	50
Bolton Flats	1,177.9	90
Breakneck Brook	1,409.0	158
Coy Hill**	654.2	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	272.4	237
McKinstry Brook	348.3	184
Merrill Pond (System)	803.0	10
Millers River(C)	3,636.4	62
Mine Brook	1,062.5	258
Moose Brook	495.3	132
Moose Hill	567.1	59

Muddy Brook	1,660.4	167
North Brookfield	102.6	278
Oakham	707.6	153
Palmer**	208.0	178
Phillipston	3,486.3	31
Popple Camp	1,161.0	A31
Poutwater Pond (fmly North Street)	378.0	133
Prince River	749.0	113
Quaboag River	1,677.4	55
Quacumquasit	179.9	131
Quisset	635.0	196
Raccoon Hill	645.5	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
Westborough***	894.6	35
Winimusett	670.1	61
Wolf Swamp	913.9	217
	35,118.5	

*Management and control under DFW: 1,673.7 acres;
DFW-owned in fee: 653.1 acres
**Listed and managed under Connecticut Valley District
***467 acres added from a FY 97 DCAM transfer

Wildlife Conservation Easements: 10

Burnshirt River	5.64	160
Carter Pond	280.0	155
Hitchcock Mountain	610.0	305
Hunting Hills	53.7	183
Leadmine Mountain	826.0	295
Moose Brook	125.0	296
North Quabbin CEs		257
Phillipston (Secret Lake)	212.0	N/A
Quabbin Corridor	99.3	301
Tully River	6.6	N/A
Quabbin	28.0	161
Quabbin Corridor(MGLCT/Wilson)	99.3	301
Stillwater River	29.0	162
	2,275.2	

Wildlife Sanctuaries: 2

Susan B. Minns	140.0	20
Watatic Mountain	100.0	25
	240.0	

River Access Areas: 5

Blackstone/West River	28.0	76
Five Mile River (incl. 17-ac CE)	195.5	120
Natty Brook	95.2	220
Quinapoxet River	32.0	66
Seven Mile River	77.0	275
	427.7	

Natural Heritage Areas: 4

Chockalog Swamp	52.5	286
Clinton Bluff NHA	42.0	154
Podunk Marsh	15.0	104
Quag Pond Bog	31.0	197
	140.5	

Marshes: 1

Quinsigamond Marsh	59.0	156

Pond Access: 6

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

Forest: 2

Hamilton	70.0	75
Northboro	88.8	51
	158.8	

TOTAL CENTRAL DISTRICT **38,520.9 acres**

Northeast Wildlife District

Wildlife Management Areas: 11	**Acres**	**Tract #**
Ashby	1,020.0	134
Crane Pond	2,251.6	38
Dunstable Brook	131.6	283
Hunting Hills*	356.4	183
Martin H. Burns	1,554.5	37
Mulpus Brook	177.7	203
Nissitissit River	364.9	71
Pantry Brook	410.9	29
Salisbury Marsh	658.8	279
Squannacook River**	1,166.1	53
William Forward	2,122.5	36&82
	10,215.0	

*Includes 53.7-acre CE in the Central District
**21 acres title vested in DCR

Wildlife Conservation Easements (WCE): 6

Ashby	148.0	280
Groton	127.0	289
Newbury Common Pasture	46.7	304
Pepperell Springs	255.0	285
Surrenden Farms	159.7	299
Throne Hill	177.5	302
	913.9	

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

Fisheries & Wildlife Area: 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	0.2	A52
Long Sought For Pond	1.0	143
	2.1	
Salt Marsh: 1		
North Shore	340.7	47 & 58
River Access: 7		
Concord River	23.6	97
Ipswich River	1.8	204
Nashua River	68.5	110
Sucker Brook	12.0	297
Sudbury River*	139.1	121
Trapfall Brook	45.4	109
Weymouth Back River**	16.4	135
	306.8	

*Held jointly with DCR
**Departmental acquisition

Natural Heritage Area: 4		
Boxboro Station	124.2	188
Eagle Island	5.0	199
Elbow Meadow	210.3	101
Hauk Swamp	55.0	206
	394.5	

TOTAL NORTHEAST DISTRICT 13,002.2 acres

Southeast Wildlife District

Wildlife Management Areas: 21	**Acres**	**Tract #**
Black Brook	283.8	300
Burrage Pond	1,960.7	265
Copicut	3,874.1	141
Church Homestead	163.0	287
Dartmoor Farms	473.0	236
Erwin Wilder	450.0	A83
Frances A. Crane	1,912.8	27
Freetown Swamp	337.0	298
Gosnold	3.5	96
Haskell Swamp	2,866.5	218
Hockomock Swamp	4,454.5	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
	21,745.1	

*NHESP priority area: Departmental taking

Wildlife Conservation Easements: 8		
Acushnet River	30.2	263
Angeline Brook	50.7	273
Brandt Island Cove	109.5	308
Camp Cachalot	789.0	223
Pickerel Cove	78.3	313
Plymouth Pine Hills	188.0	288
Plymouth Town Forest	296.0	303
Santuit Pond	293.0	268
	1,834.7	
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: 6		
Brayton Point	2.2	169
Chase Garden Creek	56.4	205
Eastham	7.4	136
English	191.5	146
Fox Island	87.1	192
South Shore	22.4	69
	367.0	
River Access: 7		
Bread and Cheese Brook	5.2	291
Canoe River	116.6	282
Childs River	0.2	193
Mashpee River	56.5	78
Nemasket River	0.5	122
Quashnet River*	426.0	32
Taunton River	8.9	219
	613.9	

*360 acres of Quashnet held jointly with DCR

Pond/Costal Access: 13		
Agawam Mill Pond	1.7	216
Bakers Pond	1.7	79
Bearse Pond	5.8	72
Clapps Pond	68.4	87
Cooks Pond	3.0	73
Dogfish Bar Beach (OFBA)	2.4	210
Lake Snipatuit	0.5	92
Robbins Pond	1.0	284
Sandy Point	0.2	54
Scorton Creek	5.5	228
Spectacle Pond	0.5	224
Triangle Pond	81.9	256
Wakeby Pond	15.9	242
	188.5	
Military Lands: 7		
Dillingham Lot	37.0	45
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): 1		
	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	**Acres**	**Tract #**
Grassy Pond	59.4	168
Grassy Pond (Dennis)	7.2	230
Harlow/Cooks Pond	53.6	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
	558.4	
TOTAL SOUTHEAST DISTRICT	**41,145.6 acres**	

*Departmental taking

Total Acreage Area by Area Type
(Through FY 08)

Wildlife Management Areas: 133	126,300.1 acres
Wildlife Sanctuaries: 13	1,197.0
Fish Hatcheries: 5	559.3
Game Farms: 3	367.1
River Access: 33	2,715.3
Salt Marsh: 7	707.7
Lake, Pond & Coastal Access: 27	295.6
Fisheries & Wildlife Areas: 5	452.0
NHESP Areas: 33	2,518.9
Conservation Restriction/Easements: 39 (Some CEs are included in W.M.As.)	19,613.1
MA Military Reservation: 1	15,000.0
Other*	626.3
GRAND TOTAL	170,351.4

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

Above figures include Departmental acquisitions.

The protection and management of wildlife lands, the bottom line for wildlife conservation, has always been a top priority of the MDFW, which now owns or has a controlling interest in more than 170,000 acres statewide.

FEDERAL AID PROGRAM ADMINISTRATION

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 to serve as liaison between the grantee and the Region 5 office of the U.S. Fish and Wildlife Service (USFWS) grant administrator for the U.S. Department of the Interior.

Federal Aid in Wildlife Restoration (Pittman-Robertson)

The DFW apportionment of Federal Aid in Wildlife Restoration funds, $3,089,160, was an increase from last year's apportionment. These funds are available for wildlife restoration projects and hunter education. Six projects were reimbursed with these funds: hunter education, wildlife population trends and harvest surveys, waterfowl research and management, wildlife habitat management, program coordination, and land acquisition.

Federal Aid in Sport Fish Restoration

(Dingell-Johnson and Wallop-Breaux)

The State's Federal Aid in Sport Fish Restoration Act apportionment of $3,983,378 represents an increase over last year's apportionment. These funds were divided as follows: The Department of Fish and Game's Office of Fishing and Boating Access (OFBA), which is responsible for constructing and maintaining motorboat access facilities, received $597,506.70 (15%), and the balance of $3,385,871.30 was equally divided between the Division of Marine Fisheries and the DFW ($1,692,935.65 each).

Eight projects were reimbursed with the OFBA and DFW shares of the D-J and W-B funds (a total of $2,290,442.35). The OFBA had four boat accommodation projects in cooperation with the DFW that were active in FY 08, while the DFW had four projects of its own. DFW activities reimbursed under the Sport Fish Restoration program include aquatic resources education, program coordination, hatchery operations, hatchery maintenance, fish distribution, and anadromous fish coordination and technical assistance.

State Wildlife Grant Program (SWG)

The DFW's FY 08 State Wildlife Grant apportionment of $937,316 was an increase from the previous year. The SWG funds were obligated toward five projects. Activities reimbursed under those projects include fish community research, anadromous fish restoration, biodiversity impact review, biodiversity inventory and research, biodiversity conservation mapping and planning, habitat evaluation, and land acquisitions.

SWG funds had also been used in the development of our Comprehensive Wildlife Conservation Strategy (CWCS). In order to establish eligibility for continued SWG funding, the DFW was required to develop a CWCS and submit it to the USFWS by October 1, 2005. Our commitment to develop this CWCS under SWG was submitted and approved on April 10, 2002. The Massachusetts CWCS was submitted on time and has been approved by the National Acceptance Advisory Team. The final version of the document can be found in the "Quick Links" menu of the Wildlife Section on the DFW web page under "Wildlife Action Plan."

The Endangered Species Act (Section 6)

The DFW continues to receive minimal Endangered Species Section 6 funding. Our FY 08 apportionment of $30,000.00 was used to reimburse the Globally Imperiled and Vulnerable Plants project.

Landowner Incentive Program (L.I.P.)

The federal government did not fund the Landowner Incentive Program in FY 08; as a result the DFW received no federal funding for its state program. In FY 07 the DFW had received a combined award of $1,029,510.00 under this highly competitive program, which was a significant increase over the FY 06 award of $180,000.00. The Landowner Incentive Program awards are divided into two tiers. Our FY 07 Tier I apportionment of $180,000.00 was used for project coordination. Our Tier II award, $849,510.00, was used for program implementation. For more detailed information relating to the DFW's FY 08 activities under the Landowner Incentive Program, please see page 29.

Chronic Wasting Disease Surveillance and Management

In FY 08, the DFW received $75,000 in federal assistance through the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service, Veterinary Services for Chronic Wasting Disease Surveillance and Management. The CWD funds are used to fund the DFW's CWD Surveillance and Management Program. For more information relating to DFW's activities under the Chronic Wasting Disease Surveillance and Management Program please see page 23.

Hatchery operationsand fish distribution are among the activities funded in part by the Sport Fish Restoration Program.

Avian Influenza Surveillance and Monitoring

In FY 08, the DFW received $50,000 in federal assistance through the USDA, Wildlife Services for Avian Influenza Monitoring. The funding was used to conduct statewide Avian Influenza surveillance efforts.

Audits

In July 2005, representatives from the U.S. Department of Interior and the USFWS Diversity and Civil Rights Department conducted a Civil Rights Audit of the DFW. These Civil Rights Audits are conducted periodically by the Department of Interior, to monitor agency compliance with various Civil Rights Acts for the agencies that are participating in federal assistance programs. The final audit report was issued in February 2006. In the following fiscal year, the DFW worked on implementing the recommendations in the report and submitted the "Grantees Reaction to the Audit Report" in February 2007. Implementation efforts will continue in the near future.

Other Matters

Additional Federal Aid Coordinator's duties included 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 serving as the liaison between all Federal Aid personnel and the DFW.

Project Personnel

Kristin McCarthy, *Federal Aid Coordinator*

Jessica Lane, *Assistant to the Federal Aid Coordinator*
Debbie McGrath, *Federal Aid Bookkeeper*
John O'Leary, *CWCS Coordinator and Landowner Incentive Program Supervisor*
Tracy Grazia, *Landowner Incentive Program Coordinator*
Marianne Piche, *Landowner Incentive Program Assistant*

MAINTENANCE & DEVELOPMENT

Gary Zima
Senior Planner

The DFW continues to place a high priority on maintaining and upgrading its facilities. Infrastructure improvements for FY 08 encompassed the completion of two projects at the Westborough Field Headquarters complex. One project, which began in FY 07, involved extensive re-pointing and waterproofing of the exterior brickwork and the foundation walls of the Richard Cronin Building. As part of this project, all the metal fire escapes were stripped and repainted. The other project involved interior construction in the area that houses Natural Heritage and Endangered Species Program staff: two offices were remodeled and one additional office was constructed.

Major equipment purchases for the DFW in FY 08 focused on the upgrading of vehicles.

Heavy Duty Trucks: Four of the District stocking trucks were replaced with new Ford F-550 flat-bed trucks.

Standard Trucks: The DFW replaced a total of 16 pickup trucks with new Ford F-150 and F-250 4X4 trucks. The five District offices each received two trucks and the remaining six trucks are based at the Westborough Field Headquarters.

Cars: The Division chose to follow the EEA's "Leading by Example" program and replaced four of its older sedans with four Toyota Prius vehicles, which are all held on leases. The DFW anticipates upgrading with additional fuel-efficient vehicles for its fleet in the near future.

One of the new Toyota Prius vehicles.

Administrative Staff

Gary Zima, *Senior Planner*

Bruce Walker, *Facilities Maintenance Specialist*

LEGISLATIVE REPORT

Jack Buckley
Deputy Director & Legislative Liaison

Chapter 83 Acts of 2007, Approved August 7, 2007

AN ACT PROHIBITING INTERNET HUNTING

Summary:

The legislation prohibits the use of a computer or any other device, equipment, software or technology, to remotely control the aiming and discharge of any weapon including, but not limited to, any firearm, bow and arrow, spear, slingshot, harpoon or any other projectile device or any other weapon capable of killing or capable of inflicting injury capable of killing any bird, mammal, reptile or fish. The legislation also provides for penalties for participating in this activity.

Chapter 114 Acts of 2008, Approved May 28, 2008

AN ACT RELATIVE TO OCEANS

Summary:

The legislation establishes a comprehensive framework and planning process for the management of the Commonwealth's marine environment.

Chapter 163 Acts of 2008, Approved June 30, 2008

AN ACT AUTHORIZING THE CITY OF WESTFIELD TO CONVEY A CONSERVATIONS RESTRICTION TO THE DEPARTMENT OF FISH AND GAME

Summary:

Authorizes the conveyance of a conservation restriction of 2,300 acres in the town of Montgomery which will become an addition to the Mount Teoka Wildlife Management Area.

Chapter 165, Acts of 2008, Approved June 30, 2008

AN ACT AUTHORIZING THE TOWN OF HANSON TO CONVEY A CONSERVATION RESTRICTION TO THE DEPARTMENT OF FISH AND GAME

Summary:

Authorizes the conveyance of a conservation restriction of 100 acres in the town of Hanson which will become an addition to the Burrage Pond Wildlife Management Area.

PERSONNEL REPORT

Peter Burke
Personnel Officer

New Hires

Name	Title	Date	Comments
Pollock, James	EDP Systems Analyst I	09/09/07	
Manzer, David L.	Receiving Teller I	09/23/07	
Murphy, Kerry A.	Receiving Teller I	09/30/07	
Morris-Siegel, Jacob	Wildlife Technician I	11/04/07	
Cooke, Laura L.	Administrative Assistant I	11/13/07	
Olanyk, Todd	Game Biologist I	12/02/07	
Drudi, Travis	Wildlife Technician I	03/09/08	
Garofoli, John	Wildlife Technician I	03/31/08	
Hanecak, Heather	Wildlife Technician I	03/31/08	
Pecorelli, Richard	Wildlife Technician I	03/31/08	
Hajduk, Laura	Game Biologist III	03/31/08	
Christensen, Sonja	Game Biologist III	03/31/08	
Davis, Jeremy R.	Wildlife Technician I	06/22/08	
Coman, Amy	Researcher	09/16/07	
Dolan, Karen	Program Coordinator	09/16/07	
Holt, Emily	Researcher	09/16/07	
Black, Kristin	Scientist	10/14/07	
Garrett, Jennifer	Scientist	12/26/07	
Maier, Sarah	Researcher	01/20/08	
Justham, Kimberley	Researcher	01/20/08	
Grazia, Tracy	Scientist	03/09/08	
Piche, Marianne	Scientist	03/09/08	
Audra V. Valaitis	Scientist	04/01/08	
Molly Sullivan	Contracted Student Intern	04/01/08	
Jenny Cunningham	Scientist	04/01/08	
Katherine Blake	Scientist	04/01/08	
Ezra Lencer	Scientist	04/01/08	
Sarah Luecke	Scientist	04/01/08	
Wendy Van Dyke	Reseaecher	04/01/08	
Nicole French	Researcher	04/01/08	
Derek McDermott	Contracted Seasonal Employee	04/01/08	
Christopher Knox	Contracted Seasonal Employee	04/01/08	
David Flynn	Contracted Seasonal Employee	04/01/08	
Timothy Harder	Contracted Seasonal Employee	04/01/08	
Christopher Manhard	Contracted Seasonal Employee	04/01/08	
Patrick Durkan	Contracted Seasonal Employee	04/01/08	
Eibin, Abigail	Contracted Student Intern	05/18/08	
Maikath, Tyler A.	Researcher	05/18/08	
Mazzei, Benjanin	Program Coordinator	06/10/08	

Promotions

Name	Title	Date	Comments
Manty, Jessi	Wildlife Technician II	03/02/08	from pos # 15872
Schluter, Everose	Conservation Biologist II	11/26/07	from pos # 142031

Transfers

Name	Title	Date	Comments
Haggerty, Sarah	Conservation Biologist II	9/23/2007	from Pos # 193747
Norris, Alicia J.	Researcher	7/1/2007	

Reallocations

Name	Title	Date	Comments
Huckery, Patricia	District Fish & Game Supervisor	01/06/08	2 Grade increase
Davis William	District Fish & Game Supervisor	01/06/08	2 Grade increase
Madden, Andrew	District Fish & Game Supervisor	01/06/08	2 Grade increase
Taylor, Ralph	District Fish & Game Supervisor	01/06/08	2 Grade increase
Zimmer, Jason	District Fish & Game Supervisor	01/06/08	2 Grade increase
Langlois, Susan	Game Biologist IV	01/08/08	2 Grade increase
Woolsey, Henry	Conservation Biologist IV	01/08/08	1 grade increase
Regosin, Jonathan	Conservation Biologist IV	01/08/08	2 Grade increase
Simmons, Kenneth	Aquatic Biologist IV	01/08/08	2 Grade increase
Scanlon, John	Game Biologist IV	01/08/08	2 Grade increase

Terminations

Name	Title	Date	Comments
Quigley, Pamela	Receiving Teller I	07/07/07	
Mauntler, Neil	Game Biologist I	07/14/07	
Currier, Amy	Widllife Technician I	09/01/07	
Guertin, Darren A	Wildlife Technician I	10/272007	
Dumont, Michael W.V.	Wildlife Technician I	10/29/07	
Nichols, Rachel	Wildlife Technician I	11/19/07	
Somers, Paul	Conservation Biologist III	11/23/07	Retired
Early, Thomas	Game Biologist II	03/31/08	Retired
Kittredge, Ann	Game Biologist II	04/25/08	Retired
Wooley, Tara	Wildlife Technician I	05/02/08	Transfer to DLE
Baker, Charles	Contracted Seasonal Employee	07/07/07	
Addison, Lindsay	Researcher	07/14/07	
Blake, Katherine	Researcher	07/14/07	
Flieger, Lindsay	Contracted Student Intern	07/14/07	
Lawson, Sarah	Contracted Seasonal Employee	07/21/07	
Chaplin, Robert	Contracted Seasonal Employee	07/21/07	
Stevens, Deborah	Program Coordinator	07/28/07	
Sabourin, Melanie	Scientist	07/28/07	
Ebel, Jonathan	Contracted Student Intern	08/18/07	
Cunningham, Jenny	Researcher	08/18/07	
Houghton, Winslow	Scientist	08/18/07	
Luecke, Sarah	Scientist	09/15/07	
Knox, Christopher	Contracted Seasonal Employee	09/29/07	
Morris-Siegel, Jacob	Contracted Seasonal Employee	09/29/07	
Perlberg, Jay A.	Contracted Seasonal Employee	09/29/07	
MacKenzie. Kenneth	Scientist	10/22/07	
Schluter, Everose	Scientist	11/24/07	
Liske-Clark, Jill	Program Coordinator	02/02/08	
Cullina, Melissa	Scientist	06/30/08	

Part Time Employees

Name	Title	Hours	Comments
Cavaliere, Mary	Accountant I	28.50	
Durand, Jill	Clerk III	22.50	
Hew. Lillian	Accountant I	6.25	
Sienczyk, Elizabeth	Administrative Services Coordinator	22.50	
Huguenin, Tara	Conservation Biologist I	27.00	
MacAdams, Priscilla	Clerk III	28.00	

Work Hour Changes

Name	Title	Date	Comments
Huguenin, Tara	Conservation Biologist I	1/6/2008	
MacAdams, Priscilla	Clerk III	6/30/2008	

Work Out of Grade

Name	Title	Date	Comments
Peter Mirick	Game Biologist III	9/18/2007 to 11/3/2007	Paid as PM V

FINANCIAL REPORT

Administrative Staff
Jessica Patalano, *Chief Financial Officer*

Procurement and Payables
Yunus Khalifa, *Purchasing Coordinator*
Kerry Meagher, *Contract Coordinator*
Laura Cooke
Gail Gibson
Lillian Hew
Kathleen Plett
Betty Sienczyk

Revenue
Robert Oliver, *Revenue Coordinator*
Mary Cavaliere
Carl Lui
David Manzer
Kerry Murphy

Permits
Robert Arini

Information Technology
Rick Kennedy
Robert Morley
James Pollock

How the Sportsmen's Dollar Was Spent

Inland Fish and Game Fund

July 1, 2007 to June 30, 2008

PROGRAMS/ASSESSMENTS	EXPENDITURES	PERCENTAGES
Administration:		
Administration	$1,438,712.71	
Information-Education	$679,486.90	16%
Total	**$2,118,199.61**	
Fisheries and Wildlife Programs:		
Hatcheries	$1,504,961.01	
Upland Game Bird Program	$381,270.24	
Seasonals	$57,690.26	52%
Cooperative Units	$100,500.00	
Fisheries and Wildlife Management	$4,782,647.03	
Total	**$6,827,068.54**	
Other Programs:		
Land Acquisitions	$1,367,922.72	
Waterfowl Management Program	$41,718.85	14%
Hunter Safety Program	$387,162.36	
Total	**$1,796,803.93**	
Other Assessments:		
Group Insurance and Other Fringe Benefits	$2,304,934.84	18%
Total	**$2,304,934.84**	
TOTAL EXPENDITURES	**$13,047,006.92**	

Summary
Revenues, Expenditures and Fund Equity
Natural Heritage & Endangered Species Fund
July 1, 2007 to June 30, 2008

REVENUES	
Natural Heritage and Endangered Species Tax Checkoff Donations	$203,308.72
Sales	$29,547.10
Federal Aid Reimbursements	$36,769.00
Massachusetts Endangered Species Act Fees	$557,413.60
Contracts	$64,655.00
Direct Donations	$18,018.78
Interest	$21,504.41
TOTAL REVENUES:	***$931,216.61***
***EXPENDITURES**	
Natural Heritage and Endangered Species Program	$1,195,914.03
Tern Restoration	$181,431.51
Wildlife Habitat Incentive Program	$34,775.50
State Wildlife Grant Program	$5,525.96
Housatonic Natural Resource Damages	$49,658.98
TOTAL EXPENDITURES:	***$1,467,305.98***
TOTAL FUND EQUITY:	***$1,509,774.46***

*100% of total expenditures charged to Natural Heritage Fund for FY2008

Other Funds and Programs
Expenditures Division Wide
July 1, 2007 to June 30, 2008

CAPITAL OUTLAY FUNDS:	
Land Protection	$73,937.61
Heritage Mapping for Biodiversity	$244,189.30
Forest Certification	$100,000.00
Upland Habitat Management	$176,566.31
Staffing for Land and Infrastructure Programs	$631,894.90
Hatchery/District/Westborough Field Headquarters Repairs	$502,485.03
TOTAL CAPITAL EXPENDITURES	***$1,729,073.15***
Interdepartmental Service Agreements with Department of Conservation and Recreation:	
Resource Management Plan	$31,117.33
Rare Species Planning and Identification	$48,818.29
Conservation Management Practices	$17,764.73
TOTAL ISA EXPENDITURES	***$97,700.35***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2007 to June 30, 2008

DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$4,959,020.03
Archery Stamps	$140,791.70
Primitive Firearm Stamps	$158,157.20
Waterfowl Stamps, Administration	$10,920.75
Waterfowl Stamps, Ducks Unlimited	$11,552.00
Waterfowl Stamps, Other	$34,656.00
Wildlands Stamps	$963,635.00
Trap Registrations	$1,150.00
Antlerless Deer Permits	$185,630.00
Bear Permits	$32,625.00
Turkey Permits	$81,735.00
Special Licenses,Tags and Posters	$51,716.00
Magazine Subscriptions	$95,102.41
Sales,Other	$66,527.47
Fines and Penalties	$18,312.50
Rents	$35,672.65
Prior Year Refunds	$26,763.00
Miscellaneous Income	$16,379.37
PAC	
NSF Charge/Debt. Collection	$1,370.00
Total	**$6,891,716.08**
FEDERAL AID REIMBURSEMENTS;	
Dingell-Johnson (Fisheries)	$486,234.88
Pittman-Robertson (Wildlife)	$740,157.17
Indirect Cost Reimbursements	$563,906.15
Total	**$1,790,298.20**
TAXES;	
Gasoline Tax Apportionment	$894,410.88
OTHER FINANCIAL SOURCES;	
Reimbursement for Half-Price Licenses	$117,030.00
Investment Earnings	$43,533.36
Total	**$160,563.36**
TOTAL REVENUE	***$9,736,988.52***
FUND EQUITY AS OF JUNE 30, 2008	**$10,099,833.60**

License and Stamp Sales

July 1, 2007 to June 30, 2008

Code	Type of License	Unit Cost	Quantity	Amount
F1	Resident Citizen Fishing	22.50	112,467	2,530,507.50
F2	Resident Citizen Minor Fishing	6.50	5,737	37,290.50
F3	Resident Citizen Fishing (Age 65-69)	11.25	4,842	54,472.50
F4	Resident Cit. Fishing (Over 70, etc.)	FREE	12,238	0.00
F6	Non-Res. Citizen/Alien Fishing	32.50	7,836	254,670.00
F7	Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,244	41,514.00
F8	Resident Fishing (3 day)	7.50	1,179	8,842.50
F9	Non-Resident (Citizen) Minor Fishing	6.50	323	2,099.50
DF	Duplicate Fishing	2.50	441	1,102.50
	Quabbin 1-Day Fishing	5.00	3,896	19,480.00
T1	Resident Citizen Trapping	30.50	249	7,594.50
T2	Resident Citizen Minor Trapping	6.50	8	52.00
T3	Resident Citizen Trapping (Age 65-69)	15.25	22	335.50
DT	Duplicate Trapping	2.50	6	15.00
H1	Resident Citizen Hunting	22.50	18,118	407,655.00
H2	Resident Citizen Hunting (Age 65-69)	11.25	786	8,842.50
H3	Resident Citizen Hunting (Paraplegics)	FREE	246	0.00
H4	Resident Alien Hunting	22.50	42	945.00
H5	Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,330	220,185.00
H6	Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	920	55,660.00
H8	Resident (Citizen) Minor Hunting	6.50	1,281	8,326.50
DH	Duplicate Hunting	2.50	253	632.50
S1	Resident Citizen Sporting	40.00	31,796	1,271,840.00
S2	Resident Citizen Sporting (Age 65-69)	20.00	2,668	53,360.00
S3	Resident Citizen Sporting (Over 70)	FREE	8,772	0.00
DS	Duplicate Sporting	2.50	685	1,712.50
	TOTAL LICENSE SALES (GROSS)		***219,385***	***4,987,135.00***
	Current Year Stamp Sales			
M1	Archery Stamps	5.10	27,649	141,009.90
M3	Primitive Firearm Stamps	5.10	31,080	158,508.00
W1	Wildlands Stamps	5.00	178,453	892,265.00
W2	Non-Resident Wildlands Stamps	5.00	13,653	68,265.00
M2	Waterfowl Stamps, Administration	Var.	10,607	10,607.00
M2	Waterfowl Stamps, Ducks Unlimited	1.00		10,607.00
M2	Waterfowl Stamps, Other	3.00		31,821.00
	TOTAL STAMP SALES (GROSS)		***261,442***	***1,313,082.90***
	Previous Years Stamp Sales			
M1	Archery Stamps		75	475.90
M3	Primitive Firearm Stamps		76	525.00
M2	Waterfowl Stamps, Administration	Var.	945	1091.50
M2	Waterfowl Stamps, Ducks Unlimited	1.00		945.00
M2	Waterfowl Stamps, Other	3.00		2835.00
	TOTAL STAMP SALES (GROSS)		***1,096***	***5,872.40***
	Fees Retained and Adjustments by Clerks			(27,148.62)
	Refunds			(209.00)
	TOTAL			**(27,357.62)**
	TOTAL LICENSE/STAMP SALES (NET)			***6,278,732.68***

APPENDIX I

FY 08 STREAM SURVEY SAMPLE SITES

(Note: UNT = Unamed Tributary)

Watershed	Waterbody Name	Date	Sample ID	Saris/Palis	Town
Bashbish					
	Guilder Brook	7/26/2007	2236	1302900	Mt. Washington
Blackstone					
	Arnolds Brook	7/12/2007	2319	5131150	Bellingham
	Blackstone River	7/12/2007	2383	5131000	Grafton
	Blackstone River	7/12/2007	2384	5131000	Worcester
	Blackstone River	7/13/2007	2391	5131000	Northbridge
	Blackstone River	7/13/2007	2214	5131000	Millbury
	Blackstone River	7/17/2007	2382	5131000	Uxbridge
	Blackstone River	7/17/2007	2213	5131000	Northbridge
	Blackstone River	8/3/2007	2212	5131000	Blackstone
	Blackstone River	8/3/2007	2211	5131000	Uxbridge
	Cold Spring Brook	8/14/2007	2416	5132650	Sutton
	Laurel Brook	8/14/2007	2395	5131775	Uxbridge
	Mumford River	8/14/2007	2316	5132050	Douglas
	UNT to Sewall Pond	9/13/2007	2413	5132605	Boylston
	Wellman Brook	8/7/2007	2389	5132250	East Douglad
Buzzards Bay					
	Boiling Spring Brook	7/20/2007	2366	9560026	Westport
	Doggett Brook	9/4/2007	2357	9559050	Rochester
	Dunhams Brook	7/20/2007	2359	9559975	Westport
	Dunhams Brook	7/20/2007	2358	9559975	Westport
	Simon Brook	7/13/2007	2317	9560250	Westport
	Snell Creek	7/13/2007	2267	9560075	Westport
Cape Cod					
	Herring River	7/10/2007	2352	9662150	Harwich
	Stony Brook	7/10/2007	2266	9661350	Brewster
Charles					
	UNT to Rosemary Lake	7/16/2007	2153	7239345	Needham
Chicopee					
	Bell Brook	7/27/2007	2177	3627875	Oakham
	Bell Brook	9/18/2007	2414	3627875	S. Barre
	Burrow Brook	7/27/2007	2175	3627850	Oakham
	Burrow Brook	9/18/2007	2398	3627850	Barre
	Cadwell Creek	7/26/2007	2123	3626575	Pelham
	Canterbury Brook	7/30/2007	2181	3627625	Hardwick
	Caruth Brook	7/23/2007	2119	3626375	Paxton
	Danforth Brook	7/30/2007	2303	3627650	Hardwick
	Demond Pond Brook (UNT to Demond Pond)	7/23/2007	2118	3628180	Rutland
	Elwell Brook	7/30/2007	2307	3627600	Hardwick
	Galloway Brook	7/3/2007	2417	3627950	Barre
	Galloway Brook	7/27/2007	2176	3627950	Barre
	Harris Brook	7/24/2007	2105	3625125	Ludlow
	Joslin Brook	7/23/2007	2295	3628225	Hubbardston
	Joslin Brook	8/21/2007	2393	3628225	Hubbardston
	Mason Brook	7/23/2007	2297	3628200	Hubbardston
	Minechaug Brook	7/24/2007	2108	3625150	Ludlow
	Moosehorn Brook	7/25/2007	2120	3627050	New Salem
	Newton Brook	7/30/2007	2174	3627575	Hardwick
	Pepper Mill Brook (UNT to Beaver Br)	7/26/2007	2122	3627480	Ware

Watershed	Waterbody Name	Date	Sample ID	Saris/Palis	Town
	Pommogussett Brook	7/23/2007	2117	3628350	Rutland
	Pudding Mill Brook (UNT to Jabish Br)	7/26/2007	2103	3626560	Belchertown
	Trout Brook	8/13/2007	2412	3626150	Brookfield
	Trout Brook	8/28/2007	2392	3626150	Brookfield
	UNT to Brooks Pond	7/23/2007	2116	3626460	Spencer
	UNT to Cranberry River	8/28/2007	2215	3626305	Spencer
	UNT to Danforth Brook	7/27/2007	2311	3627680	Hardwick
	UNT to Foskett Mill Stream	7/26/2007	2298	3625551	Monson/Brimfield
	UNT to Higher Brook	7/24/2007	2106	3625130	Ludlow
	UNT to Jabish Brook	7/26/2007	2293	3626556	Belchertown
	UNT to Jabish Brook	7/26/2007	2121	3626555	Belchertown
	UNT to Jabish Brook	7/26/2007	2104	3626557	Belchertown
	UNT to Moosehorn Brook	7/25/2007	2294	3627080	New Salem
	UNT to Prince River	7/27/2007	2308	3628005	Petersham/Phillipston
	UNT to Quaboag River	7/26/2007	2300	3625455	Palmer
	UNT to Sevenmile River	7/23/2007	2296	3626390	Oakham/Spencer
	UNT to Turkey Hill Brook	7/23/2007	2291	3626379	Paxton
	UNT to Ware River	7/26/2007	2102	3627410	Palmer
	UNT to Ware River	7/26/2007	2299	3627445	Ware/Palmer
	UNT to Ware River	7/27/2007	2309	3628006	Barre
	UNT to Ware River	7/27/2007	2178	3627890	Barre
	UNT to WB Swift River	7/25/2007	2301	3626855	Shutesbury/Wendell
	UNT to WB Ware River	7/27/2007	2182	3628185	Hubbardston
	UNT to Winimusset Brook	7/30/2007	2180	3627765	New Braintree
	Ware River	8/30/2007	2401	3626500	S. Barre
	Ware River	8/30/2007	2418	3626500	Ware, Hardwick
	Ware River	9/6/2007	2330	3626500	So. Barre
	West Wachusett Brook	7/19/2007	2390	3628375	Princeton
	West Wachusett Brook	7/19/2007	2288	3628375	Princeton
	Winimusset Brook	7/3/2007	2167	3627750	New Braintree
	Winimusset Brook	7/3/2007	2386	3627750	New Braintree
	Winimusset Brook	7/30/2007	2179	3627750	New Braintree
Concord					
	Angelica Brook	7/17/2007	2152	8248225	Southborough
	Beaverdam Brook	7/16/2007	2154	8248075	Framingham
	Cold Spring Brook	7/17/2007	2159	8248375	Hopkinton
	Course Brook	7/16/2007	2158	8248050	Framingham
	Fort Pond Brook	7/13/2007	2157	8246850	Acton
	Fort Pond Brook	7/13/2007	2155	8246850	Acton
	Hop Brook	7/17/2007	2156	8247825	Sudbury
	Hop Brook	7/17/2007	2160	8247825	Sudbury
Connecticut					
	Beaver Brook	7/20/2007	2112	3418975	Williamsburg
	Beaver Meadow Brook	7/16/2007	2145	3421025	Leyden
	Bloody Brook	7/17/2007	2140	3420150	South Deerfield
	Bloody Brook	8/13/2007	2419	3420150	Deerfield
	Bradford Brook	7/20/2007	2110	3419175	Ashfield
	Cow Bridge Brook	7/17/2007	2147	3420300	Hatfield
	Esther Brook	7/18/2007	2149	3420100	Whately
	Esther Brook	8/28/2007	2405	3420100	Whately
	Fall River	8/3/2007	2070	3420925	Bernardston
	Fall River	9/7/2007	2085	3420925	Bernardston
	fourmile Brook	8/6/2007	2069	3421075	Northfield
	Grass Hill Brook	7/20/2007	2114	3419000	Williamsburg
	Great Swamp Brook	7/18/2007	2302	3420075	Whately
	Great Swamp Brook	8/28/2007	2326	3420075	Whately
	Manhan River (N.B.)	9/5/2007	2086	3418400	Westhampton
	Manhan River (N.B.)	9/5/2007	2087	3418400	Westhampton
	Mill Brook (2)	8/6/2007	2068	3421450	Northfield
	Mill River (1)	8/7/2007	2075	3418825	Williamsburg
	Mill River (2)	8/16/2007	2406	3419825	Hatfield
	Mill River (2)	8/16/2007	2404	3419825	Deerfield
	Mill River (2)	8/16/2007	2408	3419825	Whately

Watershed	Waterbody Name	Date	Sample ID	Saris/Palis	Town
	Mill River (E.B.)	8/7/2007	2078	3419150	Williamsburg
	Mill River (S.B.)	7/19/2007	2124	3417650	E. Longmeadow
	Mill River (W.B.)	8/7/2007	2077	3419225	Williamsburg
	Mohawk Brook	7/17/2007	2148	3420400	Sunderland
	Muddy Brook	7/19/2007	2292	3417975	Granby
	Potash Brook	7/20/2007	2115	3419050	Williamsburg
	Roaring Brook	8/30/2007	2410	3420125	Whately
	Roaring Brook	8/30/2007	2422	3420125	Conway
	Roaring Brook	8/30/2007	2221	3420125	Conway
	Rogers Brook	7/20/2007	2111	3419375	Goshen
	Rogers Brook	8/7/2007	2076	3419375	8/7/07
	Sawmill river	9/4/2007	2082	3420550	Montague
	Sawmill river	9/4/2007	2081	3420550	Leverett
	Shattuck Brook	8/3/2007	2071	3421000	Bernardston
	Sodom Brook	9/5/2007	2088	3418450	Westhampton
	Sugarloaf Brook	7/17/2007	2305	3420450	South Deerfield
	UNT to Batchelor Brook	7/19/2007	2125	3418030	Granby
	UNT to Bloody Brook	8/13/2007	2420	3420152	Deerfield
	UNT to Dry Brook	7/16/2007	2146	3421160	Gill
	UNT to Parsons Brook	7/25/2007	2107	3418360	Northampton
Deerfield					
	Albee Brook	9/19/2007	2198	3315125	Charlemont
	Allen Brook	7/30/2007	2403	3313125	Greenfield
	Bear River	8/21/2007	2030	3313950	Conway
	Bear Swamp Outflow	8/23/2007	2260	3316265	Rowe
	Bozrah Brook	9/27/2007	2207	3315325	Hawley
	Burton Brook	9/26/2007	2191	3314725	Heath
	Cascade Brook	7/29/2007	2261	3316325	Florida
	Cherry Rum Brook	7/31/2007	2183	3313050	Greenfield
	Chickley River	8/1/2007	2064	3315425	Hawley
	Chickley River	8/1/2007	2066	3315425	Hawley
	Clark Brook	9/19/2007	2196	3314775	Buckland
	Clesson Brook	7/16/2007	2253	3314750	Buckland
	Cold River	8/27/2007	2037	3315675	Charlemont
	Cold River	8/27/2007	2038	3315675	Conway
	Creamery Brook	9/19/2007	2195	3313825	Ashfield
	East Oxbow Brook	9/27/2007	2189	3314925	Charlemont
	Fife Brook	7/31/2007	2262	3316350	Florida
	First Brook	9/19/2007	2197	3315050	Buckland
	Green River	8/13/2007	2054	3312925	Colrain
	Green River	8/13/2007	2052	3312925	Colrain
	Green River	8/13/2007	2056	3312925	Guilford, VT
	Green River	9/20/2007	2200	3316025	Florida
	Haley Brook	8/3/2007	2263	3316450	Monroe
	Haley Brook	9/21/2007	2206	3316450	Monroe
	Hartwell Brook	7/31/2007	2188	3315075	Charlemont
	Hawks Brook	9/19/2007	2310	3313625	Deerfield
	Hawks Brook	9/27/2007	2193	3315350	Hawley
	Heath Brook	9/27/2007	2190	3315275	Heath
	Hinsdale Brook	8/6/2007	2079	3313175	Shelburne
	Hinsdale Brook	8/6/2007	2073	3313175	Shelburne
	Hog Hollow Brook	7/16/2007	2254	3314776	Buckland
	King Brook	8/20/2007	2257	3315525	Hawley
	Manning Brook	7/9/2007	2264	3315775	Florida
	Manning Brook	9/21/2007	2205	3315775	Florida
	Maxwell Brook	8/2/2007	2067	3315200	Charlemont
	Mill Brook (2)	8/2/2007	2065	3315175	Charlemont
	Mill Brook(3)	8/1/2007	2063	3315450	Hawley
	North River	8/27/2007	2046	3314100	Colrain
	North River (E. B.)	8/15/2007	2094	3314275	Jacksonville, VT
	North River (E. B.)	8/15/2007	2092	3314275	Colrain
	Pelham Brook	8/2/2007	2072	3316075	Rowe
	Phelps Brook	9/27/2007	2192	3316525	Monroe
	Poland Brook	8/21/2007	2033	3313750	Conway

Watershed	Waterbody Name	Date	Sample ID	Saris/Palis	Town
	Poland Brook	8/21/2007	2032	3313750	Conway
	Punch Brook	7/30/2007	2409	3313150	Greenfield
	Punch Brook	7/30/2007	2222	3313150	Greenfield
	Reed Brook	9/20/2007	2201	3316275	Florida
	Rice Brook	8/8/2007	2258	3316175	Rowe
	Ross Brook	9/21/2007	2203	3315850	Savoy
	Smead Brook	7/31/2007	2184	3313000	Greenfield
	South River	9/7/2007	2083	3313650	Ashfield
	South River	9/7/2007	2084	3313650	Conway
	Tatro Brook	7/31/2007	2256	3315225	Rowe
	Tower Brook	9/21/2007	2204	3315950	Florida
	Tuttle Brook	8/8/2007	2259	3316250	Rowe
	UNT to Creamery Brook	7/31/2007	2186	3313840	Ashfield
	Upper Branch	7/31/2007	2187	3314825	Ashfield
	Vincent Brook	8/16/2007	2096	3314550	Colrain
	West Branch Brook	8/16/2007	2093	3314600	Heath
	West Branch North River	8/16/2007	2091	3314375	Colrain
	Wheatherby Brook	8/20/2007	2255	3315150	Charlemont
	Wheeler Brook	7/31/2007	2185	3312975	Greenfield
	Whitcomb Brook	9/20/2007	2202	3316300	Florida
Farmington					
	Potash Brook	9/25/2007	2272	3107750	Granville
	Sandy Brook	8/9/2007	2244	3106875	Sandisfield
	Taylor Brook	8/6/2007	2243	3107000	Tolland
	Thorp Brook	8/9/2007	2245	3107050	Sandisfield
French					
	Browns Brook	8/7/2007	2290	4230250	Webster
Hoosic					
	East Branch Green River	8/7/2007	2228	1100800	New Ashford
	Gore Brook	7/27/2007	2232	1101625	Cheshire
	Green River (W.B.)	9/7/2007	2325	1100725	Williamstown
	Hoosic River (N.B.)	8/27/2007	2313	1100925	Clarksburg
	Hoosic River (N.B.)	8/28/2007	2234	1100925	Clarksburg
	Hoosic River (N.B.)	8/28/2007	2233	1100925	Clarksburg
	Hoosic River (N.B.)	8/29/2007	2235	1100925	Clarksburg
	Hopper Brook	7/10/2007	2231	1100675	Williamstown
	Hudson Brook	8/15/2007	2229	1101000	Clarksburg
Housatonic					
	Alford Brook	8/1/2007	2237	2104025	Alford
	Konkapot Brook	8/21/2007	2239	2104400	Stockbridge
	Parker Brook	8/2/2007	2242	2105825	Pittsfield
	Scribner Brook	8/1/2007	2238	2104075	Alford
	UNT to Hop Brook	8/31/2007	2240	2104690	Tyringham
	UNT to Town Brook	7/27/2007	2230	2106010	Lanesboro
	West Branch Housatonic River	8/21/2007	2241	2105775	Pittsfield
Ipswich					
	Bear Meadow Brook	7/19/2007	2151	9254050	Reading
	UNT to Fish Brook	8/9/2007	2286	9253855	Boxford
	UNT to Mosquito Brook	8/9/2007	2283	9253890	North Andover
	UNT to Skug River	8/9/2007	2285	9254035	Andover
	UNT to Skug River	8/9/2007	2284	9254030	North Reading
Millers					
	Collar Brook	7/11/2007	2134	3523200	Royalston
	Crow Hill Brook	7/12/2007	2132	3523900	Templeton
	Dunn Brook	7/12/2007	2133	3523725	Phillipston
	Fish Brook	8/15/2007	2400	3523225	Orange
	Gulf Brook	7/11/2007	2135	3523500	Athol
	Kendall Brook	7/12/2007	2131	3523675	Phllipston
	Lyons Brook	7/13/2007	2142	3522175	Montague/Wendell
	Mellen Brook	7/11/2007	2136	3523910	Winchendon
	Mellen Brook	7/11/2007	2304	3523910	Winchendon
	Mill Brook	7/12/2007	2138	3523125	Athol
	Mill Brook	7/12/2007	2306	3523125	Phillipston
	Mormon Hollow Brook	7/13/2007	2143	3522225	Wendell

Watershed	Waterbody Name	Date	Sample ID	Saris/Palis	Town
	Nelson Brook	7/12/2007	2137	3522925	Petersham
	North Pond Brook	8/1/2007	2224	3522700	Orange
	Orcutt Brook	7/13/2007	2139	3522575	Warwick
	Osgood Brook	8/9/2007	2407	3522425	Wendell
	Tully Brook	7/11/2007	2100	3523425	Royalston
	Tully River (E.B.)	7/16/2007	2128	3523275	Athol/Orange
	Tully River (E.B.)	8/15/2007	2397	3523275	Royalston
	UNT to Willow Brook	9/19/2007	2194	3522960	New Salem
	Whetstone Brook	7/13/2007	2141	3522450	Wendell
	Whetstone Brook	8/9/2007	2225	3522450	Wendell
	Whetstone Brook	8/9/2007	2320	3522450	Wendell
Mt.Hope/Narrag					
	Clear Run Brook	7/19/2007	2365	5334150	Seekonk
	Fullers Brook	7/17/2007	2364	5334175	Rehoboth
Nashua					
	Bolton Brook (UNT to Wyman Pd)	7/9/2007	2289	8145061	Westminster
	Bolton Brook (UNT to Wyman Pd)	7/9/2007	2385	8145061	Westminster
	Carlson Brook (UNT to Whitman R)	7/26/2007	2380	8145080	Westminster
	Gates Brook	9/17/2007	2162	8145250	W. Boylston
	Gulf Brook	8/31/2007	2169	8143675	Pepperell
	Gulf Brook	9/5/2007	2170	8143675	Pepperell
	Lemerise Brook (UNT to Whitman R)	7/26/2007	2415	8145081	Westminster
	Lemerise Brook (UNT to Whitman R)	7/31/2007	2396	8145081	Westminster
	Mine Brook	9/5/2007	2287	8143600	Pepperell
	Monoosnuc Brook	9/13/2007	2216	8144825	Leominster
	Nashua River - North Branch	8/9/2007	2387	8144650	Fitchburg
	Nashua River - North Branch	8/9/2007	2388	8144650	Fitchburg
	Ponakin Brook	8/28/2007	2168	8144675	Devens
	Ponakin Brook	8/28/2007	2374	8144675	Devens
	Ponakin Brook	8/29/2007	2376	8144675	Devens
	Slaterock Brook	8/29/2007	2375	8144615	Devens (Lancaster)
	Stewart Brook	8/31/2007	2173	8143700	Pepperell
	Stillwater River	9/10/2007	2099	8145700	Sterling
	Stillwater River	9/10/2007	2098	8145700	Sterling
	Sucker Brook	8/31/2007	2172	8143625	Pepperell
	Sucker Brook	9/5/2007	2171	8143625	Pepperell
	UNT to Slaterock Brook	8/28/2007	2378	8144617	Devens
	Whitman River	7/31/2007	2381	8145075	Westminster
Quinebaug					
	Charles Brook	9/12/2007	2336	4129450	Brimfield
	Hamant Brook	10/3/2007	2219	4129275	Sturbridge
	Hamant Brook	10/3/2007	2217	4129275	Sturbridge
	Hamant Brook	10/3/2007	2218	4129275	Sturbridge
	Leadmine Brook	9/14/2007	2276	4129575	Sturbridge
	Pratt Brook	9/18/2007	2220	4129150	Charlton
	UNT to Quinebaug River	9/17/2007	2280	4129485	Sturbridge
	UNT to Cohasse Brook	9/14/2007	2279	4129105	Southbridge
	UNT to Delphi Brook	9/12/2007	2361	4129020	Wales
	UNT to East Brimfield Reservoir	9/18/2007	2350	4129281	Sturbridge
	UNT to East Brimfield Reservoir	9/18/2007	2349	4129281	Brimfield
	UNT to Hamilton Reservoir	9/18/2007	2340	4129520	Holland
	UNT to Hatchet Brook	9/14/2007	2277	4129210	Southbridge
	UNT to Leadmine Pond	9/10/2007	2278	4129580	Sturbridge
	UNT to McKinstry Brook	9/14/2007	2281	4129190	Sturbridge
	UNT to Quinebaug River	9/7/2007	2275	4129282	Sturbridge
	UNT to Sibley Pond	9/17/2007	2339	4129135	Charlton
	UNT to Walker Pond	9/17/2007	2341	4129260	Sturbridge
	West Brook	9/12/2007	2343	4129400	Brimfield
South Coastal					
	Cove Brook	8/27/2007	2354	9456400	Marshfield
	Furnace Brook	8/27/2007	2355	9457175	Marshfield
	Herring River	8/17/2007	2353	9458075	Bourne
	Holmes Point Brook	9/14/2007	2356	9457990	Plymouth
	Marshfield Fairgrounds Brook	8/27/2007	2371	9457160	Marshfield

Watershed	Waterbody Name	Date	Sample ID	Saris/Palis	Town
Taunton					
	Assonet River (Freetown)	8/24/2007	2370	6235100	Assonet
	Meadow Brook	7/24/2007	2367	6237075	E. Bridgewater
	Mill River	7/31/2007	2351	6235725	Taunton
	Mill River	7/31/2007	2369	6235725	Taunton
	Quaker Brook	9/4/2007	2372	6235200	Berkley
	Rumford River	7/12/2007	2379	6235600	Foxboro
	UNT to Taunton River	7/31/2007	2368	6235860	Taunton
Westfield					
	Bearden Brook	7/17/2007	2334	3209975	Montgomery
	Bronson Brook	8/9/2007	2058	3211550	Worthington
	Bronson Brook	8/9/2007	2060	3211550	Worthington
	Day Brook	7/13/2007	2248	3210775	Chester
	Dead Branch	8/24/2007	2250	3211225	Chesterfield
	Depot Brook	8/17/2007	2027	3210600	Washington
	Dickinson Brook	8/14/2007	2053	3208975	Granville
	Factory Brook	8/20/2007	2031	3210475	Middlefield
	Fuller Brook	7/12/2007	2249	3210975	Peru
	Kearney Brook	8/9/2007	2059	3211625	Worthington
	Kinne Brook	8/29/2007	2042	3210800	Chester
	Little River	8/23/2007	2036	3211100	S. Worthington
	Middle Brook	9/24/2007	2345	3209325	Blandford
	Middle Brook	9/25/2007	2344	3209325	Blandford
	Mill Brook (1)	8/8/2007	2061	3211950	Plainfield
	Munn Brook	8/14/2007	2055	3208825	Southwick
	Otis Wait Brook	7/13/2007	2247	3210450	Chester
	Phelon Brook	9/25/2007	2363	3209225	Granville
	Pierce Brook	9/6/2007	2338	3211000	Peru
	Pitcher Brook	9/4/2007	2348	3209175	Russell
	Pond Brook	8/23/2007	2034	3211050	Huntington
	Potash Brook	9/18/2007	2161	3209725	Russell
	Richards Brook	9/25/2007	2362	3209650	Blandford
	Roaring Brook (1)	8/23/2007	2035	3210000	Montgomery
	Roaring Brook (1)	8/24/2007	2039	3210000	Montgomery
	Roaring Brook (2)	8/30/2007	2051	3210125	Chester
	Rocky Brook	8/24/2007	2251	3211475	Chesterfield
	Shaker Mill Brook	8/17/2007	2150	3210625	Beckett
	Shatterack Brook	10/18/2007	2282	3209775	Montgomery/Russell
	Stage Brook	8/24/2007	2040	3209850	Blandford
	Stage Brook	8/24/2007	2041	3209850	Russell
	Stones Brook	8/31/2007	2089	3211825	Goshen
	Sugar Creek	9/24/2007	2271	3209300	Blandford
	Swift River	8/28/2007	2043	3211775	Cummington
	Swift River (N.B.)	8/31/2007	2090	3211800	Cummington
	Tower Brook	8/9/2007	2057	3211700	W. Chesterfield
	UNT to Coles Brook	9/10/2007	2273	3210535	Washington
	UNT to Factory Brook	9/6/2007	2274	3210485	Middlefield
	UNT to Glendale Brook	9/6/2007	2342	3210905	Middlefield
	UNT to MB Westfield River	9/6/2007	2346	3211020	Worthington
	UNT to Westfield Reservoir	7/17/2007	2246	3209720	Montgomery
	UNT to Westfield Reservoir	9/4/2007	2347	3209720	Montgomery
	UNT to Westfield River	10/21/2007	2360	3212330	Savoy
	Walker Brook	8/30/2007	2049	3210300	Chester
	Westfield Brook	8/8/2007	2074	3212050	Windsor
	Westfield River	8/8/2007	2062	3208250	Windsor
	Westfield River	8/28/2007	2044	3208250	Cummington
	Westfield River	8/28/2007	2045	3208250	Windsor
	Westfield River (M.B.)	8/29/2007	2048	3210725	Middlefield
	Westfield River (M.B.)	8/29/2007	2047	3210725	Chester
	Windsor Jambs Brook	7/25/2007	2252	3212200	Windsor
	Yokum Brook	8/17/2007	2026	3210550	Becket
	Yokum Brook	8/20/2007	2028	3210550	Becket

APPENDIX II
FY 08
FISH SPECIES SAMPLING

Species, Number Sampled, and Average Length (in Millimeters) of Fish Sampled

Common Name	Number Sampled	Mean Length
Alewife	17	40
American eel	273	221
Atlantic salmon	2469	102
Banded killifish	38	61
Banded sunfish	7	59
Black crappie	3	191
Blacknose dace	15691	54
Bluegill	428	84
Bluntnose minnow	372	58
Bridle shiner	6	52
Brook trout	5549	95
Brown bullhead	207	109
Brown trout	710	117
Central mudminnow	75	70
Chain pickerel	144	151
Common carp	12	410
Common shiner	1594	61
Creek chub	1511	69
Creek chubsucker	27	67
Fallfish	1430	78
Golden shiner	641	72
Goldfish	26	259
Green sunfish	7	88
Lake chub	6	87
Landlocked salmon	72	117
Largemouth bass	188	81
Longnose dace	3098	73
Longnose sucker	733	85
Mummichog	49	77
Ninespine stickleback	16	36
Northern pike	6	524
Pumpkinseed	445	79
Rainbow trout	50	161
Redbreast sunfish	7	126
Redfin pickerel	254	111
Rock bass	130	136
Sea lamprey	22	109
Slimy sculpin	4163	59
Smallmouth bass	23	110
Spottail shiner	14	41
Swamp darter	2	45
Tesselated darter	409	56
White perch	9	138
White sucker	2153	111
Yellow bullhead	174	126
Yellow perch	192	119

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