Annual Report 2013

Massachusetts Division of Fisheries & Wildlife

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An Agency of the Department of Fish & Game

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About the Cover:

A Gray Treefrog (*Hyla versicolor*) perches on an apple limb waiting for an insect meal in Petersham. Notable characteristics are the cryptic coloration and the prominent suction-cup toe pads that tip all its digits. Gray Treefrogs are found throughout Massachusetts except for on Martha's Vineyard and Nantucket. Photo by DFW Senior Photographer Bill Byrne

THE BOARD REPORTS

George Darey
Chairman

Overview

The Massachusetts Fisheries and Wildlife Board consists of seven persons appointed by the Governor to 5-year terms. By law, the individuals appointed to the Board are volunteers, receiving no remuneration or expenses for their service to the Commonwealth. Five of the seven are selected on a regional basis, with one member, by statute, representing agricultural interests. The two remaining seats are held by a professional wildlife biologist or wildlife manager, and one representative with a specific interest in the management and restoration of wildlife populations not classified as game species. The Board oversees operations of the Division of Fisheries and Wildlife, reviews the agency's programs, and sets policy and regulations pertinent to wildlife in the Commonwealth.

The Board has continued its tradition this year of holding monthly meetings at locations around the state, holding public hearings on proposed regulatory changes, and addressing many issues of specific concern. While many different matters and issues were brought before the Board this year, most of its meeting time was spent in scrutiny and review of proposals for regulatory changes and of agency programs.

Proposals for Regulation Updates or Changes

Fall Wild Turkey Season Regulations

In FY 12, Upland Game Bird Biologist David Scarpitti had provided a presentation to the Board on the Fall Wild Turkey Hunting season, including a review of wild turkey restoration, the history and expansion of hunting opportunities, the status of the wild turkey population, and the combined spring/fall turkey harvest. He reported at that time that staff recommended the following proposed regulatory changes:

- Expand the fall season to all remaining available Wildlife Management Zones (WMZs 10, 11, and 12);
- Increase the season length to 2 weeks statewide (i.e., add a week prior to the existing season framework);
- Adjust the legal shot size for turkey hunting to #4-#7.

The Board held a public hearing in FY 13 on the proposed changes at which all the testimony given was in support of the regulation changes. The Board held a vote on the matter during the August 2012 Board meeting and voted unanimously to adopt the three regulation changes as proposed.

Migratory Game Bird Season Regulations

On the same day, the Board heard Waterfowl Project Leader H Heusmann's annual presentation on the framework and proposed season dates and bag and possession limits for the 2012-2013 migratory game bird seasons. He noted that there would be a Statewide Youth Waterfowl Hunt on Saturday, September 29, and Saturday, October 6, 2012, and the statewide September Resident Canada Goose season was set for September 4-25, with a daily bag limit of seven. Following an informational hearing on the proposed dates and limits, Director MacCallum stated that the proposed regulations would be filed as emergency regulations and good for 90 days. The public hearing to permanently establish the migratory game bird seasons was held on October 23; the Board voted unanimously to accept them as proposed.

WMZ 13 and WMZ 14 Deer Regulations

Also on the day of the August meeting, yet another public hearing was held, to propose regulations that would increase the possession limit of unsealed/unreported deer, from two to four deer, in WMZs 13 and 14 only. Deer Project Leader David Stainbrook reported that the Division had received a public request to reduce deer densities in response to high tick-borne disease incidences on both Nantucket and Martha's Vineyard (WMZs 13 and 14) and the proposed regulations reflected that change. After receiving public testimony supportive of the changes, the Board voted unanimously to approve the new regulations.

DFW Lands' Nomenclature

Chief of Wildlife Lands Craig MacDonnell gave a concise presentation in February on the recent staff review of real estate nomenclature, which sought to establish and apply consistent naming conventions for all Division holdings, past, present, and future. He briefly described changes through the years to how staff groups assets and assigns topographic or geographic names to those assets. In the past 25 years, DFW acreage has quadrupled, while the percentage of the agency's realty interests represented by conservation easements has increased to nearly 25%.

Major changes are generally as follows:

- The "WMA" category definition was expanded to include Natural Heritage Areas, marshes, forests, and other areas that are generally available for multiple recreational uses.
- All conservation easements that include public access were assigned to the category "WCE,"

regardless of whether they abut WMAs or stand alone (for example, the "Boulders CR" portion of Chalet WMA became the Boulders WCE).

A new category of Wildlife Conservation Restriction (WCR) was created for conservation easements (mostly gifts) that do not include any provision for public access. These will not appear on public maps.

All properties for which access to water or other features is the primary use and management concern were consolidated into one Access Area category.

Many (but not all) WMA and WCE names that are simply the name of the town in which they are located are changed to something geographic or more site-specific, usually a feature visible on a topographic map (for example, Tyringham WCE became Steadman Pond WCE).

The amended categories, as approved by unanimous vote of the Board, are as follows:

Wildlife Management Area (WMA)
(Multiple-use recreational opportunities, as defined and/or limited by WMA regulations)

Wildlife Conservation Easement (WCE)
(CR that includes a public access provision; generally, multiple-use recreational opportunities, but with some site-specific limitations as described in the CR document)

Wildlife Conservation Restriction (WCR)
(CR lacking a provision for public access)

Access Area
(Primarily provide recreational opportunity; access to water body or other lands not owned by the agency; usually relatively small acreage)

Wildlife Sanctuary
(Statutory)

Installation
(District offices, hatcheries, etc.)

Other
(Catch-all category for nature preserves, deed restrictions, rights-of-way, etc.)

Shad Regulation Changes

Deputy Director of Administration Jack Buckley gave a presentation at the public hearing held in April, explaining that changes in the shad fishing regulations were necessary in order to comply with the Atlantic States Marine Fisheries Commission's regulation that catch-and-release only (no harvest) is required for American shad on rivers where shad runs are depressed or no population indices are available, and also to keep DFW regulations consistent with the Division of Marine Fisheries, since the fishery occurs in both jurisdictions.

Deputy Director Buckley provided the Board with some background and natural history information on the American shad (*Alosa sapidissima*), an anadromous fish and a member of the herring family. It is distributed from southern Labrador to northern Florida. The Connecticut River run is 244,000 fish (5-year average), while the Merrimack River run is 19,000 (5-year average). There are small runs on the Palmer and North (including South and Indian Head), Charles, Neponset, and Jones rivers.

Deputy Director Buckley stated that the fish lifts at Holyoke (Connecticut River) and Lawrence (Merrimack River) provide annual passage numbers that allow us to monitor these populations and keep these fisheries open. There is no population data for the other rivers, so the fisheries must be closed, i.e., catch-and-release shad fishing only. And where fishing is open, lowering the daily bag limit, from six (6) per day to three (3) per day, is a prudent conservation measure. He reported that the Division will consider closing a fishery if a run falls below the 25th percentile of the historic lift series for three consecutive years, and that the Connecticut River trigger is 155,000 shad, while the Merrimack River trigger is 10,000 shad.

A public comment period followed the public hearing. There were no public comments received on the regulations, and, at the May meeting, the Board voted unanimously to approve the new regulations.

The changes are as follows:

No harvest (catch-and-release only) of American shad in 85 inland waters except the Connecticut River and tributaries and the Merrimack River and tributaries.

Reduction of the bag limit on the Connecticut River and tributaries and the Merrimack River and tributaries from six (6) per day to three (3) per day.

Annual Deer Review and Antlerless Permit Allocation for 2013

Deer and Moose Project Leader David Stainbrook reported in June that Massachusetts continues to have no positive results in the Chronic Wasting Disease (CWD) sampling that has been done to date. The DFW will continue to test all disease-suspect deer and moose that it finds or that are reported, but federal funds for annual CWD sample-testing were eliminated in 2012, so statewide sampling has ended. The project leader reported that Pennsylvania was a new CWD-positive state in 2012, and that New York is still considered a CWD-positive state, so the ban on importing venison with bones in it from New York (and now, from Pennsylvania) remains in force and staff will continue to remind sportsmen of the importance of respecting the ban.

Mr. Stainbrook also reported on the 2012 Hunter Survey. Wildlife staff emailed 32,304 invitations to active hunters (i.e., those that purchased a hunting or sporting license in 2012 and whose profile contained an email address) and received 8,906 completed responses,

which was a response rate of roughly 30%. The survey is designed to collect data on hunter effort and harvest for most game and observation data on deer and moose. He also reported that Wildlife staff had conducted a Blue Hills Reservation deer abundance survey on over 7,000 acres; this survey used distance sampling and was therefore independent of harvest data.

The project leader provided data on the total 2012 deer harvest, by season, comparing it to the average of harvest years 2009-2011:

Season	Average 2009-2011	2012	Percent Change
Paraplegic	6	4	
Archery	3,678	3,903	6% increase
Shotgun	5,041	4,950	2% decrease
Primitive Arms	1,995	2,081	4% increase
Total	**10,720**	**10,938**	**2% increase**

He continued his discussion with graphs that showed the trends of the statewide harvest: 1) total statewide deer harvest by season, 1966-2012, noting that the 2012 Archery harvest was a new record; 2) statewide harvest by sex, 1985-2012, which showed a trend of increasing male harvest (provides an index to abundance) and decreasing female harvest (reflecting reduced numbers of antlerless permits because goals have been reached in the western and central zones); and 3) adult male harvest by region, comparing 2012 with the average of harvest years 2009-2011.

Mr. Stainbrook then discussed the DFW's deer management, including the goals, the hunting season framework, and the use of ADPs to manage the population. In conclusion, the project leader discussed the state's deer density goals for the 14 Wildlife Management Zones (WMZs), compared the goals to the actual densities, and indicated the 3-year trends toward or away from goal in each WMZ, which show most WMZs with increasing deer population trends.

The Antlerless Deer Permit allocations for the 2013 deer season are as follows:

WMZ	2013	Change from 2012
1	400	-50
2	175	-25
3	1,100	-150
4N	375	-25
4S	275	-25
5	1,250	-100
6	450	none
7	2,250	none
8	2,800	none
9	4,100	none
10	11,000	+1,200
11	10,500	+700
12	650	+75
13	2,700	Functionally Unlimited
14	2,700	Functionally Unlimited
All	40,725	+1,600

Disability and Other Free License Rules and Definitions

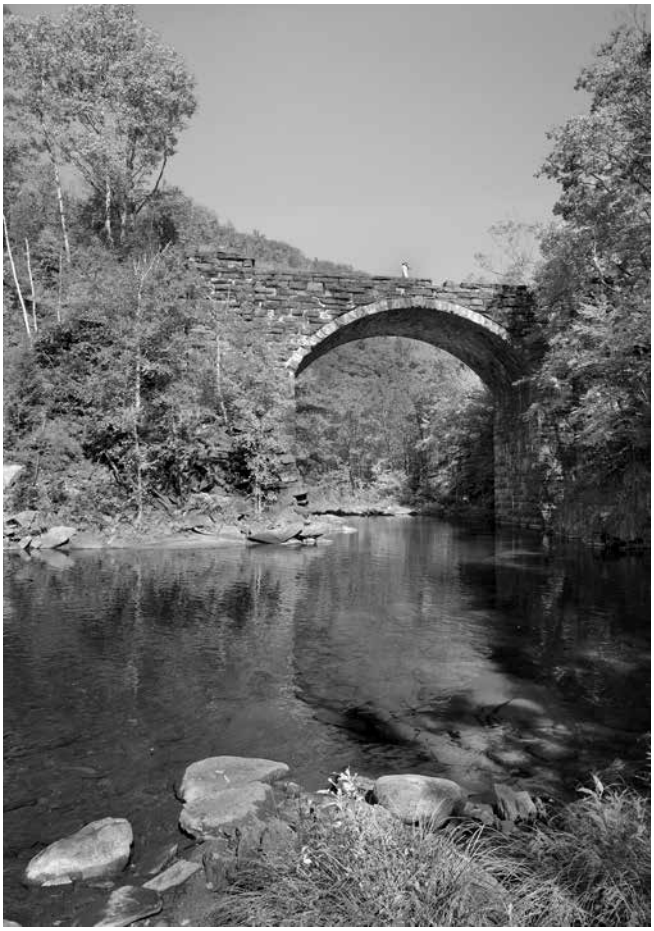
Deputy Director Buckley requested in FY 13 that the Board hold a public hearing relative to free licenses, because there were a number of discrepancies in the regulations related to the categories of licenses of this type. All the proposed changes, Deputy Director Buckley reported, would place into regulation what has already been in the statute. The Division is updating definitions, including 1) for blindness, to require the state-issued certificate of blindness; 2) changing 'mentally retarded' to 'intellectually disabled,' and requiring a doctor's letter; 3) requiring a doctor's certification for a paraplegic; and 4) for a resident alien, to align with the definition in the statute, which also provides for a Resident Alien license, so that category has also been created in the regulations. Further, the Minor Sporting license is removed as a category because, with the statutory free Minor Fishing license, the Minor Sporting license was more expensive than the Minor Hunting alone and a number of license buyers had requested refunds. The Board conducted a public hearing on the matter in May and all the comment received was supportive of the changes. The Board then voted unanimously for the proposed changes at its June meeting.

Keystone Arches Historic Designation

Western Wildlife District Manager Andrew Madden informed the Board at its June meeting that he had received a formal request to allow the nomination of the Keystone Arches on the Division's Walnut Hill Wildlife Management Area for inclusion in the National Historic Landmark (NHL) Program. The organizations that will be the nominators are the Friends of the Keystone Arches and the Westfield Wild and Scenic River Committee. Their joint proposal is to nominate the two DFW-owned keystone-arch bridges for inclusion in the NHL Program. These groups approached Mr. Madden because the landmark's owner's consent to nomination and possible listing is a NHL program requirement, and the nominators are requesting DFW support. Mr. Madden said that he had looked into the program and was before the Board to present his researches.

To provide some of the history, Mr. Madden said that the Keystone Arches were the first keystone railroad arches built in America, and were completed in 1841 by Major George Washington Whistler, who was the father of the painter, James McNeill Whistler. The bridges are dry laid, i.e., no mortar was used in the construction, and they were completed by stone masons from Stockbridge, who built a total of six such bridges in 2.5 years.

Mr. Madden then reported on the current status of the bridges. The DFW acquired the bridges in 1987 as part of a purchase to protect the Westfield River's West Branch. The Keystone Arches are currently on the National Register of Historic Places, are a very popular destination, are in need of restoration, and have an active advocacy base.



Keystone-arch bridge on Walnut Hill WMA.

Turning to the implications of the nomination and possible Landmark listing, Mr. Madden reported that a listing would give the DFW access to NHL program restoration experts with the potential for restoration funding. A listing would provide increased awareness of the Arches and recognition of their national significance. At the same time, a landmark listing places no restrictions or obligations on the owner, there are no expectations or requirements for maintenance, and no additional review of activities. Finally, Mr. Madden thought agreeing to support the listing was a good opportunity for agency cooperation in a project that will have universal support. He reported that the nomination and listing process takes 2-5 years.

After a brief discussion, The Board expressed its appreciation for and approval of the work of the organizations that sought to so designate the arches, and voted unanimously to support the nomination.

Wildlife-related Legislative Matters

Massachusetts Endangered Species Act Legislation Update

At the July meeting, Deputy Director Jack Buckley gave a brief update on the status of Senate Bill 1854, which would alter the provisions, effectiveness, and regulatory process of the agency in regulating for the Massachusetts Endangered Species Act (MESA). He stated that the legislature was close to ending the legislative session and noted that he felt nothing was going to happen with the bill, which had been referred out of the Committee on Natural Resources, in the current session. He noted that a number of individuals, environmental groups, and the sporting community had gotten involved, to defend the current process and work with the development community and the Massachusetts Audubon Society on a general framework.

Agency Program Reviews

Electronic Licensing and Game Reporting Updates

At the end of FY 12, the Board had held a public hearing to solicit input on the complicated regulatory changes that were required to fully implement online licensing and game checking. After being informed by Assistant Director O'Shea at its July meeting that the agency had not received any written comments, the Board voted unanimously to approve the required changes. In the course of FY 13, the Board heard four presentations from staff detailing the work being done to implement the capabilities of the agency's electronic licensing system.

Instant Award for Antlerless Deer Permits

At the July meeting, Permit Specialist Lori Cookman described and explained the new process for Instant Award for Antlerless Deer Permits (ADPs). She stated that the ADP application deadline was July 16, as it had been in FY 12, and that all customers must have applied by that date to be eligible to participate in the Instant Award process. The Instant Award period opens August 1 and remains open through December 31, with the chance of winning remaining the same throughout the open period. Ms. Cookman provided a breakdown of the 2012 ADP applications and noted that there are three ways to participate, 1) via the Internet, (2) at any MassWildlife office, or 3) at any licensing agent location (i.e., Wal-Mart, Dick's Sporting Goods, Town Clerk's offices), and provided detailed simulations of customers returning to attempt the online process to win an ADP during Instant Awards. In preparation for August 1, the 120 license agents have been notified and briefed, the MassWildlife website will have detailed information on the system, and there will be customer reminders and increased help-desk support at that time.

Ms. Cookman noted that the customer benefits will include increased convenience, including the ability to purchase permits outside of regular DFW hours (including evenings and weekends) and to print/reprint items on demand; increased numbers of locations where permits can be purchased; the elimination of mailing issues such as non-receipt of either applications or permits; and an equal opportunity for all applicants to win. In addition, the benefits for the Division will include the elimination of the excessive time, direct and indirect costs, and problems associated with traditional mailings, and the addition of the ability to link all sales locations, making it easier to track permit sales and providing biologists and OLE officers with instant access to existing permit information. Over-the-counter sales for surplus ADPs were set to begin October 9, 2013, and continue until they sold out.

Online Game Harvest Reporting

Assistant Director Tom O'Shea gave a brief update in August on the status of the new online game checking in the *MassFishHunt* system and told the Board that the Division was in testing phase with the new system.

A public hearing had been held in June 2012 and the proposed regulations were voted on and approved in July 2012 by the Board. As of that date, the Division was waiting for the regulations to be promulgated. For the 2012 hunting seasons, all game still needed to be physically checked at a check station. The *MassFishHunt* game checking system commenced with the spring turkey season in 2013.

In March, Wildlife Biologist Trina Moruzzi further updated the Board with another presentation about the development of online game harvest reporting in *MassFishHunt*. DFW biologists had spent over a year working on the system with the vendor, and Ms. Moruzzi reported that the agency was ready to use this functionality to process the spring turkey harvest. Ms. Moruzzi stressed that staff spent a lot of time developing the system and even more time in testing it with numerous possible scenarios. Staff is getting information about online harvest reporting out to the public in various ways in preparation for the FY 14 seasons.

Ms. Moruzzi explained that sportsmen will have two options: They can take their harvest to traditional physical check stations, which will be using the online system, too; or they can report their harvest directly over the Internet. Ms. Moruzzi then gave multiple simulations of the harvest-reporting process, for spring turkey, deer, and coyote (as an example of a furbearer). She cited one exception to the online reporting option: Deer harvested during the shotgun season for deer must be checked at physical check stations, so that the biological information that is so valuable to biologists and traditionally collected during that period can still be captured.

The 2013 hunting and trapping seasons that were scheduled to be checked online were the spring turkey, the September black bear, the Archery deer, the furbearer, and the Primitive Arms season for deer.

2012 Licensing System Summary

At the January Board meeting, Project Manager Rick Kennedy gave a report that summarized the first complete year of operation of the *MassFishHunt* system, calendar year 2012 (CY 12). Mr. Kennedy detailed the numbers of the various licenses, permits, and stamps sold; the numbers and types of sales outlets, or channels, employed; and the revenues generated, including donations to the Wildlands Fund.

The implementation of the *MassFishHunt* licensing system had marked the end of manual (i.e., preprinted paper) licensing. Mr. Kennedy reported on the specific effects on DFW licensing operations and the estimated direct-cost savings that resulted from the new system.

Mr. Kennedy also discussed the Instant Award process for ADPs, which was used for the first time in CY 12. The application phase ran from Dec. 1, 2011, through July 16, 2012, and the Instant Award phase began on August 1 and ran through December 31. No system issues were encountered during either Instant Award phase.

Since not all of the available ADPs are issued in the initial application phase, a separate surplus ADP sales process was conducted on a first-come, first-served basis beginning on October 9 for Zones 10, 11, 13, and 14. Despite the fact that the *MassFishHunt* surplus-sales functionality had been successfully developed and deployed in October 2011, and despite the simulated load testing conducted by the vendor, Active Outdoors (AO), the system performed extremely poorly and barely handled the load experienced during the first few hours of sales on October 9, when an estimated 5-10,000 customers concurrently tried to purchase the limited-quantity permits. A further complication ensued when, based on incorrect sales totals provided by AO, the DFW prematurely shut down Surplus Sales for Zone 11. Mr. Kennedy explained that AO was able to identify many of the affected Zone 11 customers from system logs, and it decided to pay for their permits. In addition, AO made its phone sales operators available to issue the remaining Zone 11 permits. In the end, the DFW was able to work creatively and effectively with AO to issue all ADPs via *MassFishHunt*, i.e., without having to work out a manual system.

Mr. Kennedy's report also provided a detailed analysis of the *MassFishHunt* system from the point of view of the customer's experience, the license agent's experience, the law enforcement officer's experience, and the DFW management and staff experience, and closed his presentation with a brief account of the ongoing work on online game harvest reporting, and future system capabilities, such as special permitting for the DCR Quabbin Deer Hunt and potential mobile-device license sales.

Surplus Antlerless Deer Permit Sales

At the close of FY 13, at the June meeting, Assistant Director O'Shea returned to the Board to explain how the sale of surplus ADPs is going to work in 2013. Assistant Director O'Shea provided background to remind the meeting of the process and timeline for the ADPs, from the application period ending on July 16 through the instant-award lottery beginning August 1 to eventual purchase by successful applicants. Surplus ADP sales traditionally begin at 8:00 A.M. on the Tuesday after Columbus Day, which is prior to the beginning of Archery deer hunting season. Sales are first-come, first-served and through point-of-sale agents and over the Internet on the *MassFishHunt* website.

Assistant Director O'Shea reported the trends in surplus ADP purchasing: Before 2011, DFW offices had handled 80% of the surplus ADP sales and the *SPORT* online system accounted for 20%. In 2011, DFW offices sold 55% of surplus ADPs, while the *MassFishHunt* website sold 45%. But in 2012, when customers could

buy surplus ADPs at all license agents via *MassFishHunt*, only 10% of purchasers did so; 90% of purchasers used PCs and accessed *MassFishHunt* over the Internet directly. Assistant Director O'Shea then described the server-shutdown that resulted when all those users attempted to access *MassFishHunt* virtually simultaneously on October 9, 2012, and the steps that were taken to restore the system and thus accommodate the customers as soon as possible.

For the 2013 surplus ADP sale (in FY 14), the *MassFishHunt* vendor has increased the capacity of the system to handle the anticipated demand. The sale of some of the surplus ADPs will also be staggered: the Zone 11 permits go on sale on Tuesday, October 1; Zone 10 permits don't go on sale until Wednesday, October 2; and the permits for Zone 13 and Zone 14 will be put on sale on Thursday, October 3.

Vernal Pool and Rare Species Information System

Early in FY 13, Information Manager Sarah Haggerty reported to the Board about the Vernal Pool and Rare Species Information System (VPRS). Funded through a U.S. EPA grant, VPRS is a web-based mapping and data submittal application that provides users with a way to submit rare species observation reports and vernal pool certification forms to the NHESP electronically. Additionally, the system provides the user with the ability to bulk-upload data from a spreadsheet, creates a more efficient method for NHESP to review and process submitted data, provides a more "real-time" update to the publicly available Certified Vernal Pool data and town rare species lists, and, by the end of the summer, VPRS system will include a mobile application.

Ms. Haggerty elaborated that direct access to the VPRS system through the online link on a mobile application will be available in September 2012. This Android mobile app will allow the user to capture her/his location while on-site (through the GPS within a Smartphone or tablet, or via the website's mapping tools), take and include photographs, and capture the basic required information for the forms for later online submittal. She stated that this should streamline the collection and submittal of rare species and vernal pool data to NHESP, as well as speeding the data processing required of NHESP data staff once the species forms are received.

Natural Resource Conservation Service/DFW Conservation Partnership

DFW SWAP Coordinator John O'Leary gave a brief introduction to the Natural Resources Conservation Service and DFW Partnership. The Habitat Management Biologist was hired in January 2008 and a Cooperative Agreement was entered into with the NRCS in September 2011. He introduced Habitat Management Biologist Marianne Piché, who talked about the habitat funding mechanisms that the DFW has access to because of this partnership, including the Wildlife Habitat Incentive Program; the Environmental Quality Incentives Program; the Wetland Reserve Program; the authorization of the 2008 Farm Bill; and various other financial assistance, stewardship, and grant programs. She reported that, in FY 09-FY 12, the Division assisted landowners with 79 funded projects on 1,463 acres. Ms. Piché further reported on initiatives related to the Dwarf Wedge mussel, the Bog Turtle, and the New England Cottontail (NEC), saying that the NRCS has funded the NEC projects in the Berkshire and the Mashpee focal areas.

Connecticut River Atlantic Salmon Restoration Program

Anadromous Fish Biologist Caleb Slater provided a presentation on the Connecticut River Atlantic Salmon Restoration Program at the November meeting. Dr. Slater stated that there had been a cooperative salmon restoration program between the four Connecticut River basin states and two federal agencies. The restoration program was run by the Connecticut River Atlantic Salmon Commission (CRASC), an interstate commission established by Congress in 1983 and reauthorized in 2002 for another 20 years. The mission of CRASC is to protect, conserve, and restore the Atlantic salmon population in the Connecticut River basin for the public benefit, including recreational fishing. The goal was to restore Atlantic salmon to the Connecticut River in numbers as near as possible to their historical abundance. Dr. Slater noted the strategy was to stock smolts for one year, in 1987; change to fry stocking 1988-1995, and stock 10 million fry and 100,000 2-year-old smolts during 1995-2011.

Dr. Slater then detailed the challenges: the USFWS failed to meet the 10 million fry goal, the White River National Fish Hatchery (WRNFH) actually cutting fry production. Meanwhile, the adult return continues to fall far below what is required to meet the goals of a self-sustaining population and a recreational fishery. Dr. Slater explained that disappointing adult returns are due to very low ocean survival, which was 10 to 15 times higher at the start of the program, 1975-1985, but research has not been able to determine the problems in the ocean. Then the WRNFH was severely damaged by Tropical Storm Irene in August 2011, and it was depopulated and closed for repairs in January 2012. The USFWS has decided to end most participation in the restoration after 2013 due to a declining budget and because the model shows no chance of short term increase in adult returns. The ramifications of the USFWS's withdrawal will be no smolts after 2013, the closing of WRNFH, and the eventual loss of the Richard Cronin National Salmon Station (Cronin) as a sea-run holding and spawning facility; Cronin is needed as a sea-run isolation facility for bio-security reasons.

In the short term, the USFWS continued to operate Cronin as a sea-run facility in 2012, the USFWS will stock the remaining smolts from the Eisenhower facility in 2013, all states will stock fry in 2013 (at a much reduced rate), all states will continue to collect samples for the Genetic Marking Study, and all states will continue to monitor adult return rates. In the long term, the USFWS is withdrawing all support for salmon restoration, and,

in the interim, the operation of Cronin as a sea-run facility requires annual determination beginning in 2013.

As a result, the DFW staff recommendation was for Massachusetts to phase out Connecticut River Salmon restoration efforts. The phase-out will entail ending fry stocking after 2013; continuing to monitor for returns for 4 more years; and maintaining the Palmer Hatchery as a Class A facility reprogrammed for brook trout broodstock, and expanded landlocked salmon production. Staff will consider renewing restoration if salmon return increases significantly in the Connecticut and other East Coast runs. The Palmer Fish Hatchery is a top-quality salmonid broodstock station with well water, UV-sterilized surface water, a recirculating egg incubation system, indoor fry tanks, and covered and netted outdoor tanks.

After a brief discussion, the Board voted unanimously to accept the proposed recommendations for the Connecticut River Salmon Restoration Program as presented by Dr. Slater.

Trends in Human-wildlife Interactions

Wildlife Biologist Mike Huguenin provided a report on a project that is designed to identify trends in human-wildlife interactions throughout the state by analyzing the reports of these interactions that come to staff via phone calls and emails to the Field Headquarters as well as the Wildlife District offices. We consider this information important and the study necessary because of the large amount of time and resources the Division spends trying to resolve conflicts or perceived conflicts that the public has with wildlife. The goal of this project is to not only compile a useful and reliable database of reports for easy reference, but also to figure out what drives the reports, in order to develop and propose effective management strategies to reduce incidents of conflict or perceived conflict. The study is being conducted by Division biologists, but it is also part of Mr. Huguenin's Master's degree work, so the Division is working in conjunction with the Massachusetts Cooperative Fish and Wildlife Research Unit at UMass-Amherst.

Mr. Huguenin detailed the preliminary study that identified the problems and some of the variables, the data analysis, and the primary study as it is being conducted now. The details of this work can be found in the Wildlife Research Section of this report.

In brief, Mr. Huguenin stated that the overall goal of the Division is to uncover what drives these human-wildlife-conflict trends – and not only what drives them generally, but what are the variables that drive what we can actually manage – so that staff can potentially propose management strategies designed to alleviate conflicts or perceived conflicts. In the future, the agency will also be able to incorporate data collected through a comprehensive, region-wide, human dimensions survey conducted by Responsive Management and paid for by the Northeast Association of Fish and Wildlife Agencies in this very long-term study.

Sport Fishing Awards Program

Aquatic Biologist Richard Hartley, the Warmwater Project Leader and coordinator of the Division's Sport Fishing Awards Program, reported at the February Board meeting that the program has two main goals, recreation and biology/management. He provided a brief history of the program, described how fish are measured for eligibility, and gave some program statistics.

Mr. Hartley explained that, in 1985, the program started a database to look for trends. One trend that is emerging now: Since the Youth category was created, in 2005, numbers of pins given for many previously less-popular species have gone up, and the number for all the eligible species have evened out. Mr. Hartley then cited a number of different statistics that have come out of the data. For example, only 10 waters in the state have yielded 42% of pins to date. Lakes can also be grouped by the highest total number of species in the lake. Approximately 4,000 anglers have pins, so the program also looked at numbers of pins among anglers. At present, over 50 anglers have at least 10 pins for specific species, and 124 anglers have been pinned for at least 5 different species.

Mr. Hartley also cited some Large Mouth Bass (LMB) data, and showed a graph of the months of the year with the numbers of bass caught in each month. He also listed the top-10 waters for LMB (22% of the LMB pins awarded to date have come out of those waters). Since 1963, anglers have landed only 20 LMB over 10 pounds. But, in a startling development, two anglers actually caught LMB over 10 pounds just this year.

When Mr. Hartley had concluded, the Director stated that the recent snowstorm and accompanying travel ban (the weekend of February 8-10) created an opportunity for the Board relative to the Sport Fishing Awards ceremony, which had had to be cancelled. After some discussion, the Board decided that the program should hold the awards ceremony on a Saturday and schedule a Board meeting on the same day. The ceremony was held in conjunction with the April meeting and was a great success. In particular, the Board was very pleased to be able to talk to the anglers involved and celebrate their angling success with them. At the same time, the anglers and their families had a convenient opportunity to attend a Board meeting and see for themselves how this oversight body deliberates and guides the work of the Division.

Aquatic Education Program Overview

As part of the same Board meeting, Aquatic Education Coordinator Jim Lagacy reported on the activities and accomplishments of the Division's Aquatic Education Program (AEP). Mr. Lagacy opened his presentation with a series of pictures of children and adults, outside, smiling, engaged in the outdoors. He stated that a major goal of the program was to promote stewardship through fishing. He had first picked up a rod and reel at 9 years old; he was inspired by that connection to nature, and wants to pass it on.

Mr. Lagacy introduced the AEP with some history. The program began in 1979 as the Urban Angler Program, which was a DFW program to teach people to fish, focused on Worcester and Boston. It was felt that it was appropriate that the state fish and wildlife agency work to get people outside and engaged with the environment, and this was one way to do it. The program as we know it now began in 1984, when a coordinator was hired with funds from the Wallop-Breaux Amendment to the Federal Aid in Sport Fish Restoration Program to teach fishing, but the program also teaches water conservation, outdoor ethics, habitat protection, and wetlands ecology. The main theme of the program, then and now, is to train anglers to leave no trace, to steward our public waters, and not have them closed through misuse. The overarching mission of the program remains to enlighten people about the benefits of fishing and of clean water.

Mr. Lagacy reported that the AEP is also supported by the generous efforts and angling expertise of 100-150 trained volunteer instructors and many partners, including the Department of Conservation and Recreation (DCR), the Boy and Girl scouts, and sportsmen's organizations.

In summary, Mr. Lagacy noted that the AEP reaches 7,000+ people every year, mostly through the efforts of the most-active 100 dedicated program volunteers, and he stressed again the primary importance of the volunteers, who teach respect and reverence for the resource through example.

Stream Flow Research Review

Aquatic Biologist Todd Richards' recent work contributes to and his presentation at the February meeting was entitled the "Sustainable Water Management Initiative (SWMI) Framework: Massachusetts Stream Flows and the Integration of Science into Policy." He briefed the Board on the Division's work on aquatic habitats and stream flows, then reported one commonality in the comments he receives: Most people traditionally ask, 'How much water do the fish need?' Rather, Mr. Richards stated, the Division would ask, 'How much water can you remove before you impact fish communities?'

The many SWMI Framework meetings and lengthy (and ongoing) negotiations, whose history, process, and outcomes were described by Mr. Richards in detail, present an excellent and informative study in both the difficulty and the ultimate importance of integrating established science into policy-making, which was the Division's specific role in the development of sustainable water management policy. A USGS publication has come out of the work, wherein the DFW was able to provide fish data that has been incorporated into the USGS's flow data, which was previously devoid of biological information.

Presentations to the Board

The Board heard a number of interesting and informative presentations from staff this year that are not categorized under the previous headings. While these reports did not require votes or provide overviews of agency programs, they added greatly to the Board's collective knowledge and insight, and the Board is thankful to have such high quality professional assessments of various subjects and issues.

Eastern Equine Encephalitis (EEE)

At the July Fisheries and Wildlife Board meeting, a discussion of Eastern Equine Encephalitis (EEE) developed in the context of the July Natural Heritage and Endangered Species Advisory Committee report to the Board. Director MacCallum reported that, if the Board would like, Assistant Director for NHESP Tom French was prepared to give an update on spraying for EEE that took place July 20-23, 2012, in various towns in the southeast part of the state.

Providing some background on EEE, Assistant Director French reported that the first documented case in the United States was a horse with EEE in New Jersey in 1933, and the first human case occurred in Massachusetts in 1938. He reviewed the Department of Public Health's role in responding to EEE/West Nile Virus threats, the aerial application of pesticide, and the ecological health effects of sumethrin and piperonyl butoxide. Assistant Director French stated that studies indicate that there are effects on non-target insects associated with these ingredients. Assistant Director French briefly explained the multi-agency emergency response that has been developed to deal with potential human outbreaks, detailing each agency's role, and showed the Board some maps of the affected areas, including exclusion zones that had been developed to protect state-listed Endangered and Threatened species.

Forest Bird Habitat

In October, Assistant Director O'Shea introduced State Ornithologist Andrew Vitz, who spoke to the Board on his doctoral dissertation and work on the "Post fledging Ecology of Mature Forest Breeding Birds," and the relationship between forest cutting and forest bird habitat. His study area for this work had been in southeast Ohio and the Ohio Hills.

The study sites included 12 regenerating hardwood clear-cuts, six small (4-9 hectares) and six large (13-18 hectares), 3-7 years post-harvest, separated by at least 1 kilometer and surrounded by mature forest.

Mr. Vitz's conclusions from his research were that 1) dense understory vegetation is heavily used by post-fledglings for food and cover and it promotes survival, 2) creating large early-successional patches may not be necessary as long as post-fledglings have access to uneven-aged forests with canopy openings, 3) excessive deer browse is not desirable, and 4) managers should be focused on the landscape scale for the best mix of habitats.

Chickley River DEP Enforcement Restoration

Dr. Caleb Slater came before the Board in December to summarize the effects of Tropical Storm Irene on the banks and channel of the Chickley River in Hawley and the subsequent actions taken by the Town of Hawley and their contractor, ET&L (Eastern Tree and Landscape, Stow), which resulted in the channelization of nearly 5 miles of river. This channelization, performed under an emergency permit from the Massachusetts Department of Environmental Protection (DEP), was later determined to be a violation of the emergency permit as well as a violation of MESA, given that the Chickley River is habitat for one state-listed fish, the longnose sucker, and two state-listed dragonflies. Division personnel from the Westborough Fisheries Section, the Western Wildlife District office, and the Natural Heritage and Endangered Species Program worked closely with staff from the Division of Ecological Restoration and the DEP for a year to negotiate a settlement with the Town of Hawley and ET&L, resulting in a major restoration effort that took place in the fall of 2012. The settlement required ET&L to mobilize heavy equipment and return to the river channel most of the cobble and boulders that had been placed on the floodplain. When available, large wood was also returned to the river channel. The result is a more natural, although still disturbed, river channel, which staff believes will provide better fish and wildlife habitat than the channelized condition. The restored river channel should also respond favorably to seasonal flow events and will transition to a natural river channel over time – something that would not have been possible when the river was channelized. The project highlights the importance of effective intra- and interagency cooperation and should have long term benefits for the environment.

Adaptive Capacity and Its Role in Understanding Climate Change

DFW SWAP Coordinator John O'Leary opened his presentation to the March meeting by defining "adaptive capacity." According to the International Panel on Climate Change (IPCC), adaptive capacity is

"…the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences."

Adaptive capacity can also be thought of as the "coping range" or "coping capacity" of a system. As the definition states, the term was originally used to describe systems, both political and social; the originators of the concept did not speak of species. Thinkers in climate science have since hijacked the term and apply it to species and even subgroups among populations to talk about the potential ability of a species or population to adapt to a change in its environment.

Next, Mr. O'Leary introduced the concept of vulnerability, and its components, exposure and sensitivity. He explained that a species' vulnerability to a potential impact is a combination of its exposure and its sensitivity to that impact. For fish or wildlife species, weather is one exposure, while sensitivity is determined by life history characteristics. The wiggle room, the slight differences among populations within a species, can often give it adaptive capacity to deal with the vulnerability. He stressed that nothing is simple in biology – there is a lot scientists don't know about a given species – and one modifier can be its adaptive capacity.

Mr. O'Leary then observed that many of the expected scenarios under climate change are not too rosy: There are some good effects, but there are limits on species' ability to respond to climate change and the limits are not well-understood by the mainstream climate-change world. The recent preliminary work on adaptive capacity indicates that people are a lot less sure about the effects than the declarative statements they make would suggest.

He went on: How do species respond to rapid climate change? Evolution allows species to change over time, but it requires lots of generations, which is a problem for some and not for others. The question scientists have started to ask is whether there are mechanisms that provide a similar benefit but over a shorter space of time. He stated that there are some ways plants and animals can respond to rapid changes in their environment, behaviorally, morphologically, or physiologically.

Mr. O'Leary then gave some more definitions: *pheno* is a prefix meaning *observable characteristic*; *phenology* is the study of periodic plant and animal life-cycle events; and *phenotypic plasticity* is the ability of an organism to change its phenotype in response to changes in the environment. He illustrated the concept with some striking yet simple examples in a series of photographs: dandelion stem length can change in response to low- or high-light and/or drought conditions; water fleas exhibit different body styles based on their immediate environment: One individual shown was found where there are no predator fish and it showed a smooth body type with one small spike, while another of the same species lived where predator fish are present and it clearly showed more and larger spikes on its body.

The detailed presentation gave more information based on recent studies, cited numerous examples of species, and shared some more recent concepts to make the point that Mr. O'Leary and his colleagues have come to the conclusion that there is still a lot they don't know about phenotypic plasticity and how it operates in populations. He opined that one needs to know the adaptive capacity of a species or you'll be wrong about its vulnerability to climate change. He concluded by reporting that, at this point, he and his colleagues have identified a shortcoming, i.e., this lack of understanding, and they've assembled a working group that is making their peers aware of the issue, including through giving a session on the topic at the National Adaptation Forum. They are also drafting a paper to garner funding to support an effort by the National Academies to bring

Chairman George Darey presenting the Francis Sargent Award at the Board's June meeting to Massachusetts Sportsmen's Council President Mike Moss.

experts together to make a plan going forward that will reorient the climate change discussion as it relates to the vulnerability of species of plants and animals before elaborate – and potentially futile – mitigation strategies are formulated.

After some follow-up questions and further discussion, the Board thanked Mr. O'Leary for his excellent presentation and asked that he continue to keep it informed about developments in this important inquiry.

Southwick Wildlife Management Area Report

Connecticut Valley Wildlife District (CVWD) Manager Ralph Taylor reported on the large amount of ATV activity and its impact on habitat at the new Southwick WMA. He provided a brief overview of the project timeline for conversion of the property from farmland with greenhouses and the subsequent 'repair' activities necessitated by the illegal ATV use (e.g., removing a newly created ATV course, etc.). The damage to grasshopper sparrow habitat has been particularly severe, and has taken the extent of the habitat from nine breeding areas originally to only two now, with none in the large area actively used by the ATV operators. District Manager Taylor and his staff have installed and are monitoring a Buckeye camera system – as both a preventative and an enforcement tool – that transmits from a cell base to cell towers to the CVWD office, but the illegal riders display mixed reactions to seeing the cameras and enforcement is still difficult. The camera system is also tied in to the OLE for use by its enforcement patrols.

In the ensuing discussion, Chairman Darey observed that October Mountain State Forest has been ruined by ATVs; hikers can't use the heavily rutted trails for walking, only for not getting lost.

Deputy Director Deblinger spoke to commend District Manager Taylor, who has embraced more and more technology instead of less as he progresses through his career. Deputy Director Deblinger had made the decision to start with the sophisticated camera system in the CVWD because District Manager Taylor is always so willing to continue learning and mastering new technologies as they emerge. Chairman Darey offered the Board's thanks to District Manager Taylor for both his excellent presentation and his hospitality in hosting the May meeting.

Miscellaneous

Congratulations

Chairman Darey took great pleasure in presenting the Francis Sargent Award at the Board's June meeting to Massachusetts Sportsmen's Council President Mike Moss, who has long been an active advocate for sportsmen and conservation across the state. The entire Board, surrounded by Mr. Moss's family, friends, colleagues, and fellow Surf Casters' Club members, thanked him for his hard work and dedication in protecting the Commonwealths environmental resources and ensuring their wise use and stewardship by sportsmen across the state.

FISHERIES

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

Overview

Fishing, hunting, and wildlife-related recreation are important recreational activities for residents and nonresidents of Massachusetts. According to the U.S. Fish and Wildlife'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 nonresidents 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 a 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 stream/river and pond/lake fisheries habitat. These habitats include both coldwater and warmwater resources. There are approximately 2,675 lakes and ponds, totaling about 142,681 surface acres. Pond and lake waters are mostly less than 500 acres in size. The two largest bodies of water, both manmade drinking water supplies, are the Quabbin (25,000 acres) and Wachusett (5,000 acres) reservoirs. The largest river in Massachusetts is the Connecticut River, with 72 miles (7,284 acres) transecting the Commonwealth. The 2,027 named streams flow about 10,704 miles and comprise approximately 14,900 acres. The protection, management, and enhancement of these inland fisheries resources and their associated habitats involved several ongoing fisheries projects.

Stream and River Research Project

Todd Richards, *Project Leader*

Stream Habitat Restoration Project: Hamant Brook, Sturbridge

The Division is investigating stream habitat restoration activities on Hamant Brook, a stream flowing through the Leadmine Mountain 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 help to restore stream form and function, improve the stream temperature regime, restore coldwater habitat downstream to the Hamant Brook confluence with the Quinebaug and improve fish passage from the Quinebaug upstream into Hamant Brook to benefit native fluvial fish species in the Quinebaug River.

Progress on the Hamant Brook Culvert Replacement Project focused on development of the 30% design drawings for the culvert replacement, discussion of preferred alternatives with stakeholders and pre-permitting meetings. Comments regarding the culvert replacement have been received from the landowners, Town of Sturbridge (Conservation Commission, Planning Board, Trails Committee, Board of Selectmen, Sturbridge historical) and will be incorporated into the 60% designs by the end of the summer of 2013. As designed, the existing 6 foot by 7 foot concrete box culvert will be replaced by a 36' wide corrugated arch culvert with natural bottom substrate and three dams will be removed. The Division also continues to monitor stream temperature at multiple locations throughout the watershed to monitor changes in temperature associated with the project. Crews also conducted standard fisheries surveys within the project area to be able to determine the extent of the increase in available brook trout habitat once the project is complete.

Stream Flow Monitoring Project

A stream flow monitoring project was continued in collaboration with the Massachusetts Cooperative Fish and Wildlife Research Unit to examine stream flows in small streams statewide. Three treatments were described: 1) relatively unaltered stream flow conditions (those without large water withdrawals; 2) stream flow conditions downstream of water supply reservoir impoundments; and 3) stream flow conditions downstream of unregulated impoundments. A total of 5 replicates are anticipated, of which 2 are complete and 2 are in progress. Transducers that measure stream stage have been installed in and around the Westfield, Greenfield, Westborough, Fitchburg, and South Deerfield water supply systems. Efforts to create stage/discharge relationships are underway at all pressure transducer installation sites. Fish community sampling is anticipated at all research locations in FY 14.

Sustainable Water Management Initiative (SWMI)

Work on this project in this fiscal year included the completion of the pilot process, designed to test drive

several communities through a mock permitting exercise and the incorporation of the SWMI Framework into draft regulations, which are anticipated to enter the public process in August 2013.

In collaboration with Coldwater Fisheries Biologist Stolarski, the Project Leader also performed a statistical analysis on the SWIMI model. They used leave-one-out cross-validation to generate an error distribution for the model. This distribution was then used to generate 95% confidence intervals around the mean error of the model; these confidence intervals will be used to assess if the error associated with new predictions are significantly different from the mean error of the model itself.

Instream Flow Council Activities

The Project Leader began responsibilities as President of the Instream Flow Council (IFC) in FY 13. His responsibilities focused primarily on planning for a workshop in 2015 that will be open to all instream flow practitioners and held in Portland, Oregon. Other responsibilities included assisting in the completion of an IFC review of research conducted on the Niobrara River, Nebraska; scheduling executive committee meetings; archiving historical instream flow resources; facilitating votes for executive committee members; and presenting awards according to IFC bylaws.

Fisheries Survey and Inventory

Leanda Fontaine, *Coordinator*

Annual Stream Survey Meetings

Annual stream survey meetings were held with each of the District fisheries biologists and their technicians between May and June 2012, to discuss the Stream Survey Priority Lists for the 2012 field sampling season. These priority lists are generated by the Field Headquarters Fisheries staff to include data gaps in the fisheries survey database and fulfill data requests submitted by internal and external sources. The Stream Survey Priority Lists were reviewed by the Fisheries Biologists and any notes or changes to the lists and any necessary coordination of logistics with the Field Headquarter staff on particular survey requests were taken care of during the meetings. A brief overview of the stream survey protocols was discussed, in addition to a fish identification exercise that was also conducted with the District staff.

Statewide Fisheries Survey and Inventory

Stream Survey and Inventory efforts continued in FY 13, sampling 272 sites in 21 watersheds (Table 1) and capturing nearly 33,600 individuals. The summer 2012 stream survey season was a difficult one due to drought-like conditions across the state. The low levels of water made stream surveys difficult to conduct for all District crews. A total of 79 new rivers and streams that had no previous fisheries data was among those surveyed in FY 13, 18 of which were found to support coldwater species.

Five lakes and ponds were surveyed in FY 13 as well, Laurel Lake in Lee, Congamond Lake (Middle Basin and Southern Basin) in Southwick, Newton Reservoir in Athol, and Populatic Pond in Norfolk. The surveys conducted on Laurel Lake are part of an ongoing fisheries investigation in response to the presence of the zebra mussel population that exists there. The surveys conducted on the Congamond Lake basins are part of an annual largemouth bass survey to assess the health of the bass population there, as that waterbody hosts the greatest number of bass tournaments in the state per year.

Table 1. Watersheds sampled and numbers of samples taken from each for the Stream Survey and Inventory in FY 13.

Watershed	Number of Surveys
Nashua	43
Westfield	43
Deerfield	41
Connecticut	20
Concord	19
Chicopee	17
Merrimack	15
Charles	14
Millers	14
Housatonic	13
Hoosic	10
Neponset	9
North Coastal	5
Taunton	5
Blackstone	3
French	3
Quinebaug	2
Shawsheen	2
Weymouth and Weir	2
Islands	1
South Coastal	1

Anadromous Fish Investigations

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

In FY 13, the DFW hired three 6-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 3-month seasonal workers were hired to staff the Essex fishway on the Merrimack River. Holyoke Gas & Electric, as directed by the conditions of their FERC hydroelectric license, hired seasonal employees to staff the Holyoke fishway, and Firstlight Power and USGS employees from the Conte Lab monitored fish passage at the Turners Falls fishways. The Project Leader supervised these activities.

A total of 9,000,608 unfed Atlantic salmon fry from the Roger Reed State Fish Hatchery was scatter-planted from shore into 40 tributaries of the Connecticut River

in spring 2013. Stocking took place on 19 days between April 8 and 29.

During FY 13, the Project Leader was actively involved in FERC proceedings concerning applications for exemptions and licenses, amendments of exemptions and licenses, preliminary permits, testing of downstream fish passage, and other design and repair activities for at least 20 different fish-passage-related projects across the state. The Project Leader also worked with the Massachusetts Department of Energy Resources, commenting on the applications of 24 hydroelectric projects seeking to qualify for "Low Impact Hydroelectric Certification" and/or "Green energy" credits in Massachusetts; nine originated in Massachusetts, 11 were in Vermont, two were in Connecticut, and two in New Hampshire.

Connecticut River

The Project Leader actively participated in the Connecticut River Atlantic Salmon Commission (CRASC), and continued as the chair of the CRASC Technical Committee. 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.

Holyoke

The City of Holyoke (Holyoke Gas and Electric Co.; HG&E) bought the Holyoke Hydroelectric project from Northeast Utilities in 2002. The Project Leader has been involved in ongoing negotiations with the new owner to settle the outstanding issues and finalize the FERC license for the project (awarded in 2001). Holyoke Gas and Electric Co., as directed by the conditions of their new FERC hydroelectric license, hired seasonal employees for the Holyoke fishway in spring 2013. The Project Leader supervised their activities.

Because 2013 fish passage operations are ongoing at this time, this report summarizes the 2012 fish passage activities. No major malfunctions were experienced any of the fishways on the Connecticut or Westfield rivers in 2012.

Upstream fish passage facilities were operated for 83 days from April 2 through July 8, 2012, and weekdays from September 15 through November 15, 2012, with some exceptions. During the spring, high flows and subsequent turbidity/poor visibility prevented observation for, and trapping of, Atlantic salmon, so fish passage was suspended April 24–25, April 26–28, May 10–12, June 1, and June 3–5. During the fall season, the fish lifts were not operated October 15–23, when fish passage attraction flows were not available due to a scheduled maintenance outage (dewatering) of the Holyoke Canal System. The facility passed a total of 505,261 anadromous fish and 2,528 fish of 23 resident species (including adult American eel). Five shortnose sturgeon were collected during the fall season. No Atlantic salmon or shortnose sturgeon were collected during fall lifting operations.

American Shad.

The number of days that passage was greater than 1% of the seasonal total was considerably less than 83. The number of days that passage is greater than 1% of the seasonal total, and the percentage of the total run that these days comprise, is a measure the temporal distribution of the run. The over-1%-daily-passage totals were: American shad, 91% of 490,431 in 26 days; blueback herring, 100% of 39 in 14 days; sea lamprey, 96% of 14,089 in 14 days; striped bass, 90% of 336 in 24 days; gizzard shad, 76% of 337 in 28 days; Atlantic salmon, 100% of 29 in 18 days.

Atlantic Salmon

Twenty-nine (29) Atlantic salmon were counted during the spring/summer fish passage season at the Holyoke fishlift; 2012 passage was 8% of the record passage of 1992, 40% of the previous 5-year mean, and 41% of the previous 10-year mean. Ten Atlantic salmon trapped at Holyoke during the spring/summer season were radio-tagged and released as per agreement with TransCanada.

American Shad

The total number of shad lifted in 2012 (490,431) was 69% of the record high passage of 1992; 2012 passage was 281% of the previous 5-year mean, and 247% of the previous 10-year mean. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed this project on the 48th day of passage, May 28. A total of 911 American shad was sampled for biological data on 44 days from April 16 through June 15. Fork length, weight, sex, and scale samples were collected from all individuals. This represents 0.2% of the total American shad passed for the year and between 0.03% and 10.5% 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 90%. The weighted sex ratio of American shad lifted at the Holyoke facility in 2012 was 62% males and 38% females.

Fish-lift personnel trapped and trucked a total of 4,072 shad for restoration efforts.

Other Anadromous Fish

Blueback herring passage in 2012 was 39. This was 47% of the previous 5-year mean and 7% of the previous 10-year mean.

Sea lamprey passage in 2012 (14,089) was 15% of the record passage of in 1998 and was 40% of the previous 5-year mean and 35% of the previous 10-year mean.

Gizzard shad passage in 2012 was 337. This was 158% of the previous 5-year mean and 61% of the previous 10-year mean.

American Eel

Implementation of the 2012 American eel study plan included:

Monitoring of upstream eel passage with five eel passage / traps on the Holyoke side of the Project: in the tailrace fish lift and spillway fish lift structures, in the fish lift attraction water system upper stilling basin, just downstream of the spillway fish lift entrance in the bypass reach, and in the tailrace canal on the downstream side of the canal louver bypass system discharge flume.

Monitoring of upstream eel passage with an eel ramp on the South Hadley side of the Project in the bypass reach.

Visual surveys within the Holyoke fish lift structures for eel aggregations and behavior toward determination of permanent ramp siting.

Tabulation of hydraulic, atmospheric, and other variables during the eel migration season. These included total river discharge, nighttime fish lift attraction flow, water temperature, local rainfall, moon illumination, and hourly rubber dam spilling status.

In 2012, eel ramps were deployed beginning May 26. Also, for the 2012 season, a fixed eel ramp, designed to withstand fish lift attraction flows, was constructed and permanently installed in the upper stilling basin following the spring / summer upstream fish passage season. The South Hadley eel ramp, bypass reach ramp, and attraction water systems on both sides of the Project were reconstructed for 2012 following their destruction due to flooding during the 2011 season.

Collections during 2012, totaling 39,423 eels, were the highest yet recorded at Holyoke Dam (Figure 1). The majority, 35,064 were collected from the Holyoke side of the Project: 19,996 from the spillway ramp, 14,814 from the stilling basin ramp, 241 from the bypass reach ramp, and 13 from the tailrace ramp. Another 4,359 were collected from the South Hadley eel ramp. The vast majority were collected during a five-day period, August 13 – 17, a period of near maximum seasonal water temperatures (27°C), when 31,616 eels were collected from the Holyoke side of the Project and 3,887 were collected from the South Hadley ramp. Because of collection hopper overcrowding and the resultant insufficient water volume, and high temperatures, 9,589 mortalities were recorded and an additional 1,500 eels were released downstream to expedite their return to flowing water and reduce mortalities. Therefore, the count for eels passed upstream was 23,975. Measures were implemented during 2012 to alleviate the conditions contributing to mortality, including increasing frequency of collections to two times per day when needed, enlarged collection hoppers for the spillway stilling basin ramps, and a rain event monitoring protocol to increase frequency of collections proactively following rain events.

Turners Falls

The fish ladders at Turners Falls were operated for a total of 76 days from May 12 through July 7, 2012. Upstream fish passage counts were made at the Spillway, Gatehouse, and Cabot fish ladders by review of recorded passage. Digital recordings were reviewed by employees of Firstlight Power. All ladders were monitored 24 hours each day unless technical problems occurred. All fish ladders remained open for passage 24 hours each day.

Anadromous Fish Passage

American shad and Atlantic salmon were identified and enumerated at the Spillway, Gatehouse and Cabot ladders, Sea lamprey were counted only at Gatehouse.

Atlantic Salmon

During the spring/summer migration, 10 adult Atlantic salmon were allowed to pass the Holyoke fish passage facility. Three of these were observed passing the fish ladders at Turners Falls.

American Shad

The number of shad passing the Gatehouse fish ladder in 2012 (26,727) was 44% of the maximum passage of 1992, 306% of the previous 5-year mean and 462% of the previous 10-year mean. The number of shad passing the Spillway fish ladder in 2012 (10,608) was 90% of the maximum passage of 1992, 660% of the previous 5-year mean and 487% of the previous 10-year mean. The number of shad passing the Cabot fish ladder in 2012 (51,901) was 55% of the maximum passage of 1992, 268% of the previous 5 year mean and 364% of the previous 10 year mean.

Examining the cumulative percent of shad passed at Gatehouse, 50% of fish passed this ladder on the 51th day of the migration, which was May, 25, 2012. Only 5.4% of the shad lifted at Holyoke (490,431) passed the Gatehouse observation window, well below the restoration goal of 50%. Examining the cumulative percent of shad passed at Spillway, 50% of fish passed this ladder on the 49th day of the migration, May 23, 2012. Examining the cumulative percent of shad passed at Cabot, 50% of fish passed this ladder on the 50th day of the migration, May 24, 2012.

Other Anadromous Fish Species

A total of 4,503 Sea lamprey passed the Gatehouse fishway in 2012. This represents 14% of the maximum passage of 2008, 35% of the previous 5-year mean and 41% of the previous 10-year mean.

Westfield River

In 2012, a fish ladder was operated for the 15th year at the A&D hydroelectric dam in West Springfield. The fishway and associated downstream bypass facilities were constructed in the fall of 1995. 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 had become nonoperational and was replaced by a new structure in 2012.

Anadromous Fish

The West Springfield fish passage facility operated for 87 days in the spring of 2012. The number of days that passage was greater than 1% of the seasonal total was considerably less than 87. The number of days that passage is greater than 1% of the seasonal total, and the percentage of the total run that these days comprise, is a measure of the temporal distribution of the run. The over-1%-daily-passage totals were: American shad, 85 % of 10,367 in 20 days; Sea lamprey, 93% of 392 in 25 days; Atlantic salmon, 100% of 6 in 6 days.

Atlantic Salmon

During the spring/summer season, 6 Atlantic salmon were trapped. All salmon were transported by personnel of the USFWS to the Richard Cronin National Salmon Station, Sunderland.

American Shad

Totals of 10,373 American shad, 392 sea lamprey, 0 striped bass, 3 Blueback herring, 0 American eel, and 176 gizzard shad were passed upstream in spring/summer 2012. The shad passage represents a new record high and 206% of the previous record high of 5,029 in 2011.

Non-anadromous Fish

White sucker, brook trout, brown trout, rainbow trout, tiger trout, and smallmouth bass were documented passing upstream through the West Springfield fish passage facility in 2012.

Merrimack River

In FY 13, the Project Leader actively participated in Merrimack River Policy and Technical Committee meetings as well as several working group meetings. The two mainstem fish lifts on the Merrimack River in Massachusetts (Lawrence and Lowell) were operated and monitored for anadromous fish passage during the spring of 2013. Because 2012 fish passage operations are ongoing at this time, this report summarizes the 2012 fish passage activities. No major malfunctions were experienced any of the fishways on the Merrimack River in 2012.

Essex Dam

The Essex Dam fish elevator operated for 87 days between 16 April and 13 July 2012. For the fall season the fishway was operated from 15 September through 1 November. During the spring migration period the Essex Dam fish elevator was operated seven days per week. Hours of operation were generally 8:00 A.M. to 4:00 P.M. throughout the season. During the fall, four lifts were made each weekday.

Anadromous Fish Passage

A total of 137 adult Atlantic salmon was captured at the Essex fishlift during spring 2012. This was 34% of the previous record passage of 2011. Salmon returns were 90% of the previous 5-year mean, and 120% of the previous 10-year mean. No salmon were captured in the fall. All were trapped for broodstock 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 2012 (21,396) was 29% of the record high passage of 2001. 2012 shad passage was 121% of the previous five year mean and 86% of the previous ten year mean. 568 shad were trapped and trucked for spawning to the USFWS Nashua Fish Hatchery, where 5.4 million fry were produced, of which 3.3 million were stocked in the Charles River and 2.1 million stocked in the Merrimack River; 176 shad were trapped and trucked for spawning to the USFWS North Attleboro Fish Hatchery, where 3.7 million fry were produced and stocked in Charles River; 243 shad were sampled for biological data collection over 19 days.

River Herring

The total 2012 passage of river herring was 8,992, this was 2% of the record high passage of 1991. The 2012 herring passage was 1,106% of the previous 5-year mean and 283% of the previous 10-year mean.

Other Anadromous Fish

Total number of sea lamprey, striped bass, and gizzard shad passing through the Lawrence fish lift were 2,067; 0; and 0 respectively.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator began (23 April) one week after lifting operations began at the Lawrence fishway, approximately 12 miles downstream, and concluded on July 13. The system was operated seven days per week, generally from 7:00 a.m. to 6:00 p.m. Frequency of lifts varied between 0.5 to 2 hours based on the density of fish observed in the hopper bucket. Estimates of fish passage were made by CHI employees who observed the hopper bucket during each lift.

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

The estimated total number of American shad passed at the Lowell facility in 2012 was 1,753, which represents 8.2% of the shad passing through the Lawrence fishway this season.

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

Other fish species of interest and numbers of fish sighted at the Lowell fish lift included river herring, 1,809; Lamprey, 166; shad, 1,753; and Striped bass, 1. Assorted riverine species were noted but not counted.

Atlantic Salmon Restoration Program

The collective efforts of the states of Vermont, New Hampshire, Massachusetts, and Connecticut and the USFWS to restore Atlantic salmon to the Connecticut River Basin ended in FY 13 after nearly four decades.

The lynchpin of the Connecticut River Atlantic Salmon Restoration Program was the production of millions of eggs and fry by the USFWS's White River National Fish Hatchery in Bethel, Vermont, and sea-run broodstock management and spawning operations at the Cronin National Salmon Station in Sunderland. In August 2011, Tropical Storm Irene severely damaged the White River Hatchery, leading to its depopulation and closure in early 2012. This event and continued disappointing returns of adult Atlantic salmon to the Connecticut River led the USFWS to withdraw its support and resources from the Program in July 2012. As a result, the number of fry available for stocking was dramatically reduced in both 2012 and 2013, and the last Atlantic salmon smolts were stocked from the Eisenhower National Fish Hatchery (North Chittenden, Vermont) in 2013. Sea-run returns are being held at the Cronin National Salmon Station this summer, but that facility will not be available in 2014.

The USFWS egg/fry-production and broodstock-management operations were critical components of the Restoration Program and, without them, the restoration effort has no real, viable chance of success moving forward. Therefore, at its November 2012 meeting, the Division's Fisheries and Wildlife Board accepted the staff's recommendation to end the DFW's efforts to restore Atlantic salmon to the Connecticut River. The last Atlantic salmon fry were stocked out of Roger Reed Hatchery in April and all remaining broodstock Atlantic salmon were stocked out as well. The state of Vermont stocked fry in 2013 but is unlikely to continue to do so. New Hampshire did not stock fry in 2013. Connecticut will continue to stock fry but at about half their normal levels. This effort will allow continued production of broodstock salmon for a recreational fishery in Connecticut.

In June 2013, the USFWS informed the DFW that it will also be withdrawing its support and resources from the Merrimack River Atlantic Salmon restoration program.

Atlantic Salmon Fry Stocking

Atlantic salmon fry from the Roger Reed State Fish Hatchery were stocked on 19 days from April 8–29, 2013. All fry stocked in 2013 were bulk-transported from the hatchery. Water was oxygenated or both oxygenated and aerated. Fry were transported by DFW personnel. Enumerated by weight and transferred to 19-liter plastic pails filled with river water, the fry were stocked using the standard scatter-plant method. Hatchery water temperature was generally similar to stream temperatures so no acclimation time was necessary prior to release. Stocking density was between 25 and 55 fry per habitat unit (100 square meters of stream area). Stocking density was converted to the number of fry to be released per 100 feet of stream length to aid the stockers in distributing the fry evenly throughout the section. Fry were scatter-planted from shore throughout stocked sections of all streams.

The number of fry stocked into Massachusetts waters in 2013 (900,608) was only 66% of the average of the last 5 years. This reduction was due to the above-referenced loss of fry production from the White River National Fish Hatchery. The Deerfield (274,612 fry) and the Westfield (467,577 fry) river basins were stocked with Atlantic salmon fry for the twenty-sixth and twenty-fifth consecutive years, respectively.

Atlantic Salmon Fry Survival

Salmon-stocked streams were sampled for juvenile Atlantic salmon in 2012. In 2012, 40 sites on 30 streams were sampled by DFW personnel.

A single-pass technique utilizing a battery-powered backpack shocker was employed on all streams sampled. All fish seen were captured. Fish were held in live cars after capture, identified to species, and measured for total length. Upon completion of 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.

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 2011smolt production (37,888) was produced by multiplying the population estimate of 1+ salmon by the estimated over-winter survival (0.6).

Warmwater Fisheries Investigations

Richard Hartley, *Project Leader*

Esocid Stocking Program

The DFW relies entirely on surpluses from other states for esocid stocking (northern pike and tiger muskellunge). In recent years, the DFW's historic sources of esocids have begun to scale back their production of northern pike. Additionally, the historic sources of surplus tiger muskellunge have also scaled back production or completely discontinued their programs. As a result, the DFW has not had any tiger muskies available since 2006, and last received northern pike in 2008. However, in the spring of 2013, New Jersey provided Massachusetts with 25,684 juvenile northern pike, which were stocked into Quinsigamond Lake, Worcester, and Quaboag Pond, Brookfield.

Freshwater Sport Fishing Awards Program

Spring of 2013 marked the 50-year anniversary of the Freshwater Sport Fishing Awards Program. Minimum qualifying weights are currently in place for 22 different species of fish. Beginning in 2005, lower minimum weights for Youth anglers (age 17 and under) were established. This addition 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 lucky Adult and Youth anglers who weigh in the largest fish of the year for each of the categories is awarded a plaque and gold pin at an annual awards ceremony. Since the Youth minimum weights were established, the only category that has had no entries is the state's most elusive, the Youth tiger muskellunge. Affidavits are still being received for 2013, so results from 2012 are presented here.

After a record-setting year in 2010 (1,131), the number of pins awarded annually has dropped slightly, with 780 awarded in 2012. (By the end of the fiscal year, however, halfway through CY 13, we were on track for another record-setting year.) Pins were awarded in all 22 categories for Adult anglers and 20 categories for Youth anglers (368 Adult and 412 Youth) for CY 12. Highlights for the 2012 calendar year included a new state record for carp; two largemouth bass over 10 pounds, and a three-way tie for Youth sunfish. Again in 2012, there were no Youth entries for tiger muskie, nor were there any broodstock salmon entries.

After reigning supreme for four consecutive years in the Number One spot with most pins awarded overall, landlocked salmon was bumped by crappie, which was also Number One for Adult anglers, while largemouth bass was ranked Number One among Youth anglers. The eleventh annual Angler of the Year Award (presented to the angler who submits the highest number of eligible species) was presented for the third time in a row to a Youth angler, Jake Souza of Berkley, who weighed in 11 different species.

Freshwater Sport Fishing Gold Pin Awards for 2013

Species	Number of Adult Pins	Number of Youth Pins	Weight of Gold Pin Adult	Weight of Gold Pin Youth
Broodstock salmon	10	0	15 lb. 4 oz.	N/A
Brook trout	11	21	3 lb. 11 oz.	2 lb. 12 oz.
Brown trout	13	8	11 lb. 11 oz.	8 lb. 8 oz.
Bullhead	16	31	2 lb. 5 oz.	2 lb. 12 oz.
Carp	21	7	46 lb. 5 oz.	26 lb. 7 oz.
Chain pickerel	14	21	6 lb. 2 oz.	5 lb. 0 oz.
Channel catfish	40	4	24 lb. 10 oz.	10 lb. 12 oz.
Crappie	54	31	2 lb. 12 oz.	2 lb. 0 oz.
Lake trout	10	3	17 lb. 11oz.	5 lb. 10 oz.
Landlocked salmon	26	9	5 lb. 12 oz.	4 lb. 8 oz.
Largemouth bass	15	55	10 lb. 5 oz.	9 lb. 7 oz.
Northern pike	24	7	25 lb. 12 oz.	18 lb. 5 oz.
Rainbow trout	12	22	5 lb. 4 oz.	5 lb. 12 oz.
Shad	2	2	6 lb. 0 oz.	3 lb. 15 oz.
Smallmouth bass	21	42	6 lb. 6 oz.	5 lb. 0 oz.
Sunfish	29	49	1 lb. 2 oz.	1 lb. 3 oz.
Tiger muskie	1	0	13 lb. 3 oz.	N/A
Tiger trout	7	20	2 lb. 15 oz.	2 lb. 3 oz.
Walleye	9	1	10 lb. 0 oz.	2 lb. 6 oz.
White catfish	8	4	7 lb. 10 oz.	2 lb. 6 oz.
White perch	22	35	2 lb. 9 oz.	2 lb. 8 oz.
Yellow perch	3	40	1 lb. 15 oz.	1 lb. 8 oz.

Bass Tournament Creel Analysis

For the past 17 years, the Fisheries Section has been monitoring the results of black bass (largemouth and smallmouth bass) tournaments to help establish a long-term database of variables such as catch rates and average fish size for specific waters. Any organization that requests the use of a facility governed by the Office of Fishing and Boating Access (OFBA) to hold a fishing event must receive a Special Use Permit. 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 generate information on tournaments held at non-OFBA facilities. The creel sheets are also available for download on the Division's website and completed creel sheets can be mailed to the Warm/Coolwater Project Leader at the Field Headquarters. As of January 2013, and in an attempt to increase participation in the voluntary creel, tournament organizers can now fill out the creel sheets and submit them electronically. (At the close of the fiscal year, June 30, 2013, of the creels sheets submitted for the 2013 season (60), approximately 63% have been submitted electronically.)

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 with limits of bass, total number of bass weighed in by species, total bass over 5 pounds, number of bass returned alive by species, total weight, winning weight and the weight of the biggest bass of the event. There is also a space for the club to include comments. This information is entered into a database to allow Fisheries staff 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 2013 tournament season, so results from the 2012 season are presented here.

In 2012, a total of 204 usable creel sheets were sent in to the Field Headquarters. This represents a voluntary reporting rate of 29%, based on the number of Special Use Permits issued by the OFBA. These 204 tournament creel sheets represented 56 different bass organizations fishing on 51 different waters. A total of 7,207 largemouth bass and 1,703 smallmouth bass were weighed in for a catch rate of 1 bass per 3.2 angler hours. The average weight of a bass weighed in was 1 lb 15 oz. Eighty-six percent of all anglers weighed at least one bass, while 43% 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 Pond, Mashpee, yielded 9 largemouth bass over 5 pounds during 8 tournaments, while the Connecticut River also yielded 9 during 24 tournaments. John's Pond, Mashpee, had the highest catch rate overall at 1 bass per 2.2 angler hours. Whitehall Reservoir, Hopkinton, yielded the highest percent of anglers weighing bass (99%) while Stockbridge Bowl, Stockbridge, had the highest percent of anglers with limits (55%). A breakdown of the number of tournaments by waterbody revealed that most host only a few a year, while the two highest numbers of occurrences continue to take place on the Connecticut River and Congamond Lake, Southwick, which generated creel sheets for 24 and 19 tournaments respectively (21% of all tournaments). Over time, this data will aid in detecting possible changes to these important bass fisheries.

Beginning in 2006, due to its status of hosting the highest number of tournaments outside the Connecticut River, the bass fishery of Congamond Lake, Southwick, has been monitored for many of the same parameters provided by the statewide bass creel survey. This monitoring will aid in determining if the large number of bass tournaments is having a measurable impact on the bass population. To date, as with the statewide creel survey, all indices measured have remained stable.

Fish Kill Investigations

Pursuant to the 1999 Fish Kill Memorandum of Understanding between the DEP, the DFW, the OLE, and the Department of Agricultural Resources (DAR), the DFW is the lead agency in coordinating fish kill response. In 2012, DFW received 36 calls relative to incidents which involved dead fish. Of these 36 reports, 11 (31%) required field investigations by DFW, DMF, DEP or local officials to determine the cause of the kills. The final disposition of the 36 calls was 26 natural kills, including species-specific kills involving black crappie, shad, white perch, white sucker, and yellow perch; 2 pollution kills (WWTP overflow and gas pipeline rupture); 6 mechanical kills including stranding in culverts and saltwater intrusions; 1 hydropower-related (leaking turbine); and 2 agricultural activity (bog operations) kills.

Environmental Review

In 2012, DFW Fisheries Section staff reviewed and provided comments on all major projects published in the *Environmental Monitor* affecting fisheries resources. Staff also provided technical information to a wide variety of consultants and town and state officials on local projects. There were 38 opportunities to review project proposals potentially affecting 47 different waters (36 rivers, streams, and unnamed tributaries, and 11 lakes and ponds) in 31 different cities and towns. Forty-five percent of the requests were received from environmental consulting contractors to fulfill DEP and Massachusetts Environmental Policy Act (MEPA) filing requirements or at the request of local conservation commissions. The remainders of the requests were from state agencies such as DEP, MassDOT and the MBTA (32%); lake management consultants (8%); federal agencies such as the US Army Corp of Engineers (3%); town offices (8%); and local associations such as land trusts (4%). Fisheries resources were partitioned

as follows: warmwater (25%), coldwater (27%), trout-stocked waters (26%, of which 5% were holdover waters), anadromous (15%), rare, threatened or endangered (5%), and unknown (2%). The majority of the projects were related to bridge replacements/rehabilitations over rivers and streams and road reconstruction, including culvert replacements and retaining walls (42%). The remaining reviews included reservoir maintenance, such as repairs or breaching of dams (34%), new construction (proposed extension to a commuter rail; 3%), lake management issues, such as draw-downs for aquatic vegetation management, dredging, beach replenishment and mechanical harvesting (18%), and proposed new well sites (3%).

Coldwater Fisheries Watershed Project

Jason Stolarski, Ph.D., *Project Leader*

Project Leader Stolarski was hired in January 2103 and immediately began two primary projects, the digitization of the agency's pond files and the analysis of statewide coldwater fisheries data. Digitization consisted of manually scanning each pond file document in the Fisheries Section's records; all of the pond files were digitized by early June. The entire archive (141 gigabytes in size) is now accessible to all staff on a shared computer drive and consists of approximately 98,000 scanned pages, maps, and pictures, organized by waterbody name.

For the data analysis project, the Project Leader developed a statistical model to identify high quality coldwater fisheries resources throughout the Commonwealth using a subset of the statewide fisheries database. Regression tree analysis (Random Forest) was used to relate coldwater fish community metrics at over 1,000 specific sampling sites to remotely sensed habitat variables collected at watershed scales. The landscape data used include land cover, surficial geology, infrastructure and impervious surface data, elevation, slope, and road crossings. Once formed, the model can be used to predict the character of coldwater fish communities in streams that have yet to be sampled, based on the inherent habitat conditions. Model predictions and field data will be used to identify between 5 and 10 streams that contain the highest quality coldwater fisheries in the state. As of the end of the fiscal year, the statistical model has been created and the Project Leader is collecting habitat data for unsampled watersheds to generate fish community predictions.

Other Related Fisheries Projects

The Project Leader queried the Fisheries database and for each fish species produced a comprehensive account of every location where that species was sampled throughout the state. He then imported these data into ARC GIS, projected them, and produced comprehensive statewide distribution maps. These maps were then released to a third party that had requested them.

Together with Fisheries Biologist Leanda Fontaine-Gagnon, the Project Leader revised and added supplementary information to the statewide fisheries sampling plan, updating and standardizing lake and sampling protocols to incorporate the use of a fish sedative (Aquis-20E) and the collection of fish weights. The team also worked with the Aquatic Animal Drug Approval Partnership Program administered by the USFWS to gain permission to use the sedative and participate in research testing its effectiveness.

The Project Leader also collected and reviewed scientific literature pertaining to the aquatic invasive diatom *Didymosphenia geminate* following its discovery in a Massachusetts river. From this review, he wrote a summary of current knowledge of the distribution, habitat requirements, and control measures of this organism within North America. In a similar study, he collected, reviewed, and summarized recent scientific literature regarding trout hooking mortality.

The Project Leader also responded to data requests. He queried the Fisheries database using the statistical software, *R*, to produce brook trout catch statistics for streams throughout the state. These and associated metadata such as location, site descriptions, and efficiency comments were provided to the Eastern Brook Trout Joint Venture for their analysis of brook trout populations throughout the East Coast.

Fisheries GIS

David Szczebak, *Project Leader*

During FY 13, the Fisheries Section began a process of increasing and standardizing its work with spatial data. Part of this project involved updating information derived from the Fisheries databases. Using the stream- and pond-sampling database, staff updated the Coldwater Fisheries Resource data layer in MassGIS to reflect these updated data through 2012. They then distributed these data to various cooperators conducting research related to coldwater resources. The GIS Project Leader and Coldwater Fisheries Biologist also created models to produce updatable species maps for access by Fisheries Section and other staff from our sampling database.

The GIS Project Leader and the Chief of Hatcheries worked with District and Fisheries Section staff to create a draft trout stocking layer. To produce the maps, we compiled a master database of specific trout-stocking locations, as well as trout-stocked stream reaches and ponds. Much of this work involved working with District biologists to determine which reaches made sense from a point of view that combined fish movement and angler access. For a public-facing application, they worked with MassGIS staff to create a draft interactive web map. These draft data and maps will be refined during the next fiscal year to create publicly accessible information.

The team also created various maps pertaining to the ongoing Housatonic River restoration. These maps depicted current bathymetry, projected dredging areas, and post-remediation bathymetry in the Woods Pond area.

Working with IT and other GIS staff, the Project Leader transitioned the DFW spatial library to a new geo-data-

2012 Sportfishing Awards Angler of the Year and Gold Pin Winners with Members of the Fisheries and Wildlife Board, Director Wayne MacCallum and Commissioner Mary Griffin.

base format, and worked with DFG GIS staff to create a seamless updating process for the new geo-database library. This new updating process will make updating data in both West Boylston and the District offices much more seamless and keep the data library up to date. The DFW GIS team worked with DFW GIS users to transition their setups for this new geo-database and held onsite training sessions for them at the Field Headquarters to facilitate the transition.

Fish Culture Program

Ken Simmons, Ph.D., *Project Leader*

The Division's four trout hatcheries produced a total of 473,099 pounds of trout in 2013. The annual production goal is 400,000 to 450,000 pounds. 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 limits imposed by the National Pollution Discharge Elimination System

2013 Fish Production

Table 2. Summary of the number trout produced and stocked from each of the Division's four trout hatcheries in FY 13.

(Fall stocking 2012 and Spring stocking 2013)

Species	Size Cat. (inches)	Number of fish				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	9+	0	0	0	6,463	6,463
	12+	39,200	27,675	68,040	63,544	198,459
	14+	0	190,418	0	0	190,418
	Subtotal	**39,200**	**218,093**	**68,040**	**70,007**	**395,340**
Brook Trout	6-9	0	0	0	0	0
	9+	0	0	38,915	0	38,915
	12+	25,700	0	4,800	9,236	39,736
	18+	0	0	0	1,016	1,016
	Subtotal	**25,700**	**0**	**43,715**	**10,252**	**79,667**
Brown Trout	6-9	0	0	0	0	0
	9+	20,000	29,800	25,925	0	75,725
	12+	21,900	0	19,452	9,004	50,356
	18+	0	0	0	485	485
	Subtotal	**41,900**	**29,800**	**45,377**	**9,489**	**126,566**
Tiger Trout	14+	0	0	0	3,365	3,365
	Subtotal	**0**	**0**	**0**	**3,365**	**3,365**
Total		**106,800**	**247,893**	**157,132**	**93,113**	**604,938**

Table 3. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY 13.

(Fall stocking 2012 and Spring stocking 2013)

Species	Size Cat. (inches)	Weight of fish (lbs) Bitzer	McLaughlin	Sunderland	Sandwich	Total Wgt. of Fish (lbs)
Rainbow Trout	9+	0	0	0	2,171	2,171
	12+	31,503	23,699	35,568	39,192	129,962
	14+	0	220,559	0	0	220,559
	Subtotal	**31,503**	**244,258**	**35,568**	**41,363**	**352,692**
Brook Trout	6–9	0	0	0	0	0
	9+	0	0	7,512	0	7,512
	12+	20,025	0	3,348	6,175	29,548
	18+	0	0	0	2,063	2,063
	Subtotal	**20,025**	**0**	**10,860**	**8,238**	**39,123**
Brown Trout	6–9	0	0	0	0	0
	9+	7,098	12,614	10,153	0	29,865
	12+	19,305	0	17,598	7,542	44,445
	18+	0	0	0	1,569	1,569
	Subtotal	**26,403**	**12,614**	**27,751**	**9,111**	**75,879**
Tiger Trout	14+	0	0	0	5,405	5,405
	Subtotal	**0**	**0**	**0**	**5,405**	**5,405**
Total		**77,931**	**256,872**	**74,179**	**64,117**	**473,099**

Table 4. Summary of Landlocked salmon and Atlantic salmon produced at the Roger Reed Hatchery in FY 13.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked Salmon	smolts (8+)	12,000	2,731
	Subtotal	**12,000**	**2,731**
Atlantic salmon	green eggs	1,460,700	-
	unfed fry (1+)	1,011,535	471
	smolts (< 15 inches)	990	470
	adults (15+ inches)	1,202	6,384
	Subtotal	**2,474,427**	**3,465**

permit that each hatchery is issued by the Massachusetts Department of Environmental Protection and the Federal Environmental Protection Agency. Overall, at total of 604,938 brook, brown, rainbow and tiger trout were stocked during the fall 2012 and spring 2013 stocking seasons (Tables 2 and 3).

A total of 67,794 pounds of trout were stocked in the fall, comprising 66,106 pounds of rainbow trout and 1,688 pounds of brown trout. A total of 75,576 rainbow trout and 3,000 brown trout, all in the 12+ size category, were stocked. During the spring of 2013, a total of 405,305 pounds of trout were stocked. There were 286,586 pounds of rainbow trout comprising 319,764 fish. More than 190,000 of these rainbow trout averaged 14+ inches long. Spring stocking also included a total of 39,123 pounds of brook trout comprising 79,667 fish that ranged between 6 and 18+ inches long; 51% of the brook trout were 12 inches or longer. Also stocked were 123,566 brown trout that ranged between 6 and 18+ inches long and totaled 74,191 pounds; 40% of these brown trout were 12 inches or longer. Spring stocking also included 3,365 tiger trout that were more than 14 inches long and averaged 1.6 pounds apiece (Tables 2 and 3). Tiger trout are a cross between a brook trout male and a brown trout female. They are called tiger trout because of their striking tiger-like stripes.

FY 13 was the final year for production of Atlantic salmon for the Connecticut River Atlantic Salmon Restoration program at the Roger Reed Hatchery. The U.S. Fish and Wildlife Service withdrew from the Connecticut River Atlantic salmon restoration program after tropical storm Irene severely damaged the White River National

Fish Hatchery in Vermont. In December, the Fisheries and Wildlife Board voted to phase out the Division's participation in the program in response to withdrawal of the USFWS. Roger Reed Hatchery produced 1,460,700 Atlantic salmon green eggs, 1,011,535 fry, and 990 smolts in FY 13. The fry were stocked into rivers and streams in the Connecticut River drainage basin and the smolts were stocked in the Connecticut River. In addition, 1,202 surplus adult broodstock salmon were stocked in selected waters across the Commonwealth to provide anglers with recreational opportunities to catch these large and beautiful fish (Table 3).

The Atlantic salmon broodstock program at Roger Reed Hatchery will be replaced with a broodstock brook trout program. To begin this program, 600 1-year-old, disease-free brook trout were brought to the hatchery in fall 2012 from the Sandwich State Fish Hatchery. The goal is to produce up to 300,000 disease-free brook trout eggs for the Division's production trout hatcheries for grow-out and stocking.

Several important infrastructure improvement projects were completed at Division hatcheries in FY 13. At McLaughlin Hatchery, Well Number 3 was cleaned and redeveloped, and the turbine pump and motor serviced. Other projects at McLaughlin Hatchery included replacing the six overhead garage doors, which were originally installed in 1968, with a lightweight, energy-efficient model. The electrical wiring and lighting systems in Wells 1 and 3 were also renovated. At Sunderland Hatchery, a large supply of concrete blocks was purchased for reconstruction of old wooden raceways by hatchery staff. In addition, electrical power and lights were installed in the main garage at Sunderland Hatchery. The "road well" at the Roger Reed Hatchery was redeveloped and the turbine pump and motor, originally installed in 1982, were replaced with new energy-efficient models.

There were no changes in hatchery personnel in FY 13.

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WILDLIFE

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Overview

The Wildlife Section is responsible for the conservation, management, and research of wildlife and game populations within the Commonwealth of Massachusetts; habitat management to maintain and enhance biodiversity on state Wildlife Management Areas (WMA); responding to human-wildlife conflicts; guiding and supporting the agency's Large Animal Response Team (LART); and supporting wildlife-dependent recreational opportunities.

Toward these ends, 15 professional biologists in the Section, including foresters, ornithologists, ecologists, and technicians, implement wildlife habitat management and the deer, moose, furbearer, upland game, black bear, wild turkey, waterfowl, and bird conservation programs; study population ecology; license and inspect commercial game preserves; test and license Problem Animal Control (PAC) Agents, wildlife rehabilitators, and falconers; inspect commercial deer farms and other wildlife propagators' facilities; issue and process antlerless deer, turkey, and black bear permits; and administer a statewide pheasant-stocking program.

The Wildlife Section develops science-based regulatory, policy, and programmatic recommendations for the Fisheries and Wildlife Board; provides technical assistance on habitat assessments for proposed management on DCR and other public and private forestlands; serves as the wildlife representative on the agency's land acquisition committee; directs and coordinates with the University of Massachusetts and the USGS Cooperative Fish and Wildlife Research Unit on scientific wildlife research projects within the Commonwealth of Massachusetts; represents the agency on wildlife conservation and management issues in public forums and in partnership with local, state, federal, and private organizations and entities; and serves as the state representative on the Northeast Association of Fish and Wildlife Agencies' various technical committees, as well as for the Northeast Association of Wildlife Administrators.

In FY 13, Wildlife Section staff accomplished substantial enhancements of grassland, shrubland, and young-forest habitats to support rare and declining species on various state wildlife lands. In addition, Wildlife Section staff continued to work with the Division's electronic licensing vendor, *Active Outdoors*, to design and test the major components of *MassFishHunt*'s increased functionality, including the design of and associated regulatory process for online harvest reporting, which was implemented for the spring turkey hunting season.

Habitat Management Programs

Landscape Analysis Projects

Jonathan Brooks, *Wildlife Population Ecologist*

According to a nationwide survey by Responsive Management in 2008, "lack of access" was rated as one of the top three reasons why people no longer continue hunting and is one that fish and wildlife agencies, conservation and sporting organizations, local communities, and landowners can realistically influence in a significant way. Three major barriers to hunting access in Massachusetts, the third-most-densely-populated state, have been determined to be 1) the combination of statutory discharge setbacks, or "safety zones," and development trends; 2) city and town restrictions on hunting practices, including firearms discharge; and 3) private land posted against hunting and/or trespass.

Hunting setbacks are areas where hunting is prohibited either by statute or by regulation. An example of a hunting setback would be the statute prohibiting any individual from hunting within 500 feet of an occupied dwelling without the owner's or tenant's written permission. Wildlife Section staff has worked over many years to develop good setback data in its efforts to respond to municipalities and individuals seeking direction from the Division about wildlife management in general and the options available to towns and landowners in particular. The Wildlife Population Ecologist used new data recently available for each Massachusetts municipality to fine-tune the GIS-based maps already developed by Wildlife Section staff representing setback areas, and calculated that 60% – roughly 3.1 million acres – of Massachusetts is within a hunting or firearm-discharge setback. Continued trends in development sprawl, exacerbated by low-density residential zoning regulations, threaten to close thousands of additional acres to hunting.

Further compounding access limitations, at least 161 communities in Massachusetts have enacted town-wide discharge and/or access bylaws that restrict hunting. The total number of such communities has increased from about 12% of the cities and towns in the state in 1956 to more than 45% today.

Private land (which makes up about 94% of all lands in Massachusetts) offers the majority of potential hunting opportunities in the state, with approximately 78% of Massachusetts hunters surveyed reporting that they use private land for all types of hunting. Private landowners and local communities must therefore cooperate in any long-term plan for sustaining both hunting access and

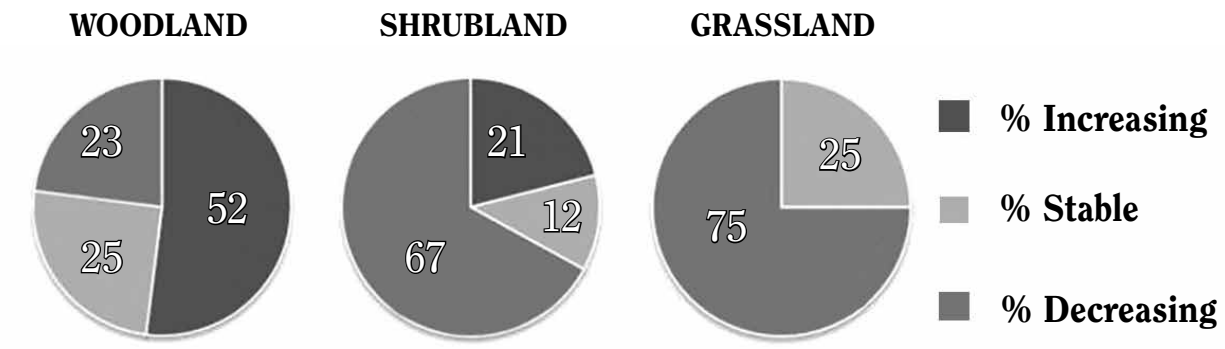


Figure 1. Data from the North American Breeding Bird Survey, indicating the declines in bird species that depend on shrublands and grasslands for some part of their life cycle.

the public benefits of hunting and wildlife management. GIS analysis was conducted using the number and location of hunting and sporting licenses sold in order to identify land parcels for potential purchase. Areas with more hunters and less huntable land were given a higher priority.

A statewide beaver flood-lands visualization project is ongoing, using a model to identify potential low-gradient beaver sites on those portions of Massachusetts that are currently supporting some type of development. This provides an idea of potential acres of habitat on significant portions of the landscape where humans have excluded this vibrant natural disturbance process.

Wildlife Habitat Program

John Scanlon, *Habitat Program Leader*

The Habitat Program is a component of the DFW's Biodiversity Initiative (BDI), which seeks to maintain and restore the native diversity of flora and fauna in the Commonwealth through active land management. Within the BDI, the Habitat Program works with the NHESP Ecological Restoration Program to reestablish open grassland, shrubland, and young-forest habitats that benefit rare and declining species of conservation need, including a variety of native birds (Figure 1). The BDI brings together ecologists, wildlife biologists, and foresters to accomplish this important work.

The Habitat Program focuses on creating a distribution of open habitats that were formerly provided through natural processes, like flooding and fire, across more than 190,000 acres of state wildlife lands. Human land-use change has substantially limited beaver impacts across the landscape, for example, and has greatly reduced the natural occurrence of fire in the coastal regions and major river valleys of the state. The extensive open habitats that formerly resulted from these natural disturbances can be emulated through management of abandoned-field sites, which typically involves some tree clearing, extensive brush mowing, and limited use of prescribed fire. The Habitat Program focuses on identifying appropriate post-agricultural sites for management of open habitats that will complement existing DFW Forest Reserve lands, and help conserve the biological diversity of species and communities across the landscape.

The Habitat Program is also responsible for monitoring forest cutting operations on over 45,000 acres spread across 175 parcels of private land that are subject to Wildlife Conservation Easements (WCE), assisting with land acquisition, and providing technical assistance to private and other public landowners interested in enhancing wildlife habitat for species of conservation need.

The Habitat Program's objectives for state wildlife lands are to:

1) Build and maintain a property management geo-database for landcover data, boundary data, and treatment data.

2) Use the geo-database to design and carry out habitat management operations that meet DFW landscape composition goals for open and mature forest habitats.

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 sites where Habitat Program objectives are complementary with Ecological Restoration Program objective, and pursue joint endeavors with that program.

DFW landscape composition goals for the state's WMAs (Figure 2, below) are science-based, have received broad public support, and call for about 20-25% of uplands to occur as open habitats (including grassland [1-2%], shrubland [8-10%], and young forest [10-15%]) with the remaining 75-80% in a full-canopy forest condition, including 10-15% in forest reserves, across more than 150,000 acres of state wildlife lands. The Habitat Program Leader and three habitat biologists conduct tree clearing, brush mowing, invasive plant control, and biological monitoring statewide through a public, competitive bidding process to help move from current

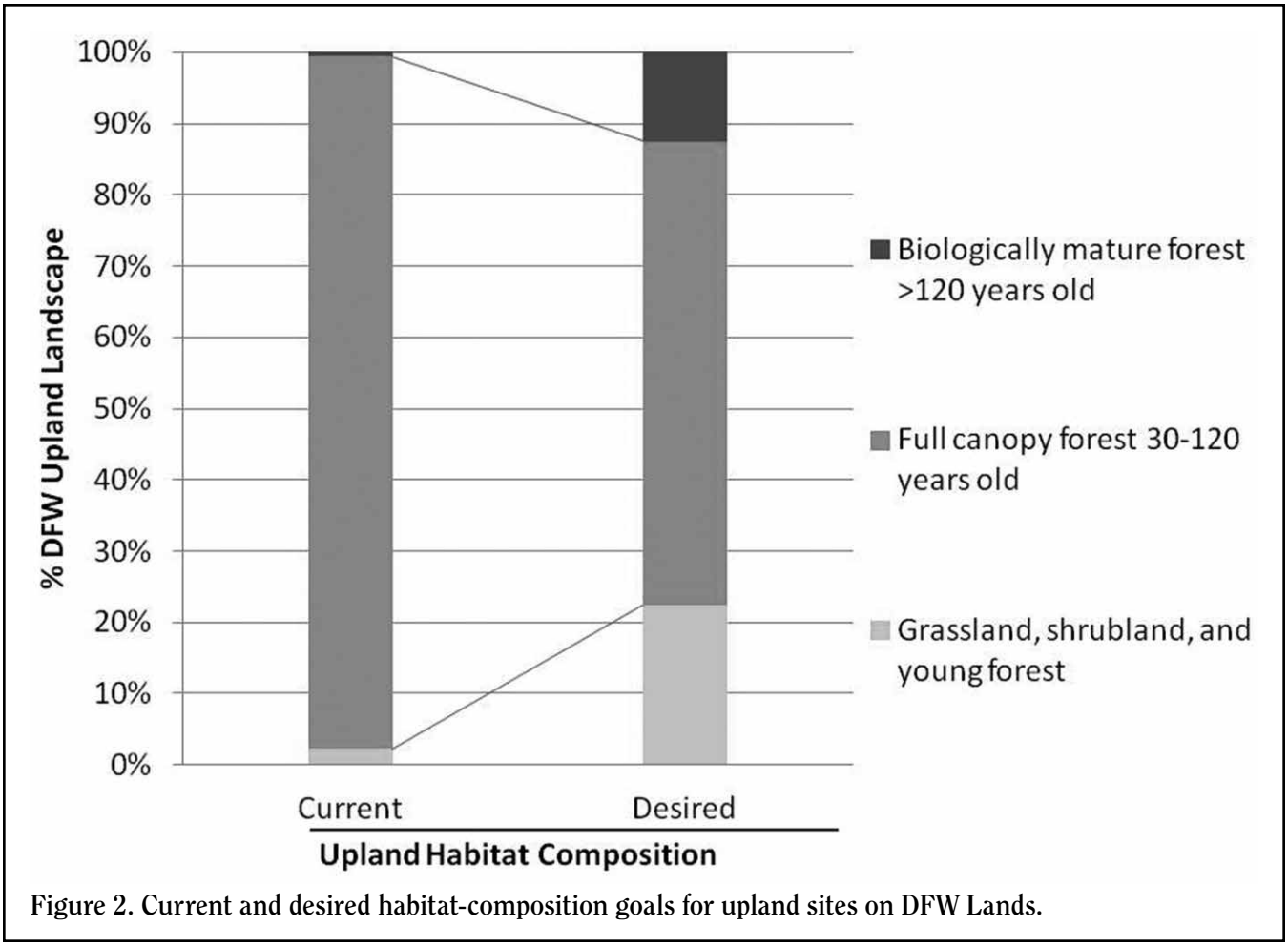


Figure 2. Current and desired habitat-composition goals for upland sites on DFW Lands.

to desired conditions. Habitat management activities are conducted under environmental permits through the Department of Environmental Protection (DEP) Wetlands Protection Act (Chapter 131), and the Department of Conservation and Recreation (DCR) under the Massachusetts Forest Cutting Practices Act (Chapter 132).

Grassland Habitat Project

Ben Mazzei, *Habitat Biologist*

Three grassland sites were enhanced in FY 13, including the Noquochoke WMA in Dartmouth, the Frances Crane WMA in Falmouth, and the Southwick WMA in Southwick (Table 1). Existing grassland at Frances Crane North was maintained using prescribed fire (see the Ecological Restoration Program subsection of the NHESP Section report), and extensive grassland restoration was planned for Southwick. Active reclamation occurred at Dartmouth as follows:

Noquochoke WMA, Dartmouth; 16 Acres of Reclaimed/Established Grassland

In May-June 2012, 16 acres of cold-season grasslands and invasive plants were mowed and treated with herbicide to prepare the area for a native warm-season grass planting. During May 2013, the 16 acres that were previously mowed and treated with herbicide, were seeded with a tractor mounted seeder designed specifically for warm season grasses. In coordination with the DFW Ecological Restoration Program, this native warm-season grassland habitat will be maintained in the future using a combination of prescribed burning and mechanical mowing. Contracted licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers and backpack pump sprayers to control cool season grasses and selected invasive exotic plants over 3 acres of abandoned field area. This work was completed to help prepare the area for warm season grass planting.

Shrubland Habitat Project

Ben Mazzei, *Habitat Biologist*

Four shrubland sites were improved in FY 13 with a combination of tree clearing and brush mowing (Table 1), and invasive plant control (Table 2) at the Stafford Hill WMA in Cheshire, the Frances Crane WMA in Falmouth, the Millers River WMA in Athol, and the Leyden WMA in Leyden.

Stafford Hill WMA, Cheshire; 42 acres of reclaimed shrubland

In January-March 2012, 18 acres of 10-25-year-old forest growing on abandoned pastureland was cleared of most standing trees to expand and connect to the adjacent 60 acres of existing old field habitat. In January-March 2013, the final 42 acres of 10-25-year-old forest growing on abandoned pastureland was reclaimed. A whole-tree-harvesting machine was used to fell and bunch trees, and a forwarder was used to transport

trees. Scattered mast-producing trees (black cherry, oak spp., butternut), den/cavity trees, wild apple trees, and native shrubs were retained within these 42 acres to provide food and cover for wildlife species. A substantial amount of woody debris was also retained throughout these 42 acres, and some of the debris was put into brush piles for the benefit of wildlife. With the completion of the final 42 acres of hedgerow removal and old-field reclamation, the DFW has connected previously maintained shrublands with recently reclaimed fields to create a total complex of 90 acres of early-successional habitat. This 90 acres of recently connected and reclaimed shrubland/grassland is less than ½ mile from a 160-acre block of early successional habitat that was reclaimed by the DFW's Habitat Program within the last 5 years. Contracted licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control invasive garlic mustard on 60 acres of abandoned shrubland habitat.

Francis Crane WMA, South; Falmouth; 60-65 acres of mowing pitch pine–scrub oak savannah

A total of 60 acres of pitch-pine—scrub-oak savannah was re-mowed using a tracked Fecon-type mower (Table 1). The DFW plans to restore and maintain more than 300 acres of fire-adapted natural communities within the Francis Crane South tract of the Francis Crane WMA in Falmouth. This project will restore areas of sandplain grassland, sandplain heathland, and scrub oak shrubland, which are ranked as the highest priority type of natural communities: S1. This project will also restore extensive areas of Pitch Pine – Scrub Oak Community (S2). This area will be maintained in the future through prescribed fire and additional mowing. Contracted licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, multiflora rose, bittersweet, and other invasive woody plants over 65 acres of abandoned-field area.

Millers River WMA, Cass Meadows; Athol; 30 acres of reclaimed shrubland

Contracted licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control invasive Japanese knotweed, honeysuckle, buckthorn, multiflora rose, and bittersweet on 30 acres of abandoned shrubland habitat. Vendors also used a cut stem application to control large (taller than 6 feet) glossy buckthorn which was found along the resource area.

Leyden WMA, Leyden; 55 acres of reclaimed shrubland

Contracted licensed pesticide applicators selectively applied herbicide using powered backpack mist-blowers to control exotic honeysuckles, autumn olive, multiflora rose, bittersweet and other invasive woody plants over 55 acres of abandoned-field area.

Young-forest Habitat Project

Brian Hawthorne, *Habitat Biologist*

Phillipston WMA; 40 acres of young forest habitat

The DFW responded to a request from the Town of Phillipston for assistance with reducing winter ice hazards along Route 101 (Queen Lake Road) where mature old-field white pine and hemlock on DFW land shaded the state highway. The DFW removed pine and hemlock trees within 200 feet of the highway, and also harvested poorly formed old-field pine and mixed hardwoods (red maple, black birch, black oak) on adjacent land more than 200 feet from the highway to increase plant species diversity, maintain structural complexity, and stimulate fruit production of low-bush blueberry on these post-agricultural forestlands (Table 1). This harvesting operation retained mature native trees including Northern Red Oak and Eastern Hemlock for their long-term habitat values, and established patches of structurally diverse young-forest habitat that contain a variety of native tree, shrub, grass, fern, wildflower

Table 1. Grassland , Shrubland, and Young-forest Habitat Projects.

Site	DFW District	Town	Habitat Type	Management Practices	Acres
Stafford Hill WMA	Western	Cheshire	Shrubland	Tree clearing and mowing (42 acres); invasive plant control (60 acres)	102
Leyden WMA	Valley	Leyden	Shrubland	Invasive plant control	55
Millers River WMA, Cass Meadows	Central	Athol	Shrubland	Invasive plant control	30
Phillipston WMA	Central	Phillipston	Young Forest	Tree clearing	40
Noquochoke WMA	Southeast	Dartmouth	Grassland	Prescribed burning, seeding, invasive plant control	16
Francis Crane South WMA	Southeast	Falmouth	Scrub oak	Brush mowing (60 acres); invasive plant control (65 acres)	125
Total					**368**

and other plants to support wildlife species that are currently experiencing long-term population declines in Massachusetts.

New England Cottontail Habitat Restoration Project

Dave Scarpitti, *Upland Game Biologist*

A variety of habitat management techniques are being employed to benefit New England cottontail habitat in southeastern Massachusetts, such as prescribed burning, shrub-mowing, tree harvesting, and invasive species plant control. Specifically, vegetation management and prescribed burning activities at the Massachusetts Military Reservation (MMR) on Cape Cod were employed on approximately 100 acres to support habitat restoration for New England cottontail and other species associate with pitch-pine—scrub-oak ecosystems. An additional 200-300 acres of prescribed burning activities are planned at the MMR in 2013-14. Further vegetation management activities are also being planned and implemented across several other DFW and other public properties in support of New England cottontail restoration.

Biological Monitoring, Inventory, and Analysis Project

Ben Mazzei, *Habitat Biologist*, and **Brian Hawthorne**, *Habitat Biologist*

To determine the success of habitat treatments over time, a long-term program to monitor birds, butterflies, and vegetation was implemented during the summer of 1999 on DFW sites across the state. Regular monitoring is essential for practicing adaptive natural resource management and typically includes one or more of the following: 1) vegetation sampling to determine the relative abundance of all vascular plants in the forest understory and overstory and to determine regeneration success of desired tree species on harvested sites; 2) identification and location of invasive plants for subsequent control efforts; 3) identification and location of rare plants in order to design appropriate mitigation during harvesting activities; 4) photo documentation of pre- and post-harvest conditions; and/or 5) wildlife sampling to determine habitat use (e.g., breeding bird surveys, butterfly/moth surveys).

During summer 2013, breeding bird surveys occurred at 71 independent points on approximately 926 acres across 15 different areas using a combination of independent contractors and DFW field staff time (Table 2). Pre-harvest vegetation data was also recorded at the Southwick WMA in Southwick and the Patrill Hollow section of the Muddy Brook WMA in Hardwick using NHESP Form 3 techniques (Table 3). Conducting pre-harvest vegetation surveys allows the DFW to monitor areas for potential rare species or rare vegetation community types and then adjust management plans accordingly. Post-harvest vegetation data can help quantify the vegetation response to the management applied, which can help determine if the response is appropriate for the target species.

The results from the various monitoring efforts indicated that target species of greatest conservation need benefit from Upland Program management activities. Data continue to indicate that following initial reclamation work, target species abundances peak at 5-6 years following treatment, and therefore maintenance mowing should typically be applied every 8-12 years.

Wildlife Conservation Easement (WCE) and Fee Ownership Habitat Enhancement and Compliance Monitoring Project

Rebecca DiGirolomo, *Habitat Biologist*

Compliance monitoring for WCEs involves review of long-term Forest Management Plans and short-term

Table 2. Breeding Bird Surveys.

Site	District	Town	Number of Survey Points	Acres
Stafford Hill WMA	Western	Cheshire	5	90
Hiram Fox WMA	Western	Chesterfield	5	80
Leyden WMA, South	Valley	Leyden	4	45
Herm Covey WMA	Valley	Belchertown	5	45
Muddy Brook WMA, Jackson Road	Central	Hardwick	3	34
Millers River WMA, Cass Meadows	Central	Athol	6	50
Bolton Flats WMA	Central	Bolton	14	125
Dunstable Brook WMA	Northeast	Dunstable	3	40
Bill Forward WMA, Canoe Area	Northeast	Newbury	3	42
Bill Forward WMA, Kent's Island	Northeast	Newbury	5	75
Martin Burns WMA	Northeast	Newbury	6	130
Southampton WMA	Valley	Southampton	4	75
Whately WMA	Valley	Whately	2	25
McKinstry Brook WMA	Central	Sturbridge	2	25
Noquochoke WMA	Southeast	Dartmouth	4	45
Total			**71**	**926**

Table 3. Vegetation monitoring sites.

Site	District	Town	Number of Survey Points	Acres
Southwick WMA	Valley	Southwick	4	45
Muddy Brook WMA, Patrill Hollow Tract	Central	Hardwick	6	125

Forest Cutting Plans (Chapter 132) for private lands where the DFW owns development and public access rights. In FY 13, the Habitat Program reviewed forest management and cutting plans for the Hull Forestlands' Breakneck Brook (Southbridge), Sandisfield, and Mica Mill (Cheshire) WCEs; the Town of Sturbridge's Leadmine WCE; and the Gaida WCE in Orange.

The DFW Habitat Program assisted with initial outreach mailings to all (>70) fee owners of lands where the DFW holds WCEs (>48,000 acres), conducted site assessments at proposed timber harvesting on lands being acquired by the DFW, and conducted site inspections and assisted with extensive logging road mitigation at the Mica Mill WCE in Cheshire. WCE lands offer great potential for wildlife habitat enhancement, provided that the DFW establishes a good working relationship with fee owners of these lands. This is a time-consuming process, but a worthwhile use of staff time since it results in enhanced habitat on WCE lands open to public hunting.

Technical Assistance and Outreach Project

Rebecca DiGirolomo, *Habitat Biologist*

The DFW Habitat Program receives requests from both private and other public landowners for technical assistance with determining wildlife habitat impacts of proposed forest harvesting operations. Private lands requests that potentially qualify for NRCS funding are referred to Habitat Management Biologist Marianne Piché. The Habitat Program responds directly to other public landowners and, in FY 13, provided review and comment on proposed harvesting at the U.S. Army Corp of Engineers' Birch Hill Dam complex in Royalston and at a series of proposed harvests on DCR state forestlands across Massachusetts. These reviews enhance wildlife habitat and plant-community diversity on public lands that are not owned by the DFW but that are open to public hunting.

Wildlife Management Programs

Upland Game Program

Dave Scarpitti, *Upland Game Biologist*

Wild Turkey Harvest

Recent regulatory changes now permit fall turkey hunting in Wildlife Management Zones (WMZ) 1-13 for 2 weeks each fall, beginning on the second to the last Monday in October. A total of 179 wild turkeys were harvested during the 2012 fall season, more than two times more than in 2011 (82 turkeys). Overall, 88 male and 91 female wild turkeys were harvested. Also of note was the proportion of turkeys harvested with archery equipment, which remains high at approximately 16%, whereas in the spring typically 4% of turkeys are harvested with archery equipment. The substantial increase in harvest for the 2012 fall season can be primarily attributed to regulatory changes that not only double season length in many areas, but also added new WMZs eligible for fall hunting (WMZs 10-12).

The Massachusetts spring turkey hunting season was held April 29—May 25, 2013. The 4-week open zone included WMZs 1-13. Greater than 21,000 wild turkey permits were issue for the 2013 spring season, the greatest season total in the modern history of wild turkey hunting and continuing the trend of increasing permit sales. Total harvest during the regular spring season was 2,778 turkeys, the third-highest turkey harvest recorded in Massachusetts since wild turkey hunting seasons were established 30+ years ago. Approximately 71% of turkeys harvested were adult males (toms or gobblers), while only 28% were immature males (jakes); <1% of harvested spring turkeys were bearded hens. The spring turkey harvest has been relatively stable over the past 4 years, varying from 2,757 to 2,857. Spring brood conditions appear to have been highly variable across the state; however, overall turkey populations are high and continue to provide excellent hunting and other recreational opportunities.

Ruffed Grouse

Roadside surveys to measure the conspicuous breeding activity (otherwise known as drumming) of ruffed grouse are conducted statewide from late April through mid-May. In 2013, grouse drumming events were slightly higher than the long-term average, particularly in the Western and Connecticut Valley districts. Overall, statewide breeding activity as measured by the drumming survey has remained stable over the past decade. Isolated areas of survey routes continue to demonstrate very high counts (three to four times greater than the average) of drumming activity, indicating that good quality habitat is still available, and ultimately influencing the local population size of ruffed grouse. This further demonstrates the need for young-forest and shrubland habitat management to support grouse and other species of conservation need that are dependent on various stages of early-successional habitat.

American Woodcock

American woodcock have a very elaborate, conspicuous courtship display that can be seen each spring from March through June across Massachusetts. This courtship display is surveyed as part of the U.S. Fish and Wildlife Service's (USFWS) Woodcock Singing Ground

survey each spring, the results of which provide an index to the breeding population of woodcock across the state. Randomized roadside woodcock singing ground surveys were conducted in 2013 from April 20 through May 10. The average number of singing woodcock heard per route in 2013 was 1.53, slightly lower than in 2012 (1.58). Greater than two woodcock were heard on seven routes; no woodcock were heard on the other 12 routes. In general, population modeling conducted by the USFWS indicates that woodcock populations have remained stable over the past 10 years in the Eastern Management Unit (Atlantic Flyway) and within Massachusetts. Estimated harvest of woodcock during the 2012 hunting season was 1,900 by approximately 800 hunters. Overall, suitable early-successional habitat limits the statewide abundance of woodcock; however, enough suitable cover exists to support locally strong populations.

Mourning Dove

Doves are not considered a game species in Massachusetts, but they are one of the most abundant and popular game bird species across the nation. The DFW participates in the annual Mourning Dove Call Count Survey, a standardized survey coordinated by the USFWS. Currently, eight survey routes are active across the state, and are sampled from mid-May to early June. The 2013 Dove Population Status Report produced by the USFWS indicated that the breeding population index, based on the number of doves heard on New England routes, was quite similar to recent years. Dove populations in New England have demonstrated stable to slightly increasing populations over the short- and long-term periods.

New England Cottontail Survey

The DFW continued winter surveys to assess the presence of New England Cottontail and Eastern Cottontail across the state during FY 13. These surveys included efforts to collect road-kill, hunter-harvest, or any other rabbit specimens for analysis and winter fecal pellet collection surveys. Approximately 400 additional specimens were collected (in addition to the >800 specimens collected the previous year); analysis is underway and pending. Approximately 200 fecal pellet samples were collected at sites across the Commonwealth, but no New England Cottontails were found. Survey efforts are planned to continue during the winter of 2013-14.

Waterfowl Program

H Heusmann, *Waterfowl Program Leader*

Division personnel continued to conduct nest-box checks on 52 sites used to monitor wood duck populations statewide. The spring of 2012 was dry with drought or near drought conditions over much of the state. Temperatures in Massachusetts had been substantially above average for the previous 9 months. Box maintenance suffered as there was scant ice to allow safe passage to service nest boxes.

Wood duck nesting attempts declined from recent years' efforts (302 starts in 2012 vs. 332, 336 and 331 the previous 3 years) and was well below the 425 nest attempts of 2004. There were 254 wood duck hatches compared to 273 last year, 251 in 2010 and 270 in 2009. Hooded mergansers hatches, however, hit a new high of 123 hatches from 159 nest attempts

Massachusetts participates in the Atlantic Flyway Resident-goose Banding Program. Previously, our state goal was to band 1,000 geese. However, we have been receiving over 400 band recoveries each year, indicating that we had a large sample of banded geese in the state. The Atlantic Canada Goose Resident Population Management Plan only requires Massachusetts to band 550 geese, so we decided to reduce our efforts, and have selected a lower banding goal of 800 geese annually to provide data for the federal database. Geese are captured by roundups during the summer molt. A total of 799 Canada Geese were banded at 61 sites in 57 cities and towns in Massachusetts. The total included 392 goslings and 407 adults. Crews also captured an additional 196 previously banded geese.

The fall of 2012 was the seventh year of use for the new airboat. This season was hampered by a few minor problems but the situation was complicated by the Headquarters move to West Boylston coming in the middle of the airboating season. Since the move activities were conducted during regular office hours and airboating was conducted in the afternoon/evening there was no direct conflict, but it required many extra hours of work. We ended up boating on 15 nights and banded 804 birds. Among birds banded, there were 567 Wood Ducks, 132 Mallards, 5 American Black Ducks, 1 Mallard x Black Duck hybrid, 53 Green-winged Teal, 27 Blue-winged Teal, 2 Hooded Mergansers, 1 Common Gallinule, 17 Soras, and 1 Virginia Rail. Twenty-eight previously banded birds were also recaptured.

During the period of September 4-25, Massachusetts conducted a resident Canada Goose hunting season, with a daily bag of seven. The USFWS's HIP report is delayed in harvest estimates for the current year. However, the USFWS estimated a September season harvest of 2,200 geese in 2011. This compares to a harvest estimate of 2,200 in 2010, 4,200 geese in 2009; 4,600 in 2008; and 2,600 the previous year.

Duck-hunting seasons in the Atlantic Flyway continued with the liberal option of 60-day seasons and a six-bird bag limit. The Canada Goose season was 60 days with a two-bird daily bag limit in the Central and Coastal waterfowl hunting zones and 50 days with a three-bird bag limit beginning October 10 in the Berkshire zone.

The winter of 2012-2013 was closer to normal than the previous year but temperatures still fluctuated widely, from the teens and single digits to near 60, and back again. Conditions were open all along the coast. American Black Duck numbers (18,626) were only 2% below the 10-year average but 39% below last year's

count, which was the highest count since 1978. Mallard numbers (2,132) were 39% below normal. Canada Geese (9,367) were 19% below the 10-year average. Atlantic brant (1,156) were 35% lower than their 10-year average. Merganser counts, which were nearly four times their long-term average last year, fell by two-thirds this year but were only 17% below their long-term average. Goldeneye numbers were near normal (3,538), 17% below average, but Bufflehead counts soared to 11,884, double their 10-year average. Scaup numbers were 68% below their average. Eider counts were near normal (-9%); Scoter counts, 72% above average; and Long-tailed Duck numbers were up 83%.

In 2013, The DFW conducted a Park Waterfowl survey, a project completed every 5 years since 1973. The survey this year was conducted January 6-26. A total of 10,108 Mallards, 292 American Black Ducks, and 1,583 Canada Geese were counted at 145 sites in 84 municipalities at or associated with areas where people feed waterfowl. The number of Mallards at feeding sites has declined since the peak count in 1993 of over 20,000. The decline appears related to sites being posted "No Feeding" as numbers of Canada Geese increased at feeding sites in the 1990s, but this in turn has the effect of reducing Mallard wintering habitat in Massachusetts.

During the period January 17—February 15, 2013, Massachusetts held a late, resident Canada Goose season in the Central waterfowl zone while the season in that portion of the Coastal zone north of Cape Cod ran January 22 to February 15, with a five-bird daily bag in each zone. The USFWS is delayed in harvest estimates for the current year. However, the USFWS estimated a harvest of 4,500 in 2012, compared to 2,800 in 2011; 2,900 in 2010; 1,200 geese in 2009; 2,300 geese in 2008; and 3,100 birds in 2007.

Postseason banding of wintering Black Ducks was resumed for the fourth year of a 5-year experiment to determine if two-season Black Duck banding efforts can improve the precision for Black Duck survival rates. Bait-trapping was carried out at 20 coastal sites in 12 towns from the New Hampshire to the Rhode Island borders. Trapping was carried out in January and February 2013. All Mallards and Mallard x Black Duck hybrids could be banded and broken down into five plumage types. Totals of 464 American Black Ducks, 167 black-plumaged hybrids, 7 intermediate types, 3 Mallard-plumaged hybrid, and 31 Mallards were banded. In addition, there were 16 captures of foreign-recovery Black Ducks previously banded in New Brunswick (10), Quebec (2), Newfoundland/Labrador (1), and three Parker River NWR summer-banded birds. There were also 40 recaptures from birds previously banded by MassWildlife personnel.

During April and May, we participated in the Northeastern states' waterfowl breeding survey, which is based on sampling randomly selected 1-kilometer-square plots. Massachusetts checked 92 of the 1,474 plots used in the survey. The population estimate in the Northeastern states for Mallards was 292,799 pairs $\pm$15%. The estimate for Black Ducks was 13,407 pairs $\pm$31%; Wood Ducks, 200,618 pairs $\pm$16%; and Canada Geese, 312,766 pairs $\pm$14%. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its 15th year of the federal Harvest Information Program (HIP). Beginning in 2012, all migratory bird hunters could register for HIP only via an online registration system. Hunters are no longer issued a HIP number but their license indicates they completed the HIP survey. Hunters had the convenience of registering from their home computer, at venues selling hunting licenses, or at any MassWildlife office. Waterfowl and woodcock hunters are automatically given a HIP survey each time they buy a waterfowl stamp with a new hunting license through the state's *MassFishHunt* system.

Massachusetts issues individual egg-addling permits for resident Canada Goose control under a federal program begun in March 2007. In 2012, we issued 36 such permits, all of which were returned. The permittees reported addling 1,633 eggs in 300 nests, while USDA/APHIS Wildlife Services addled 540 eggs in 103 nests under their statewide permit.

Bird Conservation Program

Andrew Vitz, *State Ornithologist*

American Kestrel Project

The American Kestrel is the smallest and most colorful falcon in North America. According to the North American Breeding Bird Survey and the Massachusetts Breeding Bird Atlas, over the last several decades, the American Kestrel has been one of the fastest declining species in Massachusetts, and this parallels trends throughout the northeast. The majority of breeding kestrels in Massachusetts can be found in agricultural landscapes in the Connecticut River Valley, Berkshire County, and southeastern Massachusetts. Breeding kestrels have been nearly extirpated from Cape Cod and the islands and have become increasingly uncommon across much of the state. To investigate these declines, we have partnered with MassAudubon, Keeping Company with Kestrels, the Kestrel Land Trust, and others, to study breeding kestrels in the state. Our goal is to gain an improved understanding of the factors contributing to the kestrel's decline and develop a conservation strategy for this species.

To evaluate kestrel breeding habitat and nesting success, we are erecting nesting boxes, monitoring box occupancy and fledging success, and we will be using a geographic information system (GIS) to evaluate which landscape features best explain breeding success. We are also color-banding kestrels to generate an estimate of their annual survival rate and to document dispersal behavior.

Although we are still compiling results from our collaborators at the end of the fiscal year, together we

banded over 80 birds and monitored over 100 nest boxes (occupied and unoccupied). This will be an ongoing project as we continue to learn about our kestrel population in the coming years. During the fall and winter of FY 14, we will be locating suitable breeding habitat and installing additional nest boxes for kestrels.

Shrubland Bird / Tornado Project

Early-successional forests have become increasingly scarce in Massachusetts, and account for less than 4% of the total forested habitat in the state. As a result of a reduction in habitat, many species associated with this habitat type are experiencing steep population declines. On June 1, 2011, a now-famous storm spawned several destructive tornados in south-central Massachusetts that moved in a linear fashion over a 40-mile stretch, from Westfield to Charlton. These tornados had a dramatic impact on the natural communities in the storm path and converted nearly 5,000 acres of forested areas into young-forest habitat. This storm event presented an exciting opportunity to document the avian response to early-successional habitat created through natural disturbance.

To capitalize on this, the DFW partnered with collaborators at the Massachusetts Department of Conservation and Recreation (DCR), the U.S. Forest Service, and The Nature Conservancy. Ten automated audio-recorders were purchased to document the breeding birds at sites within three treatment groups (tornado-impacted areas, tornado-impacted areas that were salvage-logged, nearby mature forest not impacted by the tornados). Seventy-four locations were randomly selected and divided into the three treatment groups. Each point was sampled on at least two separate days with 10-minute periods being recorded at five different intervals around sunrise and sunset every sampling day. During the winter of 2012-13, DFW staff and volunteers listened to the audio files and recorded all species heard.

Results from the first year were very encouraging: Almost all of the declining bird species that breed in young-forest habitat were documented in the tornado-impacted area and most were found in reduced numbers in the tornado-impacted areas that were salvage-logged. Specifically, six species of early-successional-breeding birds listed in our State Wildlife Action Plan (SWAP) were documented in the tornado-damaged areas. Five of these are listed as SWAP Species (Prairie Warbler, Blue-winged Warbler, Eastern Towhee, Field Sparrow, and Brown Thrasher) and one as a Species of Special Concern (Whip-poor-will). Furthermore, many forest-breeding birds were documented using the young-forest habitat (for food or other resources), despite it not providing suitable breeding habitat for most of these species. The second year of data collection was conducted in June 2013, and although these data have not been extracted from the recordings at the close of the fiscal year, salvage-logged areas had noticeably increased vegetation growth, and there was an increase in the number of birds using these areas. This study is improving our understanding of how birds respond to natural disturbance, and the results will be helpful in developing a conservation strategy for young-forest birds.

Grassland Bird Plan

In fall 2012, an inter-organizational committee was established to construct a statewide plan for the conservation of the MESA-listed Upland Sandpiper (Endangered) and Grasshopper Sparrow (Threatened). The committee was led by DFW staff and included representatives of MassAudubon, The Trustees of Reservation, and The Nature Conservancy, and developed "An Action Plan for the Conservation of State-listed Obligate Grassland Birds in Massachusetts," focused on maintaining sustainable populations of Upland Sandpipers and Grasshopper Sparrows in the state.

As part of this process, we used recent records (since 1990) from the NHESP database to identify all areas in the state where these species have been documented during the breeding season. Two sets of rankings were constructed, with one based on the current contribution of each site to the breeding population and another based on the long-term potential to manage for these species at the sites. One of the primary goals of the plan was to use these rankings to help determine where and how NHESP mitigation funds designated for these species would be best spent.

The top site in terms of its current overall importance to Upland Sandpiper and Grasshopper Sparrow populations in the state (and the region) was Westover Air Reserve Base, Ludlow/Chicopee, which hosts the largest population of both species in the region. It was recognized that the Westover birds are critical in sustaining the regional population of both species. However, because we have little control over management decisions at this site, Westover was not highly ranked for its long-term management potential.

The two sites with the highest scores for their long-term management potential were Southwick WMA, Southwick, and Frances Crane WMA, Falmouth. Ongoing management at these sites will provide the backbone for grassland bird conservation on state land. The action plan will be completed in September 2013, and the interagency committee has plans to convene annually to continue to address grassland bird conservation in Massachusetts.

Black Bear Program

Laura Conlee, *Black Bear Program Leader*

Black Bear Distribution and Harvest Investigations

A record total of 9,376 bear-hunting permits were issued for the 2012 hunting season. A record of 185 bears (132 in 2011) was taken during the 35-day season, including 168 during the 17-day September segment and 17 during the 18-day November segment. Ninety-one males, 93 females and 1 unknown were taken in Berkshire (n=47), Franklin (n=56), Hampden (n=39), Hampshire (n=36), Middlesex (n=1) and Worcester (n=6) counties. There

were 41 additional confirmed mortalities from July 1, 2012 to April 30, 2013 (data beyond that date have not been entered). These mortality records are collected by DFW staff and through Environmental Police call logs and included 30 road-kills; 6 bear taken under M.G.L. Ch. 131, Sec. 37 (4 causing agricultural damage; 1 broke into a house; 1 other Sec. 37); 4 of unknown causes; and 1 illegal kill.

Black Bear Research

From January 2013–June 2013, 10 of 16 radio-collared sows were handled in winter dens or during barrel-trapping. Four additional sows were captured in barrel traps or as free-range bears and collared. Division staff also ear-tagged eight additional bears in winter dens, barrel trapping, or LART (large-animal response team) situations. In 2009, a pilot habitat study began in conjunction with the Massachusetts Cooperative Fish and Wildlife Research Unit. Three GPS collars were deployed in 2009, five GPS collars were deployed in 2010, and nine GPS collars were deployed in winter 2011. Nine GPS collars were deployed between 2012 den work and barrel trapping or free-range capture. Twelve GPS collars were deployed between 2013 den work, barrel trapping, and free-range capture. To date, 23 female bears have been monitored with GPS collars, 12 of which have been monitored for at least two reproductive seasons. In 2014, there will be nine GPS collars available for deployment.

Furbearer Program

Laura Conlee, *Furbearer Program Leader*

Overview

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

Massachusetts' furbearers are abundant and widely distributed throughout the state. The populations of these species are scientifically managed and are secure. None are listed as 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 in the state.

The Furbearer Management Program presents many challenges to wildlife managers in the state and employs various options, including habitat manipulation, public education, and regulated hunting and trapping as tools in the management of these renewable resources. A combination of techniques is used to control problem animals, regulate wildlife populations, reduce habitat degradation, reduce crop and property damage, and allow a sustainable harvest of renewable furbearer resources.

Harvest and Population

Harvest activities provide recreational and economic opportunities for citizens and households in the state. A total of 2,010 furbearers were tagged at Division check stations during the 2012-13 season. The harvest (a combination of hunted, trapped, and/or salvaged) of tagged species included 711 beaver, 103 bobcat, 470 coyote, 415 fisher, 57 gray fox, 51 mink, 156 river otter, and 47 red fox. Trapper survey results indicated that a minimum of 77 raccoons, 967 muskrat and 3 opossum were trapped during the 2012-13 season.

Regulated trapping is an important component of wildlife management programs. It is the most feasible and effective method to control furbearer population growth. Regulated trapping conducted by a trained and licensed public is used by state wildlife professionals to regulate wildlife populations and can reduce negative effects associated with high wildlife populations and allow for a sustainable use of a valuable natural resource. Regulated trapping allows residents of the state to reduce the expenses associated with the property damage furbearers cause, which can also in turn reduce the need for residents to pay Problem Animal Control (PAC) Agents.

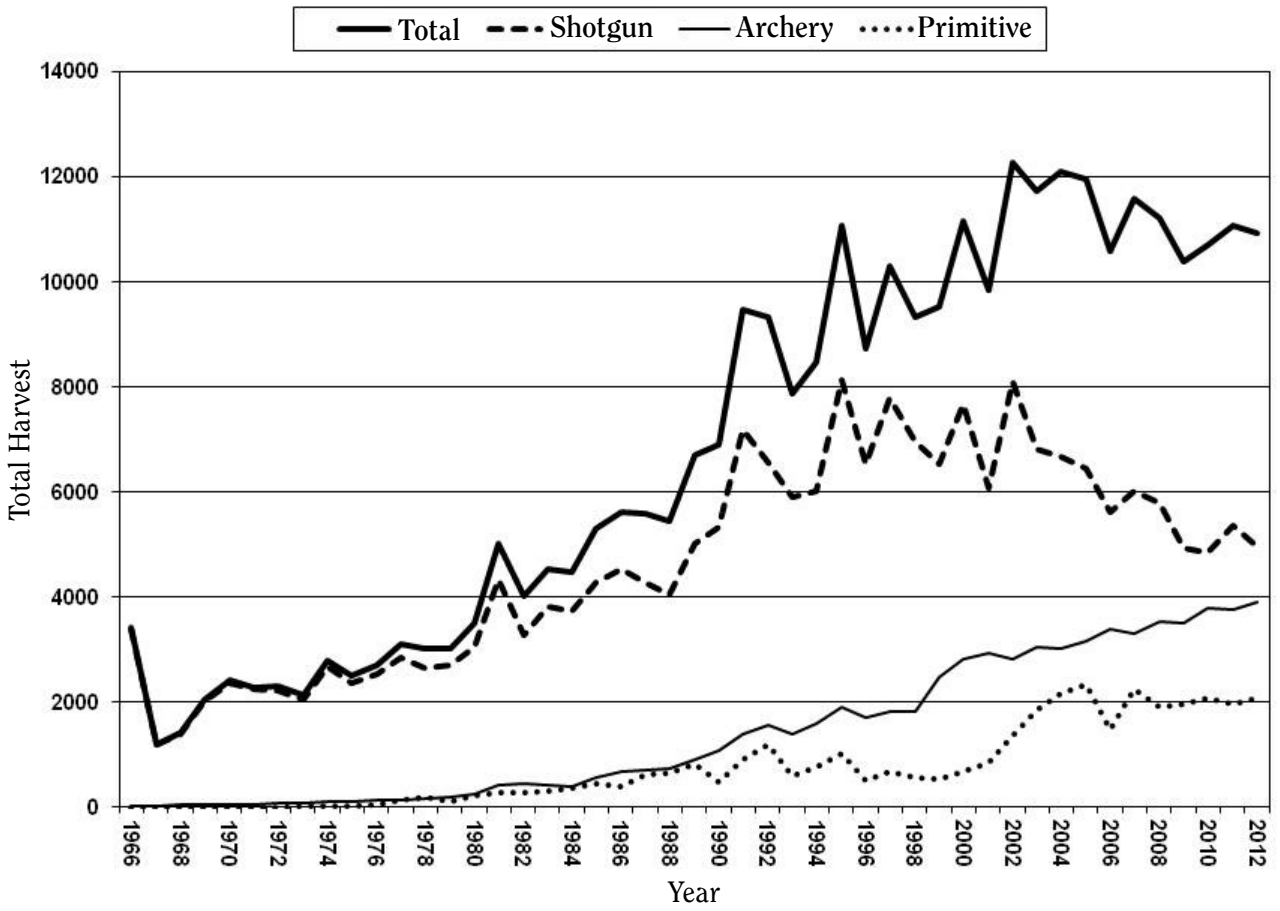
The DFW carefully regulates the harvest of furbearing animals. The Commonwealth has complex laws and regulations that govern the activity of trapping. These include mandatory licensing of trappers and trapper training, restrictions on the size of traps and on types of traps, restricted seasons for trapping and areas for trapping, and mandatory regular checking of traps and tagging of traps to identify the owner.

Wetland / Beaver Management

Between 1996 and 2000, the beaver population tripled as a result of a ban on certain types of traps enacted through a referendum in 1996. Complaints about flooding increased. Typical complaints included flooded septic systems, wells, roads, driveways, and railroad tracks. In July 2000, the Massachusetts Legislature passed, and the Governor signed, a new law that modified the restrictions on beaver and muskrat traps to provide relief for people suffering from flooding impacts caused by beaver or muskrat. An emergency permitting system was created at the town level with certain non-emergency permits for specific traps available from the DFW.

Licensed trappers tagged 708 trapped beaver during the 2012-13 trapping season, of which 281 were reported as taken under emergency permits. PAC Agents reported taking 81 beaver outside the trapping season (July 1, 2012–October 31, 2012) under emergency permits and 70 beaver from November 1, 2012 to December 31, 2012 (during the trapping season), of which 52 were taken under emergency permit. Licensed trappers reported taking 164 beaver outside the trapping season under emergency permits and 4 beaver that were taken during the season under emergency permits, but not tagged. In total, a minimum of 245 beaver were taken outside of the trapping season as nuisance animals. A minimum of 582 beaver were taken under emergency permits (either inside or outside the trapping season). Conibear

Figure 3. Total White-tailed Deer harvest, by season and year, in Massachusetts (excluding Quabbin).



traps are legal to use with emergency permits and are the preferred trap type for beaver trapping. The DCR removed eight beaver for water-quality protection or damage mitigation in FY 13.

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 to public and private property by beaver.

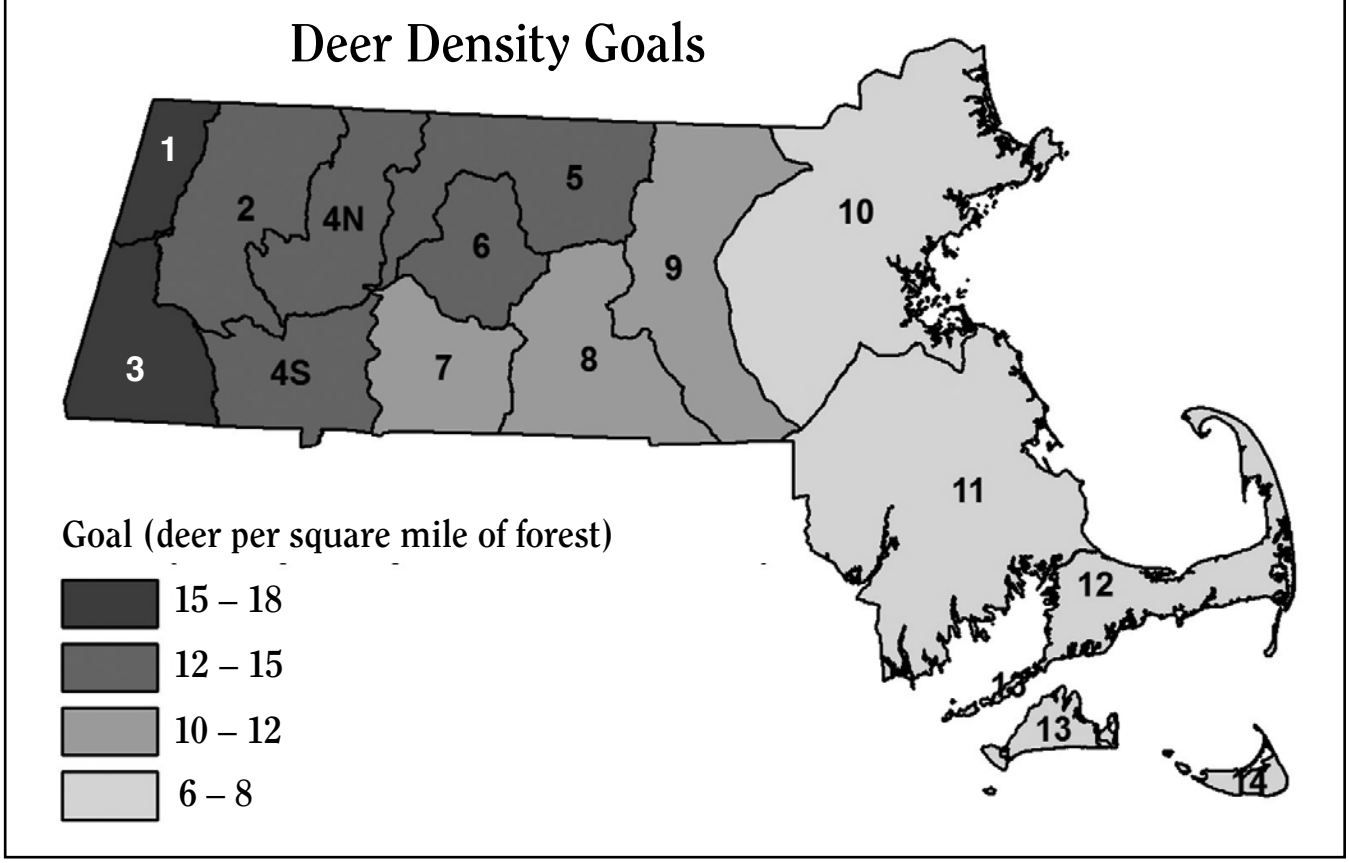
Furbearer Depredation and Damage

DFW personnel responded to complaints about furbearer species causing the loss of domestic livestock and pets. Specific furbearer species causing concern are eastern coyotes, red foxes, gray foxes, fishers, raccoons, and skunks. Coyote phone calls significantly outnumber those about other furbearer species. (See also the "Human-Wildlife Conflict Trends Project" section, below.)

Table 4. The 2012 White-tailed Deer harvest, by season and sex/age class, in Massachusetts.

Season	Adult Male	Female	Button Buck	Unknown	Total	Percent Harvest
Paraplegic	0	4	0	0	4	0%
Archery	2,672	1,066	160	5	3,903	35%
Shotgun	2,843	1,700	405	2	4,950	45%
Primitive	853	1,041	180	7	2,081	19%
Sub-Total	6,368	3,811	745	14	10,938	99%
Quabbin*	34	38	12	0	84	1%
State	6,402	3,849	757	14	11,022	100%
*Controlled hunt with DCR-limited access (excluded from subsequent statewide analysis)						

Figure 4. Map depicting the current numeric deer density goals for the 15 Wildlife Management Zones in Massachusetts.



Deer Management Program
David Stainbrook, *Deer and Moose Program Leader*

Harvest and Population

The statewide 2012 harvest of 11,022 deer represents the tenth-highest harvest reported in Massachusetts since 1966 (Figure 3). The 2012 total harvest was 1% lower than the 2011 hunting season, but 2% greater than the previous 3-year average. The 2012 Archery season harvest was the highest on record (see Figure 3 and Table 1), not surprisingly, considering that Archery season stamp sales are still on the rise.

Currently, the deer population statewide is estimated to be between 90,000 and 95,000. Densities range from 10-12 deer per square mile of forest in some areas of western Massachusetts to over 50 deer per square mile on the islands of Martha's Vineyard and Nantucket in eastern Massachusetts.

As in previous years, the Antlerless Deer Permit (ADP) system required a hunter to have an ADP to harvest an antlerless deer in any deer season. The ADP system regulates female harvest across all Wildlife Management Zones (WMZ). Overall, we've met or are very close to our deer density goals in the western and central parts of the state (Figures 4 and 5). Therefore, over the past few years, fewer ADPs have been issued in the central and western WMZs to stabilize numbers, leading to fewer deer being harvested in those WMZs (Figure 5 and Table 5). Conversely, deer densities in the eastern part of the state are still above goal, so ADP allocations have remained high in an effort to increase harvest of females. Challenges still remain in eastern WMZs because of the difficulty of hunter access in more developed areas.

The ADP allocation for 2012 was 39,125 permits, a 4% increase from 2011. However, 32,862 permits (84% of allocated) were actually issued in 2012. Surprisingly, this is less than in 2011, where 33,082 antlerless deer permits were issued. We typically issue about 10-15% less than we allocate because we only sell about 50% of the allocated permits in WMZs 13 and 14 and typically about 10% of hunters do not pay for their permit. In 2012, the ADP acquisition system changed to an Instant Award system, where hunters applied for a WMZ before July 16, returned to the system after August 1 to see if they were drawn, then had until the end of the year to purchase the ADP. Thus, an additional percentage of hunters applied but never came back to the system to see if they were drawn or never actually paid to obtain their ADP.

Because we do not sell all of the ADPs allocated in WMZs 13 and 14, increasing allocation will not lead to an increase in harvest. Therefore, in an effort to increase harvest of females in WMZs 13 and 14, a change was made in 2012 to increase the convenience of obtaining

Figure 5. Map depicting how the current deer densities relate to the numeric deer density goals for the 15 Wildlife Management Zones in Massachusetts.

ADPs (i.e., hunters can now buy more than four per day) and allow hunters to have four rather than two unchecked deer in their possession, so that they can spend more time in the field.

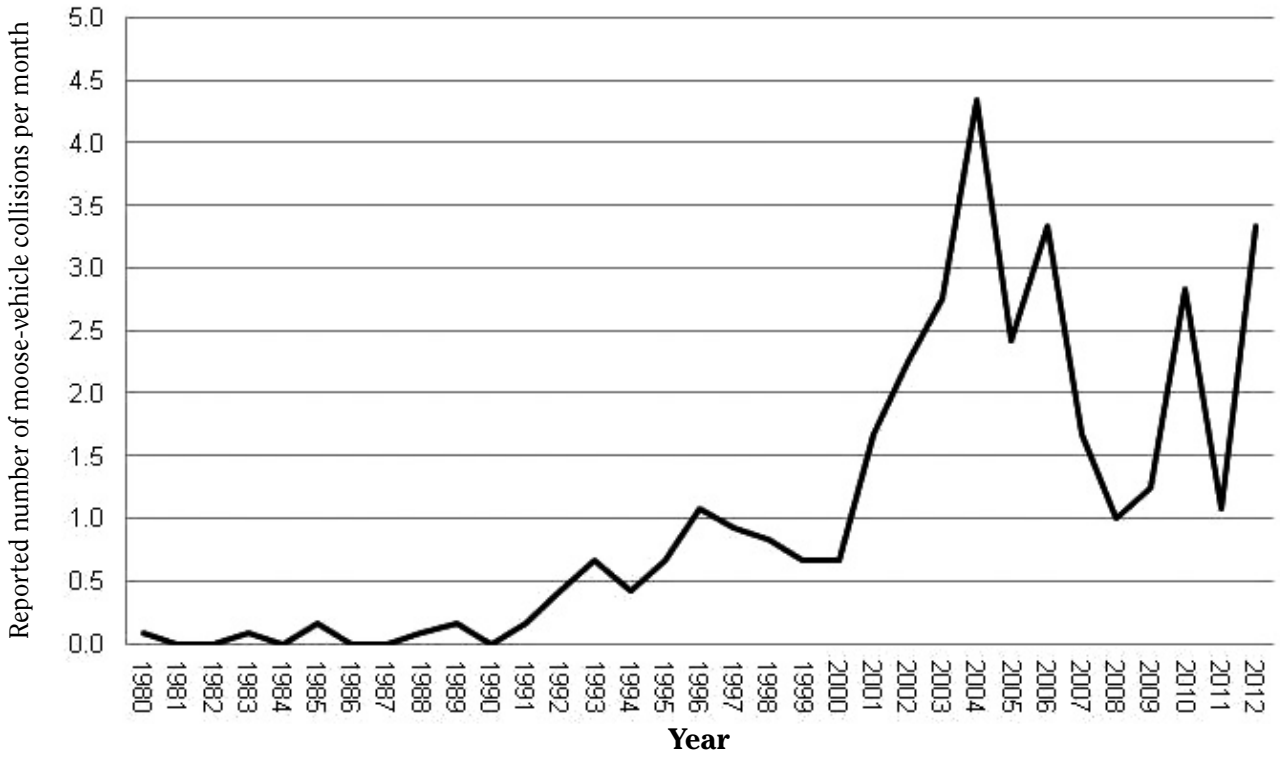
Research

No deer-related research projects occurred in FY 13.

Table 5. The 2012 White-tailed Deer harvest by deer sex/age and the number of Antlerless Deer Permits allocated and issued, by WMZ for Massachusetts (Quabbin excluded).

	Adult		Button	Sex	Total		2012 Antlerless Deer Permits	
WMZ	Male	Female	Buck	Unknown	Harvest	Goal	Allocated	Issued
1	166	49	4	1	220	Increase	450	375
2	333	32	0	0	365	Increase	200	158
3	327	122	16	2	467	Increase	1,250	1,105
4N	283	51	11	1	346	Increase	400	298
4S	173	33	2	0	208	Increase	300	222
5	337	170	21	0	528	Stabilize	1,350	1,157
6	112	28	5	0	145	Stabilize	450	347
7	394	205	40	0	639	Stabilize	2,250	1,921
8	589	293	39	0	921	Stabilize	2,800	2,387
9	597	338	70	1	1,006	Stabilize	4,100	3,421
10	1,042	1,029	189	4	2,264	Reduce	9,800	9,066
11	1,336	845	152	4	2,337	Reduce	9,800	8,558
12	178	57	12	1	248	Stabilize	575	496
13	250	277	83	0	610	Reduce	2,700	1,836
14	249	282	101	0	632	Reduce	2,700	1,515
Unknown	2	0	0	0	2			
Statewide	6,368	3,811	745	14	10,938		39,125	32,862

Figure 6. Total moose-vehicle accidents reported per month from 1980 to 2012 in Massachusetts.



Chronic Wasting Disease

Funding provided by the USDA/APHIS ceased in early 2012, thus we did not collect or test any hunter harvested deer in 2012. However, we did collect samples from 12 deer that appeared to exhibit symptoms or signs of disease. Of these, four were tested and none tested positive for CWD. The remaining eight have not been tested because of limited finding. We will continue to sample for CWD from suspect deer provided we can allocate the funds required for testing.

Moose Program

David Stainbrook, *Deer and Moose Program Leader*

Traditionally, the DFW has collected reported data of moose sightings, moose found deceased, and moose-vehicle accidents (MVA). There have been 1,581 reports submitted to the DFW concerning moose since 1924. In 2012, there were 109 reports made to the DFW concerning moose, which included 41 MVAs, 36 sightings, 11 moose found dead, 0 illegal kill reports, 20 Large Animal Response Team (LART) responses, and 1 relocated problem moose. However, MVAs are not routinely being reported to the DFW or to the OLE; thus, these reports make up only a fraction of the actual human-moose interactions that occur in the state. For example, many are discovered indirectly through newspaper reports. Further, caution must be used when looking at the number of collisions reported from year to year because reporting rates can vary from year to year (Figure 6). Nonetheless, these indices can be useful for biologists to use, along with other population trends, to monitor moose in Massachusetts. The number of reports per town can be useful when making decisions about areas to focus on with signage on highways (Figure 7).

The current moose population in Massachusetts is estimated to be around 1000 animals. We use a basic population model that incorporates standardized sighting rates from an annual deer hunter survey (we ask a random sample of deer hunters how many moose sightings they had per hour of deer hunting) and available moose habitat in the 12 WMZs that we feel have the potential for moose (we exclude Cape Cod and the Islands in our estimate, as they do not represent potential moose habitat).

Chronic Wasting Disease

Funding provided by the USDA APHIS ceased in early 2012, thus we did not collect or test all moose available for testing in 2012, only those that appeared to exhibit symptoms or signs of disease. During 2012, eight CWD samples were taken from target moose. These samples have not been submitted for testing, as a funding source is currently unavailable. We will continue to sample for CWD from suspect moose provided we can allocate the funds required for testing.

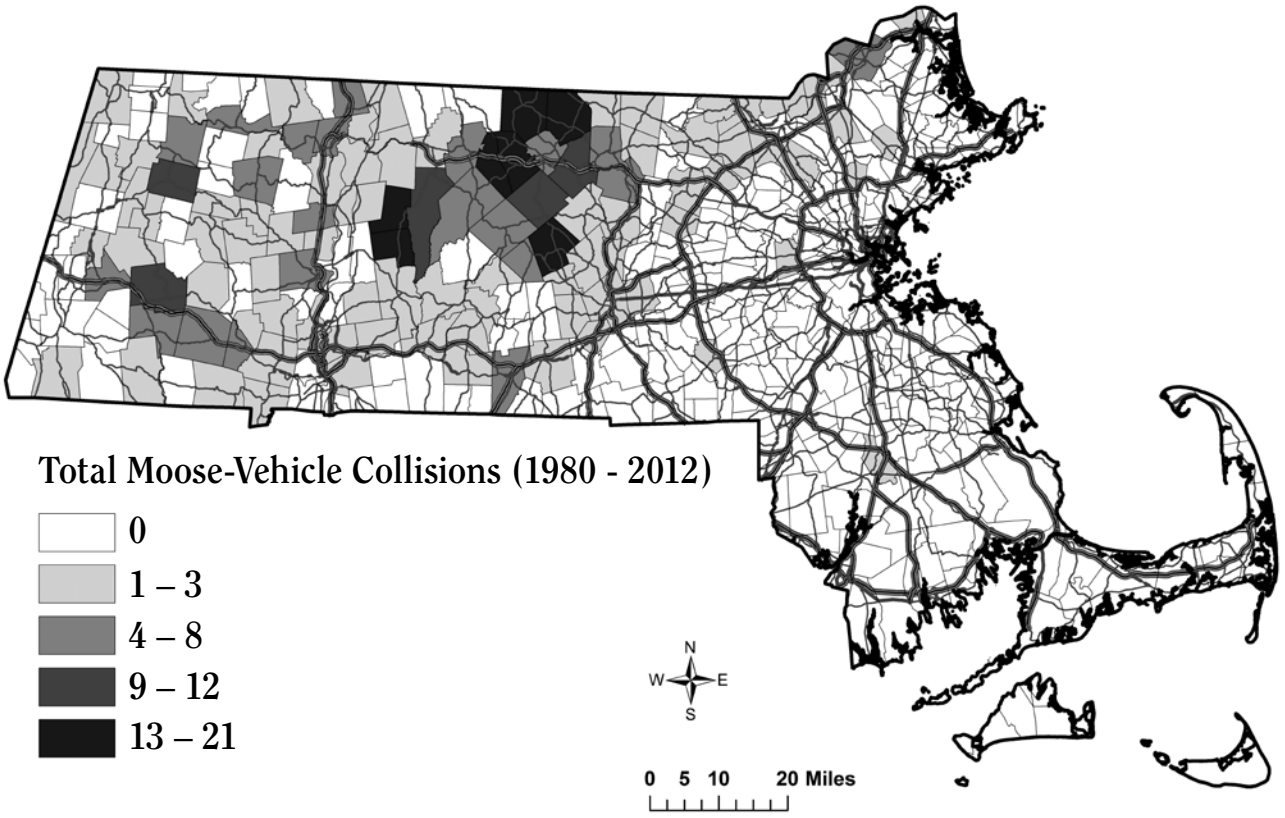
The Human-wildlife Conflict Trends Project

Michael Huguenin, *Wildlife Biologist*

Overview

A study of human-wildlife conflict reports was initiated in 2010 as part of a graduate project through the USGS Cooperative Fish and Wildlife Research Unit at the University of Massachusetts. The goal of this study is to produce information that can be used to develop

Figure 7. Total number of moose-vehicle accidents reported by town from 1980 to 2012 in Massachusetts.



proactive management strategies effective at resolving human-wildlife interactions and, more specifically, human-wildlife conflicts. This is accomplished by analyzing wildlife report data, generated through unsolicited phone calls and emails from the public received at each of the six DFW offices regarding a variety of wildlife-related issues.

Initially, staff evaluated the effectiveness of the previously used Animal Report Data Sheet at providing the appropriate information for investigating trends in human-wildlife interactions. We determined that the Animal Report Data Sheet was ineffective at collecting objective, robust data that could be used for informing effective management strategies. We subsequently developed a new data collection system designed to capture more objective information regarding human-wildlife interactions that can be analyzed more efficiently and more effectively. Currently, we are utilizing data collected from this form to summarize reports of human-wildlife interactions in Massachusetts and to analyze trends both spatially and temporally. We are analyzing these trends using multiple regression techniques. We are displaying the data spatially using Massachusetts Geographical Information Systems (MassGIS). The MassGIS layers include, but are not limited to, land use, towns, census data, and infrastructure (e.g., roads). Further, we intend to utilize this data collection system on a long-term basis in order to develop and support future research and management strategies with regards to human-wildlife interactions.

The Current Study

Reports were recorded from 293 of 351 towns across Massachusetts between August 1, 2012, and June 30, 2013, totaling 1,204 (Figure 8). Three hundred and thirty-seven reports came from the Northeast District, 313 came from the Central District, 247 from the Western District, 117 from the Southeast District, and 112 from the Connecticut Valley District. We averaged 4 reports per town (ranging from 1 to 62). The town of Pittsfield reported the highest number of records with 62 and Boston reported the next highest with 36. Reports ranged from general inquiry to threat to public safety and covered over one hundred species. Report type was categorized into one of five groups: 1) general; 2) sick/injured/young; 3) property damage; 4) depredation; and 5) public safety.

We received 67 reports involving threats to public safety, which include wildlife found inside a dwelling, wildlife approaching humans and/or pets on a leash, aggression toward humans, and human attack. Among these, 3 were reported as human attack and involved the following species, turkey (2) and fox (1). We received 86 reports of depredation/agricultural damage, which include missing pet or livestock, aggression toward pet, attack on livestock witnessed or not witnessed, and attack

The eastern coyote, Canis latrans*, is well established throughout most of Massachusetts except on Nantucket and Martha's Vineyard.*

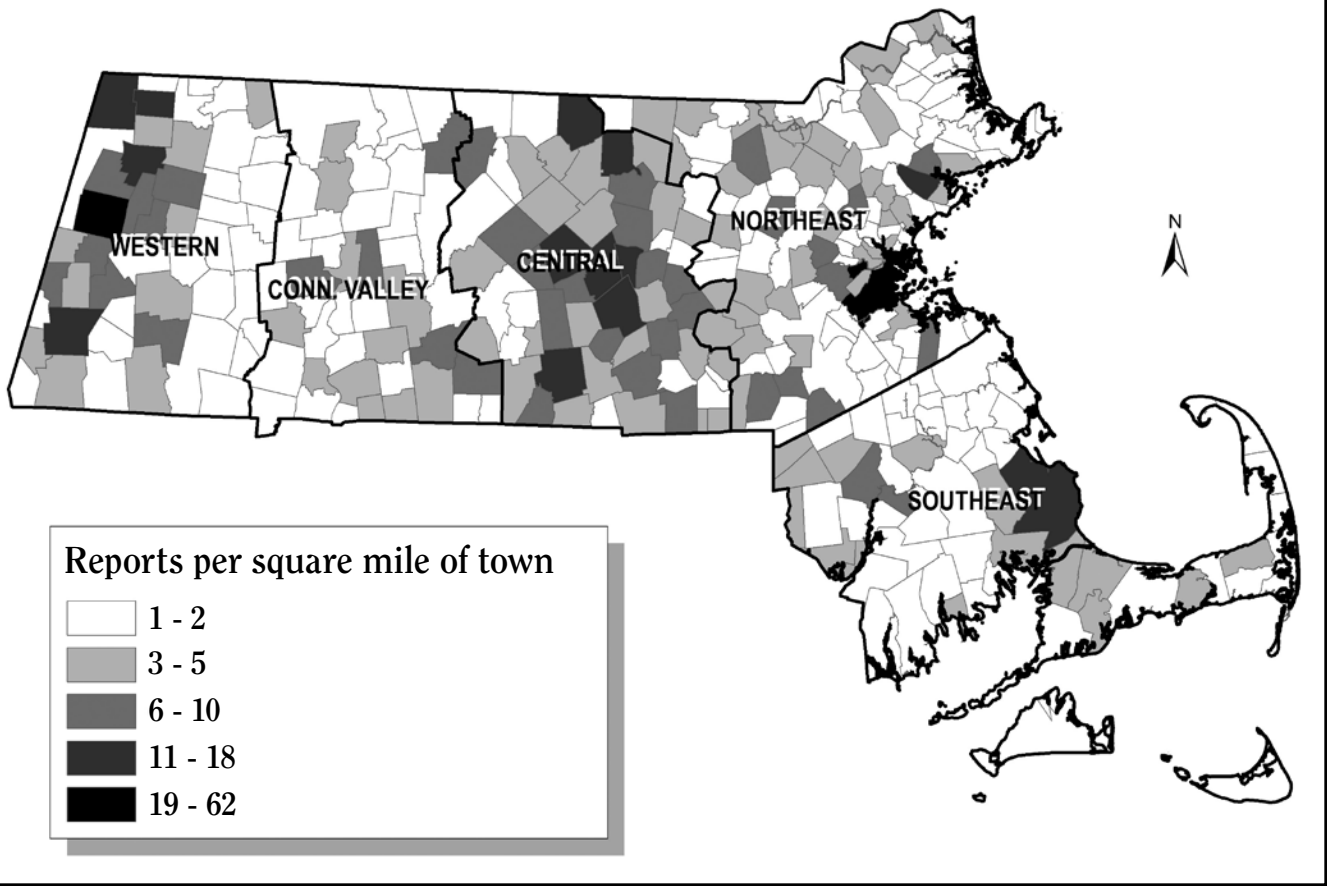
on pet witnessed or not witnessed. Of the 86 reports, 73 included information regarding a pet or livestock species depredated and 15 were reports of crop damage.

Conclusions

During this time period, while using the new animal report form, DFW staff has been effective at capturing a much more diverse group of human-wildlife conflicts than in the past. Capturing more diverse human-wildlife conflict data may be the result of several factors: an increased emphasis on collection effort; the implementation of a new animal report form, an actual increase in conflicts' or a combination of some or all of these things. Regardless, DFW staff has found data collection and data entry to be more efficient due to the new animal report form. Also, the new animal report form has proven effective at capturing more robust and less subjective data.

Collecting these types of data affords us the opportunity to conduct more in-depth analyses. These analyses will include a more specific investigation of actual incidences and an individual's level of concern associated with that incident. Understanding concern will allow us to look at public perception of human-wildlife interactions. Public perception is important because it can help the DFW track potential trends of wildlife populations as wildlife species shift from resources to pests or vice versa. Also, gaining knowledge on perception can help DFW staff invoke more focused management strategies (e.g., a trend toward coyote sightings that involve concerns for public safety may warrant more focused education with regards to coyote behavior).

Figure 8. Map of Massachusetts, showing animal reports per square mile of town.



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PRIVATE LANDS HABITAT MANAGEMENT

John O'Leary, *Supervisor*

Overview

Private lands management is essential to the conservation and restoration of important fish and wildlife habitats in Massachusetts. Eighty percent of the land base in Massachusetts is privately owned, and many Special Concern, Threatened, and Endangered species occur on these lands. Two of the programs administered by the DFW to enhance species habitat on private lands are the Landowner Incentive Program (LIP) and the DFW Technical Assistance Program to the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). Where applicable, these programs work with other DFW or NHESP staff when conducting site visits and providing technical assistance. These programs are designed to partner with private landowners to provide financial and technical assistance for the benefit of Massachusetts's declining species, including Species in Greatest Need of Conservation as defined by the State Wildlife Action Plan (SWAP); Massachusetts List of Endangered, Threatened, and Special Concern species as published by the NHESP; and Massachusetts LIP At-risk Species as identified by the Landowner Incentive Program.

Landowner Incentive Program (LIP)

Michael S. Sawyers, *LIP Coordinator*

The Massachusetts LIP was established to create partnerships between state biologists and private landowners to identify common habitat management goals and provide financial and technical assistance to help landowners achieve these goals. Funding for this program was allocated by Congress through the Department of the Interior's U.S. Fish and Wildlife Service (USFWS) to support the habitat management efforts of state fish and wildlife agencies. LIP is a cost-share program designed to give landowners with limited financial resources the ability to obtain funds and guidance to help them manage wildlife habitat, conserve natural communities and declining species, and promote biological diversity on their lands. Projects chosen for LIP funding are reimbursed up to 75% of the cost of the on-the-ground practices performed to complete the project; the landowner provides the remaining percentage in funds, in-kind labor, or equipment.

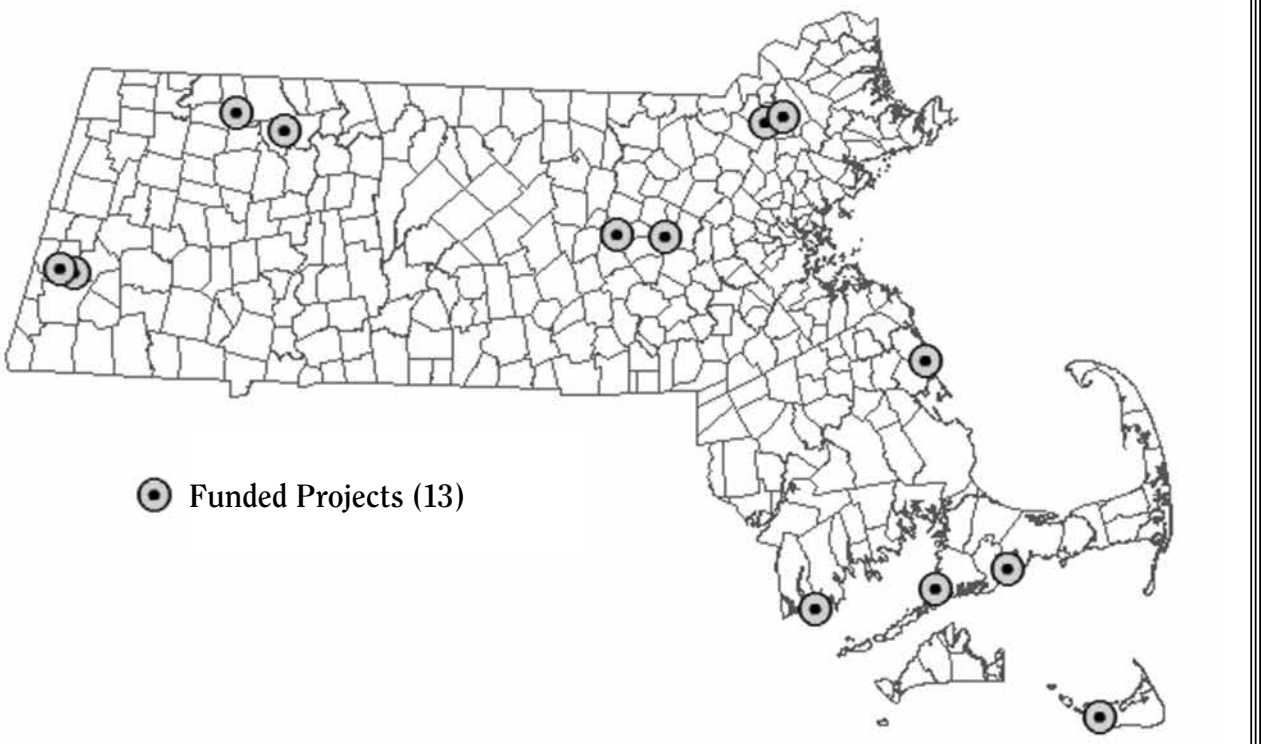
Since its inception in 2005, LIP has played an integral role in restoring and conserving wildlife habitat on a diverse array of private lands across the Commonwealth with goals to (1) enhance wildlife habitat for species-at-risk; (2) identify and reclaim appropriate sites for management of declining habitats (especially open land: old-field and early-successional forest, wetlands, coastal habitat, and pine barrens); and (3) control exotic and invasive plants within habitat being created or restored for species-at-risk. In awarding grants, LIP staff focuses on the management of private lands identified by the NHESP's *BioMap2* project as being essential for the conservation of declining species. The DFW received LIP grant funds in each year they were available, until 2007, when federal funding for this program ceased. However, LIP has been able to continue providing financial assistance with funds carried over from previous years.

The last remaining funds for private landowner habitat management projects were used in FY 13 (Figure 1). The recipients of FY 13 grants included 10 conservation organizations and three individual private landowners, with ownerships totaling 351 acres that were managed at a cost of $154,400. Funded projects addressed a wide variety of species-at-risk in a diverse range of habitats that included protection of coastal water bird nesting habitats, young forest/shrubland habitat improvement, grassland habitat improvement, control of invasive species, management of fire dependent communities, and native pollinator habitat enhancement. Throughout FY 13, the LIP Coordinator communicated with grantees to monitor the progress and success of each project. Prior to processing reimbursement requests, the LIP Coordinator made site visits to each property to verify the work was completed as described in the LIP contract.

During FY 13, the LIP Coordinator continued to assist landowners and towns by providing onsite technical assistance for implementing habitat management, responding to information requests over the phone, and participating in informational public outreach events. The LIP Coordinator visited six properties of landowners that had not previously sought management recommendations nor applied for funding. Recipients of technical assistance included five private landowners and one town conservation commission. Providing technical assistance to these landowners encourages them to conduct habitat management activities that can increase habitat availability and diversity across the Commonwealth.

A LIP Effectiveness Measures Report was completed in FY 13 that highlights the accomplishments of the program, promotes the necessity for active habitat management on private lands for conservation in the Commonwealth, and renews the call for continued

Figure 1. Map of Massachusetts, showing Fiscal Year 2013 Project Sites.



funding of habitat management by private landowners in Massachusetts. Data were compiled from past LIP projects and from a LIP landowner survey sent to all grant recipients. The response rate was very high, with 84% of the LIP projects being represented in the survey. Survey respondents voiced their approval of LIP in Massachusetts, with 100% stating that LIP funding was important to the achievement of their habitat management goals, 97% noting the importance of technical assistance from LIP staff during project implementation, and 94% indicating they would participate in the program again. Additionally, over 80% of the respondents indicated that they have continued monitoring the LIP project area or continued to manage for invasive species. This indicates a continued benefit for the habitat and target species after the initial funding through LIP.

Beyond the benefits to habitat and species-at-risk, LIP in Massachusetts had a positive impact on the local economy. Over the first 5 years of LIP, nearly 75% of the grantees hired a contractor to complete some or all of the habitat management described in their LIP grant. This resulted in nearly $2.1 million being paid to local contractors across Massachusetts. This report provides an example of an effective use of federal funds on private lands management that benefits species-at-risk, private landowners, and local businesses. The results of the report were presented at the 2013 Northeast Association of Fish and Wildlife Agencies (NEAFWA) Conference in Saratoga Springs, New York.

In FY 13, the LIP Coordinator became the Massachusetts representative to the Northeast Habitat Technical Committee (NEHTC), a committee of regional biologists from the 13 Northeast states focused on addressing upland habitat management issues across the region. The NEHTC works collaboratively among state counterparts to address shared management and conservation issues in a broader landscape-level context. In FY 13, issues addressed by the NEHTC included 1) the development of a regional habitat management database, a young forest communication strategy, and Farm Bill recommendations for the northeast states; 2) promoting the use of prescribed fire in the northeast; and (5) communicating and coordinating landscape-level habitat management activities in the northeast.

To date, the DFW has funded 170 LIP projects and has provided technical assistance to private landowners from Cape Cod to the Berkshires. Through this program, the DFW has contributed close to $3.5 million for the conservation of declining species on private land over the program's 7-year history.

In May, Michael Sawyers resigned his LIP Coordinator position to accept a new position as the Federal Aid Coordinator for the DFW. He continued to manage and administer LIP grants and other activities for the remainder of FY 13.

Figure 2. NRCS Environmental Quality Incentive Program Project Locations.

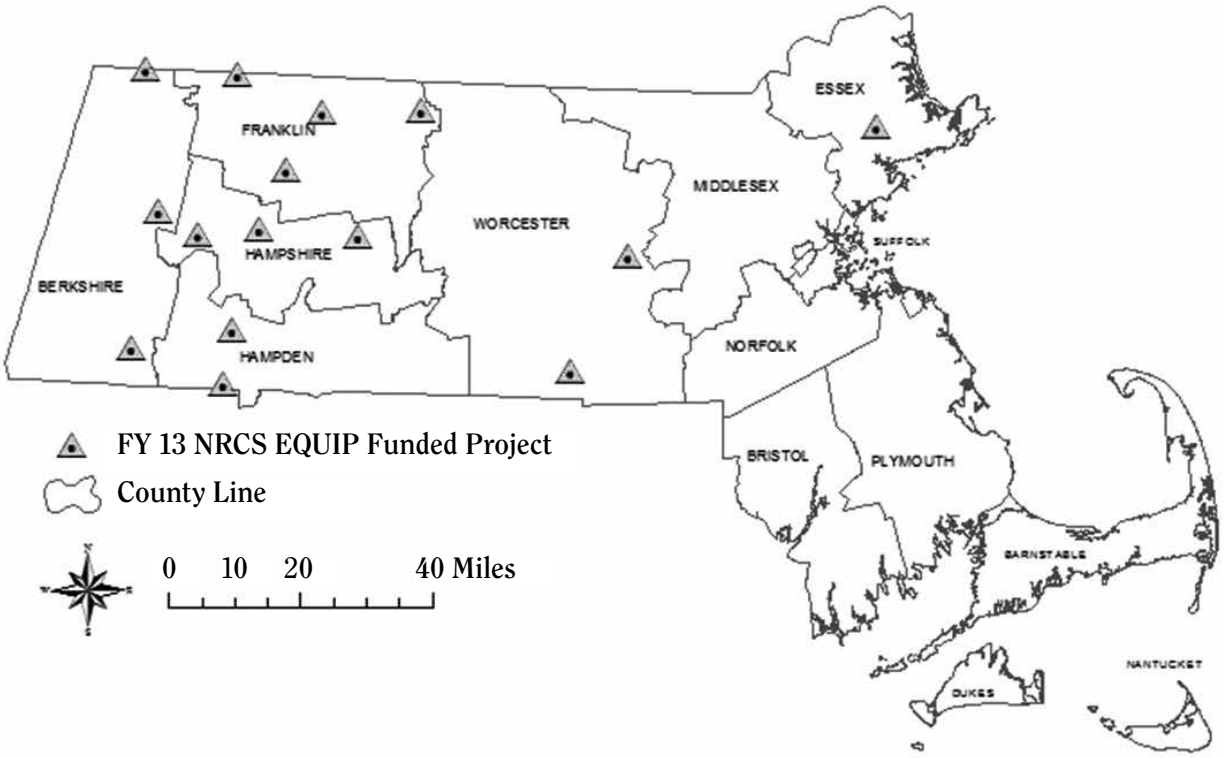
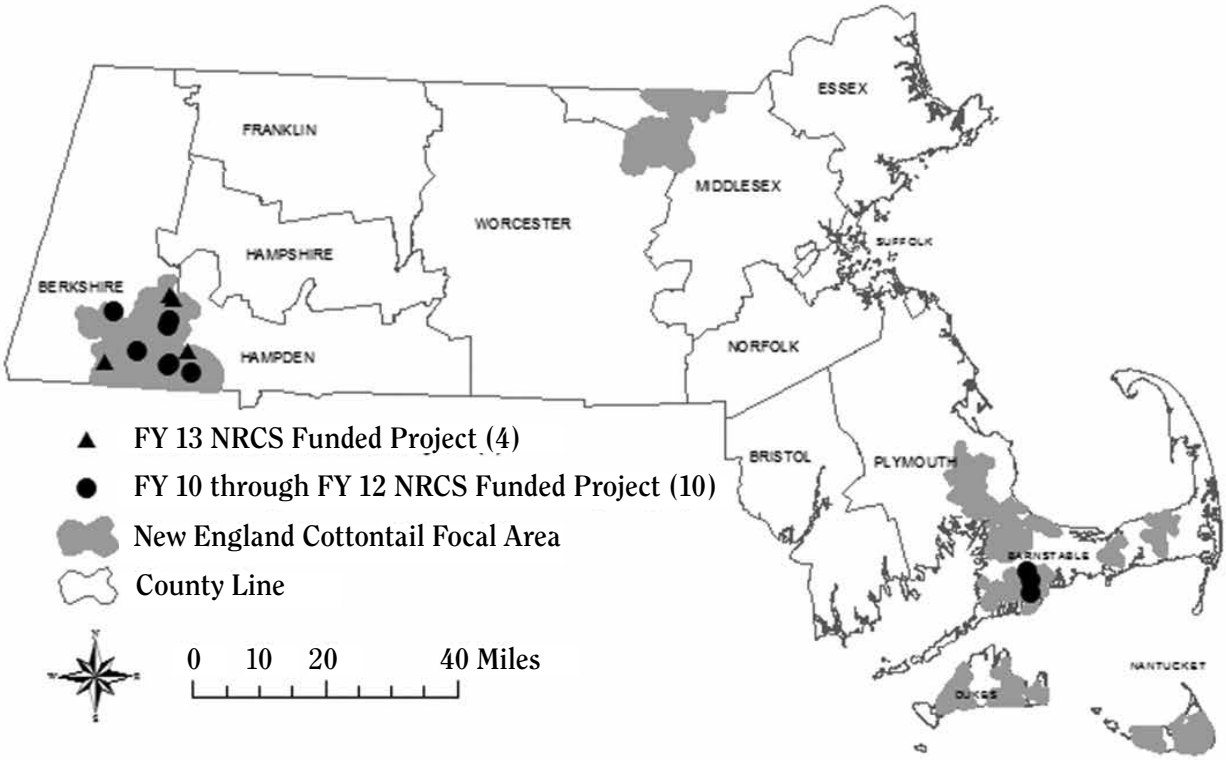


Figure 3. NRCS New England Cottontail Project Locations.



Technical Assistance Program to the Natural Resources Conservation Service

Marianne Piché, *Habitat Management Biologist*

In FY 13, the DFW and the NRCS completed the fifth year of a partnership whereby the DFW Habitat Management Biologist provides wildlife technical assistance to NRCS for the Wildlife Habitat Incentive Program (WHIP), the Environmental Quality Incentives Program (EQIP), and the Wetlands Reserve Program (WRP). The Habitat Management Biologist continued to provide NRCS staff with assistance in the development of WHIP, EQIP, and/or WRP applications and to work directly with NRCS to plan, implement, and supervise the wildlife conservation management associated with WHIP, EQIP, and WRP contracts. These contracts offer cost-share funding to landowners for specified habitat restoration and habitat management activities on private lands. The Habitat Management Biologist is responsible for providing specific wildlife habitat recommendations consistent with the goals and objectives of the DFW Biodiversity Initiative and the Massachusetts SWAP, and for serving as the liaison between NRCS and the DFW on the Rangewide New England Cottontail (NEC) Initiative.

During FY 13, the Habitat Management Biologist participated in 26 site visits for the development of NRCS funding applications. In the process of working with NRCS staff to develop projects, the Habitat Management Biologist consulted with other DFW staff, thereby bringing the knowledge and expertise of the NHESP-NRCS Endangered Species Review Biologist, the NHESP Restoration Ecologist, NHESP taxonomic specialists, the Wildlife Habitat Program Leader, the Upland Program Coordinator, the Upland Game Project Leader, and others to NRCS projects across the Commonwealth.

Fifteen applications were awarded funding in FY 13 through EQIP (Figure 2), with assistance provided by the Habitat Management Biologist to include wildlife habitat management activities. These will result in 362.7 acres of habitat being created, restored, or enhanced: 58.5 acres of Young Forest/Shrubland, 274.2 acres of Upland Forest, and 15 acres of Grassland, with a total of $253,547 of NRCS funding obligated for management.

In FY 13, with coordination from the Habitat Management Biologist, four landowners entered into NRCS contracts to manage habitat for the NEC, with $146,406 of NRCS funding being obligated, bringing the total number of private-land NEC Initiative projects to 14 (Figure 3). With patches ranging in size from 5 to 50 acres, a current total of 328 acres of habitat will be managed on private land, with $547,077 of NRCS funding. In FY 13, project implementation on private land included canopy thinning on 124 acres of Pitch Pine-Scrub Oak, prescribed burning on 30 acres of Pitch Pine-Scrub Oak, and tree clearing to create 19 acres of Young Forest/Shrubland.

The Habitat Management Biologist continued to coordinate Massachusetts NEC Land Management Team meetings, holding three in FY 13. She made four presentations to promote the use of NRCS funding to manage habitat for NEC and Bog Turtle on private land and worked to engage private landowners in habitat management to benefit species identified in the SWAP through active participation in workshops, conferences, and public events.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

Thomas W. French, Ph.D.
Assistant Director, Natural Heritage & Endangered Species Program

Vernal Pool and Rare Species Information System

The Vernal Pool and Rare Species Information System (VPRS) was made available to the public in November 2012. Using a grant from the U.S. EPA, the Natural Heritage and Endangered Species Program (NHESP) developed the VPRS as a web-based mapping and data submittal application that provides users with a mechanism to submit vernal pool certification forms and observation reports for plant and animal species listed under the Massachusetts Endangered Species Act (MESA) to the NHESP electronically. The system allows users to bulk-upload data from a spreadsheet; view their submittals and the associated acceptance statuses; communicate with NHESP staff regarding specific submittals; and provide information on survey efforts, including areas searched, methodologies used, and whether the survey target was found or not. In addition, the system provides a more efficient method for NHESP staff to review and process submitted data, provides users with more timely updates to the publicly available Certified Vernal Pool GIS data and town-level rare species lists, and also includes a mobile application that allows the user to enter basic vernal pool or rare species information directly into the system while in the field.

From early November until the end of FY 13, 225 people signed up for VPRS and created a total of 561 observation reports: 116 vernal pool certification forms, 188 rare plant observation forms, and 257 rare animal observation forms. Once submitted through VPRS, the forms and associated data are reviewed by NHESP biological staff, which has standardized data acceptance criteria that must be met before records can be included in our database, and the accepted records are entered into the database by NHESP data staff.

BioMap2: Town Reports and Key Sites Analysis

As the next phase of *BioMap2*, which was released in 2010, Town Reports have been published to provide towns that contain *BioMap2* habitat with town-specific biodiversity information, to better inform land protection and planning activities at the town level. *BioMap2* Town Reports and links to them via an interactive online map viewer were made available to the public at the New Year.

In addition to the Town Reports, the NHESP has completed a GIS analysis of the components of *BioMap2* to identify Key Sites that will assist the DFW Lands Committee as it targets land for conservation of biodiversity, among other values. The Key Sites analyses include State Wildlife Action Plan (SWAP) species hotspots analyses, habitat diversity within *BioMap2* Forest Cores, and sites integral to the conservation of species and natural communities for which the habitat in Massachusetts has regional importance. The analyses are designed to add guidance for land-protection decisions geared toward biodiversity conservation, and are not intended to replace or eliminate consideration of the other land protection values. In addition, these analyses can aid state land managers in their efforts to steward public lands so as to protect the biodiversity of the Commonwealth for the future.

Rare Species Habitat Mapping

The NHESP continued to delineate and revise habitat footprint polygons for each new observation record for the 432 rare plant and animal species listed under the MESA. Revisions and updates were also made to habitat maps based on new information, including changes to the MESA List, new aerial photography, and new research that improved our understanding of individual species' habitat requirements and utilization.

The Natural Heritage Atlas

The species-specific habitat areas described above are used, among other ways, in the creation of the 14th Edition of the Natural Heritage Atlas (14th Atlas). Publication of the 14th Atlas has been delayed pending the outcome of a court case before the Supreme Judicial Court. The case revolves around the question of the use of Priority Habitat for regulating private property interests; the Division won the original case and a request for reconsideration, and it has now been taken up by the Supreme Judicial Court. The publication of the 14th Atlas will occur after the case has been settled.

2012 Field Season Summary

Birds

Piping Plover; Federally Threatened

MassWildlife coordinated annual monitoring and protection efforts for Piping Plovers conducted by a coast-wide network of cooperators. Over 250 sites in Massachusetts were surveyed for the presence of breeding plovers during May and June 2012. A major coastal storm that flooded many nests and displaced some nesting pairs during early June complicated interpretation and reporting of census results. Compilation of final census results is still underway. Preliminary results indicate that Massachusetts supported approximately 675 breeding pairs of Piping Plovers in 2012, up from 656 pairs in 2011. The preliminary estimate of productivity for 2012 is only about 0.75 chicks fledged per pair. This represents the lowest level of statewide productivity since 1987, when these data began to be collected, and falls well below that level of 1.24 chicks fledged per pair that we believe is necessary to support a stationary population. By comparison, final estimates of overall productivity for Piping Plovers breeding in Massachusetts in 2010 and 2011 were 1.50 and 1.18 chicks fledged per pair, respectively.

American Oystercatcher

MassWildlife coordinated annual monitoring and protection efforts for American Oystercatchers conducted by a coast-wide network of cooperators. Over 250 sites were surveyed during May and early June 2012. Preliminary results indicate approximately 200 breeding pairs were present at about 100 sites, with overall reproductive success of approximately 0.5 chicks fledged per pair. By comparison, final results from the 2011 survey were 202 pairs with productivity of 0.49 chicks fledged per pair.

Grassland Birds at Westover Air Reserve Base

Westover Air Reserve Base (ARB) in Chicopee supports the largest concentration of grassland-nesting birds in Massachusetts and New England, and so is of critical importance to the conservation of this suite of species in this region. A survey of grassland birds at Westover ARB led by MassWildlife biologists on June 11, 12, 14, 15, and 19, 2012, tallied total counts of 81 adult Upland Sandpipers (state-listed as *Endangered* in Massachusetts) and 236 singing male Grasshopper Sparrows (*Threatened*). One Vesper Sparrow (*Threatened*) was seen. Total counts for other species were: Horned Lark, 39 adults; Eastern Meadowlark, 92 adults; Killdeer, 25 adults; Savannah Sparrow, 73 singing males; Bobolink, 125 males; and Red-winged Blackbird, 38 males. Species observed flying over the airfield that may pose risks to aircraft included Canada Goose, Mallard, Great Blue Heron, Turkey Vulture, Red-tailed Hawk, American Kestrel, and Herring Gull. Cumulative totals of 131 Mourning Doves and over 90 European Starlings were also tallied. The continuing practice at Westover ARB of mowing 300- to 500-foot-wide swaths of grassland vegetation to a height of 6-7 inches during nesting and chick-rearing periods was underway during our surveys, raising concerns about losses of eggs and unfledged young of Upland Sandpipers, Grasshopper Sparrows, and other ground-nesting species.

Terns, Laughing Gulls, Black Skimmers

Cooperators in Massachusetts surveyed more than 144 coastal sites in 2012 for the presence of breeding Roseate Terns (*Sterna dougallii*), Common Terns (*Sterna hirundo*), Arctic Terns (*Sterna paradisaea*), Least Terns (*Sternula antillarum*), Laughing Gulls (*Larus atricilla*), and Black Skimmers (*Rhynchops niger*). Ninety-two sites were occupied by nesting birds of one or more of these species. Total nesting pairs of Roseate Terns (1,269 pairs; the lowest recorded in the last 27 years), Common Terns (14,773.5 pairs), Least Terns (2,738 pairs), Black Skimmers (3 pairs), and Laughing Gulls (1,253 pairs) all declined from 2011 levels. One Arctic Tern individual nested. In the case of Common Terns, Least Terns, and possibly Roseate Terns, most or all of the observed decline may be due to a protracted and severe early June storm during a period of extreme tides; thousands of nests were washed out before they could be counted in peak censuses.

Buzzards Bay Tern Restoration Project

Collectively, Bird, Ram, and Penikese islands supported 1,262 peak-season pairs of Roseate Terns (*vs*. 1,348 in 2011; -6%) and a *minimum* (see Ram Island and Penikese Island, below) of 5,231.5 peak-season pairs of Common Terns (*vs*. 6,423 in 2011; -19%).

Bird Island

Common Tern numbers were essentially stable at 1,902 pairs (*vs*. 1,872 pairs in 2011; +2%). Productivity (0.82 fledglings per pair *vs*. 1.43) was average. Roseate Tern numbers declined from 937 pairs in 2011 to 814 pairs (-13%) in 2012, probably reflecting a shift of terns back to Ram as predation pressure there eased in 2012. Roseate productivity on Bird was good at 1.12 fledglings per pair (*vs*. 1.23). No major predation events were recorded this year.

Ram Island

Common Tern numbers on Ram dropped to 2,693 pairs (*vs*. 3,345 in 2011; -19%). This apparent decline is an artifact of weather events immediately preceding our census. We estimated that hundreds of Common Tern nests on Ram were overwashed during a severe storm and extreme tides June 2-8. *Therefore, the census results do not accurately reflect the number of nesting pairs on the island, and should be interpreted as a minimum estimate only*. Common Tern productivity was good (0.97 fledglings per pair *vs*. 1.10). Roseate numbers increased (+16%) to 439 pairs (*vs*. 377). The very low numbers in 2011 were attributed to Peregrine Falcon disturbance in May and early June. Although Peregrine disturbance persisted in 2012 and numbers remained depressed, there appeared to be less Peregrine activity this year, so some terns that fled Ram in 2011 probably

returned. Productivity was excellent (1.31 fledglings per pair *vs*. 1.18).

Penikese Island

Common Tern numbers on Penikese were also artificially low (636.5 pairs *vs*. 1,206 pairs in 2011; -47%) because of the June 2-8 overwash events (an estimated hundreds of nests lost to overwash) and heavy predation from gulls, Black-crowned Night Herons, and Northern Harriers prior to the census. Productivity was poor (0.32 fledglings per nest). Roseate Tern numbers (9 *vs*. 34) were the lowest they have been since 2004. Most Roseate nests were overwashed, resulting in an observed productivity of only 0.11 fledglings per nest. One Arctic Tern was paired with a Common Tern, but their nest was overwashed and predated.

Penikese Island Habitat Restoration

Habitat restoration on Penikese involves improving habitat for grassland birds and making upland habitat available for terns so that they can expand from the narrow, rocky nesting beach. In order to do this, the structure of the upland vegetation must be changed with fire and herbicide to reduce invasive shrubs, reduce percent cover of vegetation, and encourage native grassland and coastal vegetation. We foresee two primary rounds of herbiciding (separated by a year or two) and burnings of sections of the island on a rotating basis every spring and fall. Partial burns of the island were conducted in spring 2011 and spring 2012. Herbicide treatment was conducted in fall 2012.

Public Outreach

We again partnered with Burr Brothers Boatyard and the Town of Marion to have a live tern web camera on Bird Island (***www.birdislandterns.org***). We continued to maintain our Buzzards Bay Tern Restoration Project website (***http://www.mass.gov/dfwele/dfw/nhesp/conservation/birds/tern_restoration.htm***).

Common Loon

In 2012, DFW and Massachusetts Department of Conservation and Recreation (DCR) personnel monitored Common Loon (*Gavia immer*) activity in central and western Massachusetts throughout the summer months. Thirty-five territorial loon pairs were observed on 13 waterbodies in Massachusetts. This is a significant increase from 2011, when 28 loon pairs were observed on 12 waterbodies. In comparison, 33 territorial loon pairs were observed on 14 waterbodies in 2010 and 30 loon pairs took up residence on 11 waterbodies in 2009. Nineteen loon pairs nested in 2012, one more than in 2011. The number of fledged chicks, however, doubled from 2011; 16 chicks were presumed to have fledged in 2012, compared to eight in 2011, ten in 2010 and 14 in 2009. This resulted in a productivity estimate of 0.84 fledglings per nesting pair and 0.45 fledglings per territorial pair in 2012. Average productivity from 1990 to 2011 was 0.86 fledglings per nesting pair.

New Spring Nesting Bald Eagle Survey

In 2013, the agency shifted its Bald Eagle survey efforts from a statewide midwinter count to a spring count in order to locate and monitor resident nesting pairs. The midwinter count was conducted for 32 consecutive years, from 1979 through 2011. In the first year, only eight Bald Eagles were sighted, and in 2011, a record high of 107 were reported. With the initiation of the first Spring Nesting Eagle Survey on April 5, 2013, agency staff, volunteers, and interested citizens checked known eagle territories and explored areas with potential eagle habitat to verify continued use of "old" and try to locate "new" eagle nests. The preliminary results of these efforts yielded a total of 30 active eagle nests throughout the Commonwealth with the highest concentrations of birds along the Connecticut River (8 nests) and Quabbin Reservoir (6 nests). At the Quabbin Reservoir, a hardy boat crew of DFW and DCR staff and Fisheries and Wildlife Board member Dr. Brandi Van Roo reported 6 active nests. The highest number of active nests (8) was seen along the Massachusetts stretch of the Connecticut River. The Merrimack River and the larger waterbodies in southeast Massachusetts have multiple pairs of nesting eagles. A single nest was observed on the Wachusett Reservoir and another was reported in Framingham, where an active nest was observed on one of the DCR reservoirs. Additional eagle sightings were reported in Fall River, Carver, Arlington, Sandisfield, and Pittsfield, and along the Housatonic River.

Bald Eagles have increased in number in the state ever since they were reintroduced to the Quabbin Reservoir in the 1980s, and we expect to surpass last year's record-high numbers of breeding eagles in Massachusetts. Citizen-spotters play an increasingly important role in our survey efforts. We had 35 volunteers actively participate in the count on April 5 and received dozens of emails reporting eagle sightings during the spring. Several of those reports are of new eagle nests, including one in Stoneham, that are in the process of being verified by MassWildlife staff.

Bald Eagle Nest Results

During the summer of 2012, there were 38 known territorial pairs of Bald Eagles in Massachusetts. This is 2 more pairs than in 2011. Of the 38 documented pairs, at least 27 pairs incubated eggs and at least 19 pairs successfully fledged 31 chicks. Of the 31 chicks that fledged, 26 were banded by agency staff. In 2009, 2010, and 2011, there were 27, 32, and 36 territorial pairs, respectively, which produced 38, 41, and 37 fledged chicks, respectively. This is the 24th year that Bald Eagles have raised young in Massachusetts since their restoration. During those 24 years, at least 447 wild-born chicks are known to have fledged.

Peregrine Falcon

The number of pairs of Peregrine Falcons increased from 18 in 2009 to 20 in 2010 and 23 in 2011. During the 2012 nesting season, 20 nesting pairs were confirmed,

but three additional older nesting pairs were not visited to be confirmed, so the total number of nesting pairs was probably at least 23. In addition, an adult Peregrine Falcon was reported from Monument Mountain in Great Barrington during the nesting season. Monument Mountain hosted the last successful Peregrine Falcon nest site in Massachusetts during the decline from DDT. In 1955, one chick fledged from the cliffs of Monument Mountain. Of the 23 probable pairs this year, 20 were confirmed active, 18 were monitored for their success or failure and 16 successfully fledged at least 42 chicks; 34 chicks were banded from 13 nests, and at least eight chicks that fledged from three nests were not banded. This is the largest number of chicks fledged in any single year, and is three more than 2009, when 14 pairs fledged 39 chicks.

Reptiles and Amphibians

Northern Red-bellied Cooter; Federally Endangered

For the 28th consecutive year, efforts were made to locate Northern Red-bellied Cooter nests and place wire cages over them in order to prevent predation. The first nest was found on May 23, 9 days before the typical June 1 start of the nesting season, and the last nest was laid on July 3, 2 weeks earlier than usual. The entire nesting season was 42 days long. A total of 51 nests were located and caged by contractor John Crane. These 51 nests produced 673 eggs (13.2 per nest) and 528 hatchlings (10.35 per nest). Of these, 114 hatchlings were saved for head-starting and 414 were released directly into Federal Pond. Eight or nine nests were predated by a Red Fox and multiple coyotes before they could be caged. At least 15 additional nests, which were not discovered and caged when they were fresh, produced hatchlings.

A total of 127 hatchlings from 2011 had been kept for head-starting. Of these, nine died and three were retained for additional care. The remaining 115, which were head-started by 22 cooperating organizations and individuals, were released on June 1, 2012. Since 1984, a total of 3,501 head-started Northern Red-bellied Cooters have been released after 9 months of care and feeding.

Bog Turtle

Surveys were performed in May and June at five sites and habitat management activities occurred at one site. Two known sites were surveyed for 3-4 hours three times to test a draft regional population monitoring program. Twenty-seven turtles were found during 39 person-hours (mostly volunteer) of survey time. Recruitment (the presence of new, i.e., unmarked sub-adults) was observed at both sites and radio transmitters were attached to all four new turtles to track their movements during the active season. Three other sites were surveyed to evaluate the quality of the habitat to support bog turtles and to search for turtles. More than 29 person-hours were spent surveying these three sites; no turtles were found.

Habitat management was performed at one known site. Water levels and beaver activity were monitored at this site every other week throughout the year. Herbicide treatment was performed to control invasive plants, and a high-tensile electric fence was installed to enclose a 3-hectare area for prescribed grazing by three cows put onsite to help control the invasive plants (e.g., *Phalaris*) and to thwart secondary succession.

Blanding's Turtle (Emydoidea blandingii)

The DFW participated in a regional population monitoring program as part of a nationally competitive State Wildlife Grant and as part of the statewide monitoring program. Visual surveys were performed at six sites and trapping at seven sites. This season's work was to investigate lesser-known sites along the periphery of the range of Blanding's turtle within the Commonwealth, provide information to help prioritize sites, and to evaluate habitat management needs. The survey occurred between April 10 and June 21, the spring season. Eleven Blanding's turtles were observed during visual surveys at four of six sites. During trapping, 90 Blanding's turtles were captured (75 at the same site) at four of seven sites. The sex ratio was skewed toward females, driven primarily by the results from the one site with many Blanding's. This completes the second year of a 2-year sampling window to gather baseline data. Sites sampled in 2011-2012 will be resurveyed every 5-10 years to evaluate long term population trends using estimates of occupancy, detection, and abundance.

Wood Turtle

The DFW participated in testing a regional population monitoring program as part of a competitive Regional Conservation Needs Grant through the Northeast Association of Fish and Wildlife Agencies and as part of the statewide monitoring program. This season's work was to investigate lesser-known sites along the periphery of the range of wood turtles within the Commonwealth and provide information to help prioritize sites. Monitoring surveys were performed at 32 sites across the species' range in Massachusetts, which mainly constitutes the western, central, and northeastern parts of the state. Each site was surveyed three times between April 9 and June 2. For each survey, surveyors spent 1 person-hour surveying a 1-kilometer stretch of appropriate stream habitat. A total of 102 wood turtles were found during 96 surveys. This completes the first year of a 2-year sampling window to gather baseline data. Site sampled in 2012-2013 will be resurveyed every 5-10 years to evaluate long term population trends using estimates of occupancy, detection, and abundance.

Tiger Beetles

Northeastern Beach Tiger Beetle (Cicindela d. dorsalis); Federally Threatened

Only 1,100 individuals were counted during peak flight season in 2012, a significant drop in numbers from the previous 2 years.

Puritan Tiger Beetle (*Cicindela puritan*); *Federally Threatened*

A USFWS contractor reported 45 individuals and a population during an ordinary flight season. DFW staff assisted with vegetation management.

Plants

Rare Plant Inventory

During the 2012 field season, 282 rare plant records were updated, searched for, or discovered. Thirty new plant populations were found and 344 plant element occurrences were verified and mapped.

Special Projects

Tissue samples of Bushy Rockrose, a Special-concern species, were collected and compared genetically to close relative Crocanthemum canadense in collaboration with the University of Connecticut. Results indicate that these taxa may be too genetically similar to be considered distinct. A manuscript for publication was prepared for the Journal of the Torrey Botanical Society.

Butternut, Juglans cinerea, a watch-list tree species, has been in decline due to butternut canker, a fungal infection. Additionally, hybridization with Japanese walnut, Juglans ailanthifolia, may also be a threat to this species. Butternut tissue samples were sent to Notre Dame for genetic analysis to test for hybridization with Japanese walnut.

The following actions were accomplished for the three federally-listed plants:

Sandplain Gerardia (*Agalinis acuta*); Federally Endangered: Population censuses or sampling procedures were conducted at two locations on Martha's Vineyard and three on Cape Cod. Population numbers were lower than in previous years. A controlled burn was conducted at Crane WMA to increase the numbers at a restoration population.

Small Whorled Pogonia (*Isotria medeoloides*); Federally Threatened: No actions were implemented for this species in 2012.

Northeastern Bulrush (*Scirpus ancistrochaetus*); Federally Endangered: The previously known population in Massachusetts was visited but not found; no de novo searches were conducted.

General Habitat Management Projects

The Program continued to work in cooperation with the USFWS, the DCR, and The Trustees of Reservations (TTOR) to control pale swallowwort within the habitats of four state-threatened plant species at Mount Tom State Reservation; treatment within a hickory-hop hornbeam woodland, an area known to be important habitat for Shining Wedgegrass (*Sphenopholis nitida*; T) and Lily-leaf Twayblade (*Liparis liliifolia*; T), has been particularly successful.

Invasive Plant Projects

Mile-a-minute vine (*Persicaria perfoliata*) is a relatively new invasive plant in Massachusetts, first documented in 2006. The Massachusetts Invasive Plant Advisory Group has designated this invader an early detection and rapid response species, a priority for management actions. NHESP, in cooperation with TTOR, the DCR, The Massachusetts Department of Agricultural Resources (MDAR), and the USFWS's Silvio O. Conte National Wildlife Refuge controlled populations of the plant for a third year in Erving, Bridgewater, Foxborough, and Greenfield.

Kudzu (*Pueraria lobata*), a well known invasive in the southern U.S., also has populations established in Massachusetts. Program Staff assisted DCR and MDAR in continued controlling a Kudzu population in Needham for a second year.

Regulatory Review

The following table summarized the environmental reviews conducted during FY 13.

Review Type	Count
Conservation and Management Permits	18
Data Releases	79
MESA Information Requests	186
Forest Cutting Plans	99
MESA Project Reviews	684
MEPA Reviews	61
Notices of Intent	730
Scientific Collection Permits	94
Other	115
Total	**2,066**

Data Management and Data Products

In FY 13, the NHESP processed a total of 474 new rare species, natural community, and certified vernal pool records, and updated 781 existing records. The data processed were in the following categories:

FY 13 Totals	New Records	Updates to Existing Records
Vertebrates	32	281
Invertebrates	34	88
Plants	30	252
Communities	52	32
CVPs	326	128
Total	**474**	**781**

Land Protection

In FY 13, the DFW spent approximately $7.8 million to protect 3,525 acres of land across the state, bringing the agency's total land holdings to just over 200,441 acres. Several of this year's acquisitions were of particular relevance to the protection of rare species and exemplary natural communities, as noted below.

Northeast District

Over 500 acres and a mile and a half of Nashua River frontage in Groton was protected by a DFW conservation easement in FY 13, protecting habitat for eight MESA-listed species, including Threatened Blanding's Turtles.

Southeast District

In Plymouth, the DFW acquired over 100 acres of the southern shore of Halfway Pond; the pond and its shoreline are home to the federally Endangered Northern Red-bellied Cooter and six other MESA-listed species.

Central District

The acquisition of about 147 acres of marsh and adjacent upland in Phillipston and Templeton help to protect Endangered American and Least bitterns.

Valley District

Along the Green River in Colrain, the DFW acquired 182 acres, conserving habitat for the Special Concern Ocellated Darner dragonfly and two species of Special Concern plants.

Western District

The acquisition of 906 acres in Otis and Tyringham adds substantially to the protection of a *BioMap2* Forest Core Habitat, as well as a Level Bog and Acidic Graminoid Fen.

Natural Heritage and Endangered Species Advisory Committee

Full members are Kathleen Anderson (Chair), Mark Mello (Vice Chair), Jonathan Shaw (Secretary), Joseph Larson, Marilyn Flor *(part-year)*, Glenn Motzkin *(part-year)*, Wayne Petersen *(part-year)*, and Thomas Rawinski.

Associate members are William Brumback, Andy Finton, Timothy Flanagan, Wayne Petersen *(part-year)*, Mark Pokras, Dave Small *(part-year)* , and Bryan Windmiller.

During FY 13, the committee held nine scheduled meetings. Of these, one was held at the Westborough Field Headquarters, one at the USFWS Assabet River National Wildlife Refuge Visitor's Center in Sudbury, and the remaining seven meetings were held at the temporary Field Headquarters in West Boylston. The November 2012 and February 2013 meetings were cancelled due to inclement weather, and there is no scheduled meeting each year for the month of August.

Presentations from Agency Staff

Falconry in Massachusetts (Mike Huguenin, Wildlife Biologist)

Former Senate Bill 1854 (Thomas French, Assistant Director for NHESP)

A History of Feral and Wild Hogs in the United States (Assistant Director French)

Adaptive Capacity and Climate Change (John O'Leary, Grants Specialist)

Native Brook Trout: Its Natural History and Restoration in Massachusetts (Steve Hurley, Southeast Wildlife District Fisheries Manager)

Restoration and Protection of Grasshopper Sparrow Habitat in Massachusetts (Ralph Taylor, Connecticut Valley Wildlife District Supervisor)

Other Presentations to the Committee

eBird: Cornell's Avian Database (Marshall Iliff, eBird/AKN Project Leader)

Science and Bird Conservation (Dr. Kim Peters, Chief Scientist and Director of Bird Conservation for Mass Audubon)

Population Trends and Distribution Changes over the Last 20 Years from Citizen Science Data (Sharon Stichter, Professor Emerita of Sociology at the University of Massachusetts, Boston)

Natural Heritage and Endangered Species Program Staff

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

Tara Boswell, *GIS Manager*
Chris Buelow, *Assistant Restoration Ecologis*t
Bryan Connolly, *State Botanist*
Karen Dolan, *Finance and Projects Administrator*
Lori Erb, *Turtle Conservation Biologist*
Karro Frost, *Conservation Planning Botanist* (part-year)
Lauren Glorioso, *Endangered Species Review Assistant*
Sarah Haggerty, *Information Manager*
Lynn Harper, *Habitat Protection Specialist*
Peter Hazelton, *Aquatic Ecologist* (part-year)
Amy Hoenig, *Endangered Species Review Biologist*
Tara Huguenin, *Conservation Data Specialist*
Kim Justham, *Conservation Data Specialist*
Jacob Kubel, *Conservation Scientist*
Jesse Leddick, *Endangered Species Review Biologist*
Jennifer Longsdorf, *Administrative Assistant*
Lisa MacGillivray, *Habitat Mapping Biologist/Data Specialist*
Sarah Maier, *Natural Heritage Database Manager*
Misty-Anne Marold, *Senior Endangered Species Review Biologist*
Scott Melvin, Ph.D., *Senior Zoologist*
Carolyn Mostello, *Coastal Waterbird Biologist*
Michael Nelson, Ph.D., *Invertebrate Zoologist*
David Paulson, *Endangered Species Review Biologist*
Brent Powers, *NRCS Review Biologist*
Jonathan Regosin, Ph.D., *Chief of Conservation Science*
Eve Schlüter, Ph.D., *Senior Endangered Species Review Biologist*
Tim Simmons, *Restoration Ecologist*
Patricia Swain, Ph.D., *Natural Community Ecologist*
Amanda Veinotte, *Administrative Coordinator*

INFORMATION & EDUCATION

Marion Larson
Chief, Information and Education

Overview

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 also provides basic information about and science-based explanations of wildlife-related issues, in order to enhance public understanding of wildlife management and compliance with laws and regulations. Perhaps most importantly, the Section also maintains an active program of educational and promotional outreach, to instill and foster an appreciation for native wildlife in the general public.

This year, a 1-year contract for an Archivist was initiated and filled by Jim Cardoza, retired DFW Wildlife Biologist. The contract provided for Cardoza to conduct research and develop a complete written history of the Division, identify items to be archived, process incoming and backlogged collections of artifacts into the main collection, organize the materials and create an inventory, prepare a collection guide, store or display documentation for preservation and integrity, and coordinate these activities with Division staff. Writing of the history commenced in December 2012 and a draft manuscript was completed in early April, with a copy provided to DFW administrators for their review. Photo needs were researched and a visit to the State Archives in June resulted in procuring photographs to be scanned for the publication. In his final report to the Director and the Chief Financial Officer, Cardoza made recommendations regarding organizing and cataloguing various historical materials and items. Cardoza also made recommendations regarding the cataloguing of materials and sign-out procedures for the DFW's library, which cannot be attended to until the new building is complete and staff has moved in. A renewal contract is planned for FY 14.

In June 2012, Senior Planner Gary Zima was transferred to the I&E Section and divides his time between coordinating the Massachusetts Outdoor Exposition (see below) and working with other I&E staff on education and outreach events. In February 2013, Promotion Specialist Susan Sacco was promoted to Assistant to the Director; though not far away, her presence and energy will be missed by the Section. Finally, a Communications Specialist position (formerly Outreach Coordinator) was posted in late May 2013, and interviews are scheduled for the beginning of FY 14.

Production of Annual Materials

The Guide to Hunting, Freshwater Fishing, and Trapping

The CY 13 Guide to Hunting, Freshwater Fishing and Trapping was again produced in cooperation with J.F. Griffin Publishing Co., as part of a multi-year contract with this publisher. The full-color, glossy-stock, 60-page booklet includes a digest presentation of the fishing- and hunting-related laws and regulations and articles of interest to sportsmen; in FY 13, these last included articles on online game checking, fishing the Connecticut River, land conservation, and a guide to Massachusetts snakes. Publications Editor Peter Mirick and Senior Photographer Bill Byrne contributed much of their respective time to the production of the 2013 Guide, providing articles, photos, and editorial support to the publisher and other staff involved with this critical project.

Information and Outreach

Marion Larson, *Chief of I&E*

Information and outreach duties were handled by the Chief during this fiscal year as the Outreach Coordinator position remained vacant.

Responses to Public Inquiry

Agency Email Activity

A total of 2,219 agency email messages (1,531 FY 12) were processed during this fiscal year. This represents yet another increase in agency email inquiries over the past 3 years. In January, Wildlife Biologist Bridgett McAlice, who is assigned to the Wildlife Section, began answering agency emails with guidance from the I&E Chief.

Media Inquiries

As per current protocol, media inquiries are routed through the Executive Office of Energy and Environmental Affairs (EEA) press office. The vast majority of inquiries are then passed on to DFW staff for a response. In some cases, EEA provides the information directly (or with assistance from DFW) to the media, or the inquiry is handled through the Department of Fish and Game (DFG).

In FY 13, the agency received 391 media inquiries (291 FY 12) from 115 different media outlets; 300 of the inquiries resulted in interviews with DFW staff; three with DFG staff. EEA handled 80 media interviews directly, with the remaining eight inquiries resulting in joint interviews with some combination of DFW, DCR,

EEA, and/or OLE staff. EEA press team members often call the Outreach Coordinator for guidance on DFW staff members to be interviewed. The vast majority of inquiries came from newspapers; 64 inquiries came from television (includes public access); 38 from radio; four from magazines; and six from online publications.

Geographically, the highest number of media inquiries came from outlets based in the Northeast Wildlife District (147), with 64 inquiries from Valley Wildlife District outlets, 53 from outlets in the Southeast Wildlife District, 42 inquiries from Central Wildlife District media outlets, and 11 inquiries from outlets in the Western Wildlife District. The remaining inquiries were from New England-based, national, or unknown media outlets.

A brief breakdown of the topics of interest to media, by DFW section, is as follows: 137 Wildlife topics, 65 NHESP, 62 Fisheries, 18 Realty, 17 relating to Administration, and nine I&E topics. In some cases, there were topics of interest that involved several sections.

Print Media Coverage

As in past years, DFW utilized a newspaper-clipping service to collect all articles in Massachusetts newspapers that mention the Division by name. Articles mentioning DFW totaled 2,519 in FY 13 (2,988 FY 12).

MassWildlife E-newsletter and Advisories

Thirteen issues of the e-newsletter were published this fiscal year and emailed through the Division listserv to over 6,500 subscribers. Advisories, to alert subscribers to new regulations, special events, public meetings and hearings, etc., are also sent out on occasion through the MassWildlife E-news listserv. Four advisories were issued to the listserv this fiscal year, on such diverse topics as new regulations on turkey hunting, new unchecked deer possession limits on the Islands, a spring turkey hunting reminder, and the announcement of a new spring nesting-eagle survey. The EEA also issued its own press release on the spring nesting-eagle survey results.

Website Redesign

All state agency websites are being standardized in a process that has been ongoing for several years. Part of the rationale for this effort is that it should be obvious to all Mass.Gov web-page visitors that they are on a Massachusetts state government website. "Website Portalization," the term used for this statewide initiative, has been managed by the Information Technology Division (ITD) of the Office of Administration and Finance. During FY 12, ITD turned its attention to the EEA agencies with a mandated goal to portalize all EEA agency websites by June 2013.

In order to prepare and transition Mass.Gov/MassWildlife to the new system, five DFW staff attended a training session for the new web page creation software in mid-February, redesigned the website and web pages to fit within the prescribed template, decided what old website content should be "migrated" to the new and how it would be organized, archived old content, and participated in weekly conference calls. The effort involved staff from ITD, the DFG Commissioner's office, and staff from the various DFG divisions.

ITD provided interns with previous agency portalization experience to help build web pages over a period of 4 weeks. A contractor from ITD was also available for 8 weeks to guide the DFW team in the technical aspects of the software as well as build web pages. (Side note: When the DFW website was last redesigned, in 2006, there were three DFW staff people who worked with a much smaller website and had 12 months to launch the new version. This year's imposed project deadlines were half the time for a website with many times more pages, images, and associated documents.) Priority was given to the text content, to ensure that it was all migrated to the new site. Images require more processing in the new system, which could not be accomplished before ITD's deadline.

The new website launched on June 5, and is still a work in progress. DFW web team members were consulting with ITD for technical assistance, working through the website to address concerns, and processing photos for eventual upload at the close of the fiscal year.

Promotion of Agency Activities

Susan Sacco, *Promotion Specialist*

A promotion campaign has been developed to showcase and translate DFW programs and ongoing land conservation and management for its current constituents, including sportsmen, naturalists, and other outdoors-people, as well as for the general public. The public presentations and displays that have been developed are designed to 1) maintain and increase the engagement and activity of current constituents by offering them resources and information valuable to them and (2) establish and maintain connections with a wider audience of citizens who have not traditionally contacted the agency or taken part in its programs, but are now turning to the DFW for information, particularly about the wildlife they are encountering in Massachusetts and for programs and publications that will help them and their children reconnect with the outdoors. Current promotion efforts are directed into two principal areas: the Wildlife Districts (primarily through design, delivery and set-up, and staffing of manned displays at five regional fairs and four trade shows) and agency publications, which are all designed and edited to provide information in the most professional, efficient, and engaging manner possible.

Fairs and Trade Shows

The Wildlife District offices and the hatcheries that are open to the public have traditionally offered the agency's most frequent opportunities for face-to-face interactions with members of the public, so promotion support is given to these installations every year, through publications and through staff time. Agency presence at regional and county fairs (late summer-early

fall) and sportsmen's shows (late winter-early spring) has traditionally been provided by the Wildlife District within which the event occurs (with limited assistance from staff at the Field Headquarters), but competing demands and limitations on staff time often hamper an individual district's ability to install and man a display to provide visitors with opportunities to ask questions and make connections to the agency. The Promotion Specialist provided support to the wildlife districts by coordinating the displays, filling in schedule gaps, restocking literature from the Field Headquarters, answering or referring questions, and generally giving event visitors more opportunities to be exposed to the mission and work of the agency and to talk to an agency representative if they wish.

In FY 13, the DFW exhibited at five fairs, one in each Wildlife District, for the first time: the Marshfield, Cummington, Spencer, Franklin County (Greenfield), and Topsfield fairs; and four trade shows: the Boston Home Show, the New England Fishing and Outdoor Expo (Worcester), the Springfield Sportsmen's Show (West Springfield), and the Boston Flower Show. Field Headquarters I&E staff and Division staff from across the agency, including its Wildlife District offices, continued the tradition of selling licenses at the two sportsmen's shows; staff also answered sportsmen's hunting- and fishing-related questions and provided visitors with information about and instruction in navigating the electronic license-purchasing system.

The Boston Flower Show was again and by far the largest of the DFW's exhibiting opportunities in this fiscal year, giving agency staff and its "Living With Wildlife" series of handouts very favorable exposure to tens of thousands of mostly urban visitors in the garden display area at the center of the state's most popular flower show. The FY 13 Boston Flower Show display was enhanced by an extensive collection of the agency's pelts and skulls from most of the state's native furbearers, which were arrayed on tables so that visitors could touch, handle, compare, and ask questions about them, and which were extremely popular with show attendees of all ages. Staff estimated, based on randomized head counts and numbers of publications taken, that the DFW exhibit drew approximately 10,000 direct-contact visitors from the show's estimated total attendance of 65,000 people over the 5 days the show was open. Somewhat unexpectedly, this multi-aged, largely urban and suburban audience was as interested in hunting, fishing, and wildlife-viewing as it was in controlling damage from or concern about wildlife in its yards, gardens, and neighborhoods, based on the types of questions asked and the types and numbers of publications taken.

Promotion and Outreach Events

Many 1-day events, conferences, and programs also served as promotional opportunities for the agency throughout the year. The Chief of I&E and the Promotion Specialist consulted with the professional staff involved in outreach events, provided appropriate display equipment and literature for the targeted audiences, developed targeted display materials such as posters and handouts, and/or helped to staff the agency's display at these events, including the annual spring conferences of the Massachusetts Tree Wardens, the Massachusetts Association of Conservation Commissioners, and the Massachusetts Land Conservation Conference, to highlight a few. Staff from across the agency leads and otherwise participates in such events as workloads and time permit; a sampling of the conferences and other 1-day events in which staff participated in FY 13 are outlined below.

July

Woodlot Informational Tour; Ashburnham: Habitat Biologist Marianne Piché, along with representatives from Massachusetts Department of Conservation and Recreation, led participants through a forest thinning project to address the damage caused by a 2008 ice storm. Wildlife habitat values of this project were highlighted.

Snakes, Bugs, and Dragonflies, Oh My!; Phillipston: Wildlife Biologist Peter Mirick.

August

Waquoit Bay Reserve Watershed Block Party; Waquoit: Southeast Wildlife District staff.

Peter Rabbit's Animal Day; Sandwich: New England Cottontail Initiative; Southeast Wildlife District staff.

Dennis Conservation Trust; Dennis: *Carnivores of Cape Cod*; Wildlife Technician Susan Ingalls.

September

Sandwich Fish Hatchery 100th Anniversary Celebration; Sandwich: Agency displays and a tour of the Hatchery; Hatchery and DFW staff.

New England Cottontail Initiative Informational Sessions; Sandisfield, Otis, and Monterey: Three informational sessions to inform foresters and the public about conservation efforts, habitat management, forest management, and rabbit surveys; Habitat Biologist Marianne Piché.

The Massachusetts Outdoor Expo (the Big MOE); see the detailed write-up below; I&E Specialist Gary Zima and DFW staff.

Natural Resources Trust of Easton's Harvest Fair; Easton: Promotion Specialist Sacco.

October

Wellesley Conservation Council; Wellesley: *Snakes of Massachusetts*; Wildlife Biologist Peter Mirick.

November

New England Park Rangers Association Conference; Boylston: *Ranger Resources and Programs Available from MassWildlife*; I&E Chief Marion Larson.

Hardwick Historical Society; Hardwick: *History of Fire and Landscape Use in Pine Barrens*; Restoration Ecologist Chris Buelow.

City of Newton; Newton: *Coyotes and Turkeys in Newton*; Furbearer and Black Bear Project Leader Laura Conlee and Upland Biologist David Scarpitti.

Northeast Trackers Conference; Leominster: *Helping New England and New York Wildlife Agencies Find Populations of New England Cottontails*; Upland Biologist David Scarpitti.

December

The Nashua River Watershed Association; Groton: *River Otters and Fishers in Massachusetts: A Tale of Two Weasels*; Wildlife Biologist Trina Moruzzi.

January

Harwich Conservation Trust Winter Talk Series; Harwich: *The Cape Cod Bear*; Furbearer and Black Bear Project Leader Laura Conlee.

Massachusetts Tree Wardens and Foresters Conference, Sturbridge; *Habitat Management: When Nature Can No Longer Take Its Course* display; Habitat Project Leader John Scanlon, Forester Rebecca DiGirolomo, Promotion Specialist Sacco.

Walden Woods Project Stewardship Lecture Series; Lincoln: *Taking on Invasives: Battles Won and Lost and Their Lessons*; Restoration Ecologist Tim Simmons.

ABC-TV's *Ocean Mysteries* with Jeff Corwin; an episode featuring fisheries management in New England, including DFW's salter brook trout research at Red Brook (Plymouth) with Southeast Wildlife District Fisheries Manager Steve Hurley and District Manager Jason Zimmer.

Congress on Lakes and Ponds; Worcester: *Fisheries Management in Massachusetts: 100 Years at Lake Wickaboag*; Fisheries Biologist Richard Hartley.

February

New England Botanical Club, Cambridge: *The Amazing Antioxidant, Apogamous, and Amorous Genus Aronia*; State Botanist Bryan Connolly.

34th Annual Southeastern Massachusetts Sportsman's Show; East Bridgewater: Southeast Wildlife District staff.

Pioneer Valley Trout Unlimited; Holyoke: *Is There Life After Salmon?*; Anadromous Fish Project Leader Caleb Slater.

New England Cottontail habitat management site walk; Mashpee: Upland Biologist David Scarpitti and Habitat Biologist Marianne Piché.

MassAudubon's Wachusett Meadow Sanctuary Lecture Series; Princeton: *The Need for Managing Grasslands and Shrublands for Wildlife*; Habitat Project Leader John Scanlon.

March

Norcross Wildlife Sanctuary; Wales: *Uncommon Natural Communities in Massachusetts*; Natural Communities Ecologist Pat Swain.

New England Wild Flower Society Plant Conservation Volunteers meeting; Framingham: *Recent Changes to the MESA List*; State Botanist Bryan Connolly.

Winter Talks at Norcross Wildlife Sanctuary; Wales: *Fire Ecology: Managing Habitat for Imperiled Species and Their Habitats*; Restoration Ecologist Tim Simmons.

Harvard Forest lecture; Petersham: *Post-Fledging Ecology of Forest Songbirds in a Managed Landscape*; State Ornithologist Andrew Vitz.

The Cape Wildlife Center talks; Barnstable: *Conservation and Management of the New England Cottontail in Massachusetts*; Wildlife Technician Susan Ingalls.

2013 Westfield River Watershed Association Symposium; Westfield; Anadromous Fish Project Leader Caleb Slater.

Sharon Friends of Conservation; Sharon: *Endangered Species in Massachusetts*; Assistant Director for NHESP Tom French.

Warwick Conservation Commission talk, Warwick: *Beavers and the Law*; Wildlife Biologist Trina Moruzzi.

MassAudubon's Long Pasture Sanctuary; Barnstable: *Saving the Bald Eagle*; NHESP Assistant Director for NHESP Tom French.

April

Spring Bald Eagle Survey; Statewide: DFW staff and volunteers.

Association of Northeastern Biologists' Northeast Natural History Conference; Springfield: State Botanist Bryan Connolly, Conservation Science Chief Jonathan Regosin, State Ornithologist Andrew Vitz, and Restoration Ecologist Tim Simmons.

Turtle-survey training for utility workers and subcontractors; Falmouth: Review Biologists Eve Schluter and Dave Paulson.

Bristol County Aggie Spring Expo; Dighton: Turtle Conservation Biologist Lori Erb and Wildlife Biologist Peter Mirick.

May

Biodiversity Conservation Tools Walk-and-Talk; Sharon: *BioMap2 and VPRS*; NHESP Information Manager Sarah Haggerty.

Montague Plains WMA; Montague: *Fire Ecology at the Montague Plains WMA*; Restoration Ecologist Tim Simmons.

June

Birding and land management walk; Florida: Habitat Biologist Marianne Piché.

Westfield River Fish Passage Open House and Tour; West Springfield: Anadromous Fish Project Leader Caleb Slater.

Water Systems Council 2013 Bay State Children's Water Festival; Holyoke: Education Coordinator Pam Landry and Aquatic Education Coordinator Jim Lagacy.

Pioneer Valley Boat and Surf Club; Agawam: *Anadromous Fish of the Westfield River*; Anadromous Fish Project Leader Caleb Slater.

Holyoke Conservation Commission; Holyoke: *BioMap2: Biodiversity Conservation Blueprint*; NHESP Information Manager Sarah Haggerty.

Detecting and Reporting New Plant Invaders to The Connecticut River Watershed; Easthampton: State Botanist Bryan Connolly.

Groton Greenway River Fest, Groton: *Snakes, Turtles, and Frogs*; Wildlife Biologist Peter Mirick.

Massachusetts Outdoor Exposition

Gary Zima, *Information and Education Specialist*

The Massachusetts Outdoor Expo (the Big MOE) is a 1-day, family-oriented event traditionally held on or around National Hunting and Fishing Day, in the last weekend in September, on the Hamilton Rod and Gun Club grounds in Sturbridge. This free event is designed to introduce children and adults to a variety of traditional outdoor activities relating to hunting, fishing, trapping, water sports, nature observation, and history with one-on-one and mentored instruction available and without the necessity for purchasing any equipment. Demonstrations and exhibits on forestry, native wildlife, pioneer encampments, sporting dogs, and tree-stand safety are also part of the event. Most of the activity and demonstration stations are staffed by local sporting, conservation, and other outdoor-related clubs and businesses. Coordinated by volunteers with the Facts about Wildlife and Nature Society (FAWNS), a non-profit conservation organization, this popular event has a 17-year history and attracts thousands of participants – individuals, youth groups, and families – every year.

The Division has been actively involved in this event for over 10 years with a few DFW staff serving on the event committee as volunteers, including Wildlife Biologist Peter Mirick, and a number of agency staff volunteering at the event. I&E Specialist Zima has been a key organizer of the Big MOE and with to his transfer to the Information and Education Section this fiscal year, some of his job responsibilities include his activities associated with the Big MOE. As the event organizer, he coordinates and chairs monthly planning meetings, maintains a database of approximately 320 Big MOE volunteers, and assists in writing grants that help offset the operational expenses associated with the event.

This fiscal year, the Big MOE was held on September 23, on the grounds of the Hamilton Rod and Gun Club in Sturbridge. Approximately 6,400 people were in attendance, coming from across the state as well as Rhode Island, Connecticut, and New Hampshire. There were over 45 different activity stations, with the majority being staffed by various fish-and-game-club volunteers and other professional organizations such as the National Wild Turkey Federation, the Capen Hill Nature Sanctuary, and the Massachusetts 4-H Program.

Publications

Massachusetts Wildlife Magazine

Peter Mirick, *Editor*

Bill Byrne, *Senior Photographer*

The DFW's most visible publication is *Massachusetts Wildlife*, a 40-page, full-color, quarterly magazine with a stable base of approximately 25,000 subscribers. Publications Editor and Wildlife Biologist Peter Mirick and Senior Photographer Bill Byrne, along with other I&E staff, produced four issues of *Massachusetts Wildlife* (Number 3, 2012 – Number 2, 2013) covering a wide variety of fisheries, wildlife, and outdoor-related subjects, including wildlife research, rare and endangered species, general nature interest, and "how to" articles for the hunter, angler, and nature observer. Continuing a long tradition of producing issues that are also useful as reference works, the last issue of the year was a "Field Guide to the Amphibians of Massachusetts," and included detailed identification portraits of every species of frog, toad, and salamander found in the Commonwealth, plus a wealth of information on amphibian conservation, evolution, and observation. This issue was designed to complement the "Field Guide to the Reptiles of Massachusetts" issue, produced in 2009, which was also updated and reprinted this year to meet public demand.

Subjects covered in other issues included a how-to article on SCUBA diving for lobster; a feature article on the history and analysis of 50 years of data from the Sportfish Awards Program; a feature article on the bird irruption that took place in the winter of 2012-13 (with outstanding photography of virtually every species involved); and a feature article on how wildlife is likely to adapt to climate change. We also covered the original works of a Massachusetts wildlife artist; a history of the rainbow smelt in the Commonwealth; two articles on wildlife observation, from a tree stand and while hiking in the Quabbin Reservation; and two articles covering fishing tips and saltwater fly selection. The feature article on a Law Enforcement case involving a bear-poaching incident ("Wildlife CSI") earned Second Place in the New England Outdoor Writers' Association's 2012 "Best Magazine Article" category, and an article on a Connecticut River master angler ("The River Master"), which had appeared in the last issue of the previous fiscal year, earned First Place in the same category. The four

issues also contained numerous short features, on the smallest turtle in the world (musk turtle), an incident of antler entanglement, and the Junior Duck Stamp program, and the usual plethora of interesting letters and responses in the "Correspondents" section.

Other Publications

Standard annual publications, including the trout-stocking lists and the waterfowl abstracts, were updated and reprinted, and staff began the process of contracting to reprint the "Freshwater Fishes of Massachusetts" brochure.

Photography

Bill Byrne, *Senior Photographer*

Photographs are a key component of *Massachusetts Wildlife*'s popularity. Special effort was required to capture portraits of two OLE Officers for the "Wildlife CSI" article, along with the Brook Trout photograph for the cover of the 2013 Guide to Hunting, Freshwater, Fishing, and Trapping. Photographing the subject birds for "The Great Winter Bird Irruption" article required many attempts and some long hours to capture the spirit of the species, which included crossbills, redpolls, and grosbeaks, to enhance the informative text of new State Ornithologist Drew Vitz. Choosing the right images to accompany Central Wildlife District Supervisor Bill Davis' article, "The View from Above," meant matching his written observations about bear, bobcat, pileated woodpecker, great horned owl, fisher, and deer fawn with dynamic images, so that the reader would feel more involved. The largest body of work was collected for the "Amphibians of Massachusetts" issue. The collective writings of Peter Mirick and Jake Kubel were supported by several seasons of photographic efforts to depict as many identification and behavioral traits of each species as possible within the bounds of 38 pages.

Other Photography Projects

Photo coverage of habitat restoration projects on WMAs is ongoing. One such project chronicles the harvest, milling, kiln-drying, and finishing of oak and cherry logs that will be used in the construction of the new Westborough Field Headquarters.

Several award and education events were photographed in FY 13, including the Massachusetts Outdoor Exposition (The Big MOE), the Sport Fishing Awards Program ceremony, the Junior Duck Stamp and Conservation Camp awards ceremonies, the Fisheries and Wildlife Board's Francis Sargent Award ceremony, the Massachusetts Junior Conservation Camp map and compass course, and a turtle-survey training day for NSTAR line workers. Bobcat photographic efforts continued through the colder months.

Education Programs

Staff members of the I&E Section offer programs to civic, school, community, conservation, and sportsmen's groups on a variety of wildlife-related topics throughout the year, for both youth and adult audiences. Through our wildlife education programs (general wildlife, wildlife in the backyard, endangered species, tracking, living with wildlife, wildlife and habitats), public appearances at conferences, and workshops, we reach out to urban youth, scouts, early childhood educators, Department of Youth Services secure-treatment residents, pre-service teachers, undergraduate and graduate college students, formal and non-formal educators, and other adult audiences.

Formal or School-based Education Programs

Pam Landry, *Education Coordinator*

Educational programs by Education Coordinator Pam Landry focuses on groups of educators, students, and youth gatherings, but was also highlighted at other public events.

Project WILD

Project WILD is one of the most widely-used wildlife-focused conservation and environmental education program among educators of students in kindergarten through high school. It is based on the premise that young people and educators have a vital interest in learning about our natural world. Project WILD addresses the need for human beings to develop as responsible citizens of our planet and fosters responsible actions toward wildlife and related natural resources. Through the use of balanced curriculum materials and professional training workshops, Project WILD accomplishes its goal of developing awareness, knowledge, skills, and commitment. This results in the making of informed decisions, responsible behavior, and constructive action concerning wildlife and the environment.

Seventeen Project WILD facilitators, contributing 644 volunteer hours, offered fifteen workshops that reached a total of 248 pre-K—Grade 12 educators from across the Commonwealth. Workshop participants included undergraduate and graduate college students, formal and non-formal educators, nature center natural history guides, state park interpreters, homeschooling parents, librarians, Montessori teachers, Student Conservation Alliance volunteers, scout leaders, and summer camp staff.

Growing Up WILD: Exploring Nature with Young Children

This early-childhood (ages 3-7 years) education program builds on children's sense of wonder about nature and invites them to explore wildlife and the world around them through a wide range of activities and experiences. Growing Up WILD is a tool for helping fish and wildlife agencies meet their conservation goals by recognizing that children start developing attitudes towards wildlife and nature at an early age, providing knowledge and skills to early childhood educators so they may teach about nature, providing suggestions for outdoor nature-based recreation, providing conservation suggestions for each activity, providing activities that families can do together, and laying the foundation for acquiring increased scientific knowledge and problem-solving skills.

Early-childhood educators attending workshops represented staff from family child care and child care centers, Massachusetts Association for the Education of Young Children, Head Start and Early Head Start, Department of Early Education and Care, Montessori schools, YMCAs, state and community colleges, Self-Help/Community Partnership for Children, the Student Conservation Alliance, state park interpreters, children and science museums, and child care resource and referral agencies.

Flying WILD Workshop

Nineteen educators attended this workshop, which offers a whole-school approach to environmental education using birds as the focus. Targeted for the middle-school audience, though widely adaptable, *Flying WILD* offers practical hands-on classroom and outdoor field investigation experiences connecting real-world experiences in bird biology, conservation, and natural history. Participants were affiliated with public and private schools from elementary through high school, MassAudubon, the DCR, city park-and-recreation departments, the Lowell Parks and Conservation Trust, and the Green Briar Nature Center.

Public Education Programs

Through our wildlife education programs (general wildlife, wildlife in your back yard, endangered species, tracking, living with wildlife, wildlife in your schoolyard, wildlife and habitats), public appearances at conferences, special events, and workshops, the Education Coordinator and many other Division staff reached out to over 5,000 people from across the Commonwealth, including urban youth, scouts, early childhood educators, Department of Youth Services secure treatment residents, pre-service teachers, senior centers, formal and non-formal educators, civic and municipal boards and groups, and a variety of other audiences.

Junior Duck Stamp Program (JDS): Connecting Children with Nature through Science and Art

Students in grades K-12 from across the Commonwealth submitted 321 pieces of artwork to this *"Conservation through the Arts"* program. Entries were received from public, private and home schooled students; scouts; individuals; and private art studios. Participation rates have fluctuated greatly over the years due in large part to the discontinuation of art programs in public schools statewide. The judging, by a panel of five wildlife artists, took place at the USFWS Assabet River National Wildlife Refuge Visitor Center, Sudbury. Artwork depicting a Northern Pintail in acrylic by Xiaomei Chen, Westford Academy was selected as Best of Show and represented Massachusetts at the National Competition. Nearly 200 people (student artists, families, judges, and teachers) attended the awards ceremony held at Bancroft School in Worcester. Combinations of the top 100 pieces of art were part of a statewide traveling exhibit appearing at eight venues. In Massachusetts the Junior Duck Stamp Program is sponsored by the DFW and U.S. Fish and Wildlife Service with support from the Massachusetts Chapter of Ducks Unlimited and Massachusetts Wildlife Federation.

(Above) Xiaomei Chen's artwork depicting a Northern Pintail was selected as Best of Show and represented Massachusetts at the Junior Duck Stamp National Competition. (Below) Ms. Chen and Pam Landry at the awards ceremony.

Massachusetts Envirothon

The 2013 Envirothon was held at Borderland State Park in Easton.

The DFW's continued involvement in this natural resource program, which reaches over 500 urban and rural high school students annually, continues through the efforts of Education Coordinator Landry, who hosts teacher and student workshops, serves on the education subcommittee of the steering committee, prepares the wildlife exam, provides wildlife-related information to the Current Issue question (Trees, Forests, and Sustainability), and attends the competition. Promotion Specialist Sacco served on the Massachusetts Envirothon Steering Committee as its Vice Chair and helped coordinate the volunteers and the food service until her promotion in February, while Aquatic Education Coordinator Lagacy helped to run the Aquatic station and coordinated the station tests. Several other Division staff played roles in this important program as well by volunteering in various capacities on the competition day in May.

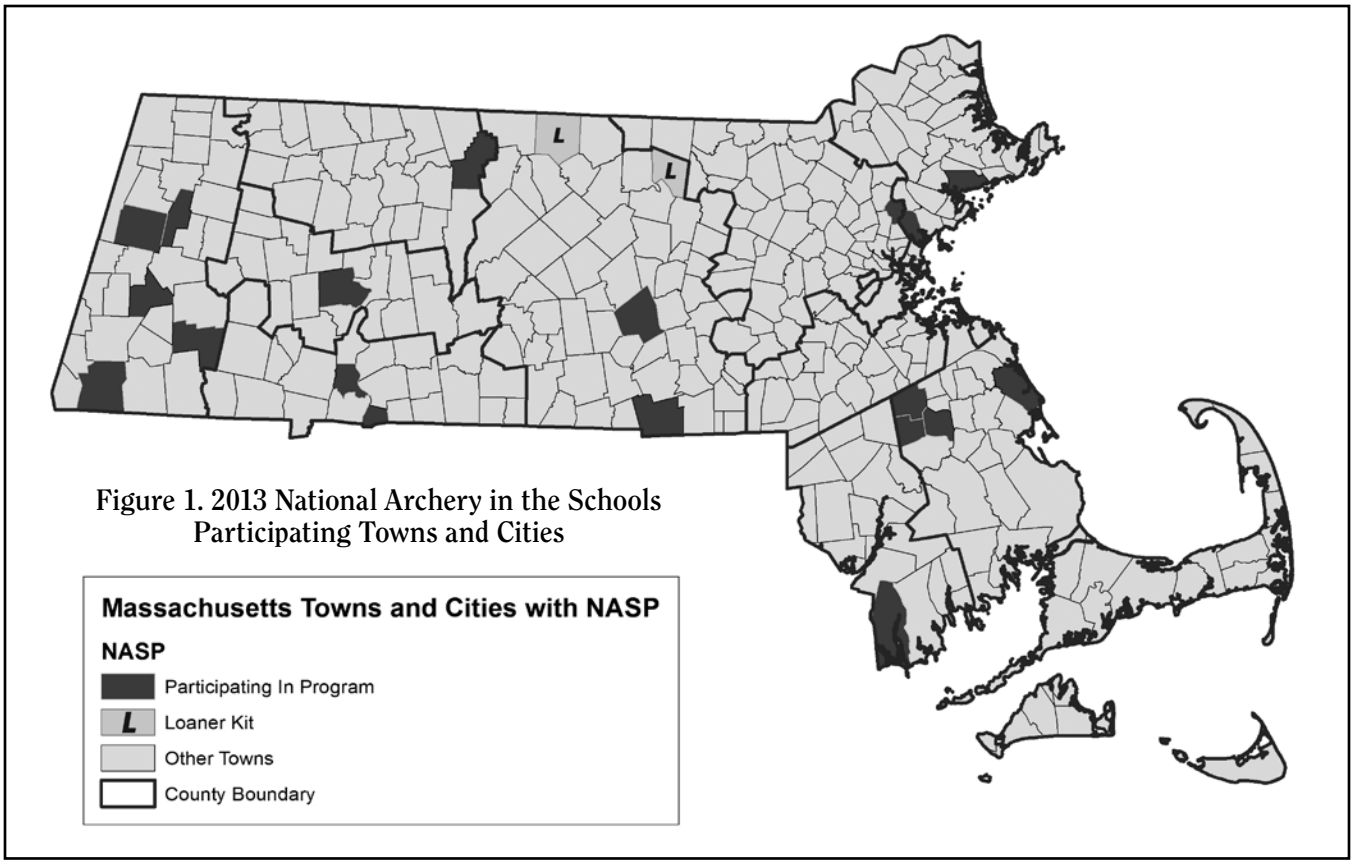


Figure 1. 2013 National Archery in the Schools Participating Towns and Cities

Recruitment and Retention

Astrid Huseby, *Hunting and Angling Recruitment and Retention Specialist*

The Hunting and Angling Recruitment and Retention Specialist is charged with designing and coordinating an overall plan to promote hunting and angling in Massachusetts by enhancing current programs, as well as through the development and implementation of new programs through a Hunting and Angling Recruitment and Retention Plan for Massachusetts. This plan was under review at the end of the fiscal year.

Youth Skills and Recruitment Programs

National Archery in the Schools Program in Massachusetts

This program offers international-style target archery training with a national standardized education package in cooperation with state fish and wildlife agencies across the country. The National Archery in the Schools Program and the Archery Trade Association have partnered with the DFW and the Massachusetts Outdoor Heritage Foundation to promote student education and lifelong interest and participation in the sport of archery in Massachusetts.

The National Archery in the Schools Program (NASP) is a part of the in-school curriculum, generally a physical education class. This means all students have an opportunity to try archery, including many who may not otherwise show an interest in the sport. The NASP curriculum, aimed at grades 4-12, includes social studies, mathematics, and physical education. Since its inception in 2002, more than 4 million students in 4,900 schools across 47 different states have participated in NASP; Massachusetts was the 47th state to participate.

The DFW provides a 1-day Basic Archery Instructor training for physical education teachers within schools/districts that plan to participate in NASP. In addition, DFW coordinates the ordering and delivery of program equipment for the schools. In order to receive training, schools must obtain the NASP equipment kit, which costs about $3,000 and includes 11 Matthew Genesis bows, 122 arrows, 5 targets, 1 arrow curtain, and 1 tool/repair kit. At the end of FY 13, there are 26 schools participating in the program. Eight more were added in FY 13. Some schools provided their own funding; others secured funding from sources including the Worcester County League of Sportsmen, the Easton Foundation, the Pittsfield Cooperative Bank, the Berkshire County League of Sportsmen, and other community donations.

Young Adult Pheasant Program

The Massachusetts Young Adult Pheasant Hunt Program was developed by the DFW to provide an opportunity for 12-17-year-old Hunter Education graduates to practice firearms safety, develop shooting skills, and participate in a special pheasant hunt with an experienced pheasant hunter in a friendly environment. The program is run by participating local sportsmen's clubs. Hunter safety is emphasized in all aspects of the program to help build the confidence of young adult hunters so they may feel comfortable hunting alone or with others in the field.

This program is more than just a day in the field pheasant hunting. It is a comprehensive, three-part

Table 1. 2013 Youth Pheasant Hunt Participating Clubs

Club	Number of Youth Participating	Location of Hunt
Carver Sportsmen's Club	19	Myles Standish SF
Essex County League of Sportsmen	10	Martin Burns WMA
Falmouth Rod & Gun Club	10	Crane WMA
Fin, Feather and Fur Club	6	Poland Brook WMA
Lee Sportsmen's Club	10	Hopbrook WMA
Norco Sportsmen's Club	15	Club property
Singletary Rod & Gun Club	2	Club property
Walpole Sportsman's Association	6	Charles River WMA
Worthington Rod & Gun Club	4	Route 143 field
Total Students	**82**	

recreational program. Shooting instruction and practice take place during the summer or early fall; the pre-hunt workshop is held a week or two before the youth pheasant hunt; the actual hunt is scheduled by the individual clubs for any one of the six Saturdays prior to the mid-October start of the regular pheasant hunting season (Table 1., above.)

Youth Turkey Hunt Program

This program was developed by the DFW in cooperation with the Massachusetts Chapter of the National Wild Turkey Federation (NWTF) to provide an opportunity for 12-17-year-old Hunter Education graduates to practice firearms safety and turkey-hunting techniques, develop shooting skills, and participate in a special 1-day turkey hunt under the one-on-one guidance of an experienced turkey hunter. The Recruitment and Retention Specialist coordinates the Youth Turkey Hunt, with logistical assistance from I&E Specialist Zima.

The program is offered by participating local sportsmen's clubs in partnership with local chapters of the NWTF. It is a comprehensive, three-part outdoor education program designed to give young hunters an opportunity to acquire some of the specialized skills associated with the activity. Hunter safety is emphasized to help build the confidence of the inexperienced hunters so that they will feel comfortable when in the field.

The Youth Turkey Hunt Program takes place in the spring. Shooting instruction, practice, and the pre-hunt workshop take place 2 or 3 weeks prior to the day of the hunt. The actual turkey hunt takes place on the Saturday prior to the last Monday in April.

In FY 13, a 1-day mentored Youth Turkey Hunt was held on April 27, 2013, the Saturday preceding the opening of the spring season. A total of 104 new students (sponsored by 12 clubs) completed the pre-hunt training and participated in the field exercise and the hunt. One hundred and sixty-four previous-year Youth Turkey Hunt Program participants returned to participate in the 2013 event and did not need to repeat the pre-hunt training and field exercise. Of the 268 participants, 166 were 12-to-14-year-olds and 102 were 15-to-17-year-olds. A total of 82 (31%) of the 268 participating youngsters were successful in harvesting a turkey on the Youth day. (Table 2., below.)

Table 2. 2013 Youth Turkey Hunt Participating Clubs

The following sportsmen's clubs participated in the program, in cooperation with the NWTF state chapter.

Club	Number of Youth Participating	Number of Birds Harvested
Barre		8
Carver	14	3
Cheshire	7	1
Conway	24	9
East Mtn.	1	0
Essex	5	0
Falmouth	10	6
Fitchburg	4	1
Lee	3	1
Norco	12	4
Stockbridge	6	1
Worthington	5	2
Total # New Students	**91**	**36**
Returning	163	44
TOTAL	**268**	**80**

Skills Programs

Hunter Education Program*

Susan Langlois, *Administrator*

Overview

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 that provides instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. Massachusetts offered its first hunter safety course in 1954. The program is administered by the DFW, Wildlife Biologist Susan Langlois, Administrator, and courses are taught by certified volunteer instructors. All courses are offered free of charge to the participants.

Courses

Courses were offered in six disciplines across the state in FY 13. A total of 4,760 students participated in the Hunter Education Program in FY 13. The participation level is consistent with the 5-year average of 4,523 students. Students are asked to volunteer information on age, gender, and ethnic background on their registration forms. The following is a summary of course offerings and statistics on student participation in FY 13.

Basic Hunter Education

This course provides 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.

Eighty-three courses were offered. Courses were 12-18 hours in length. A total of 3,855 students participated, 3,638 successfully completed the course; 22 failed and 195 did not complete the course. Of the total, 608 students were minors (under 14 years old), 552 were 15-17-year-old minors, and 181 were minorities. Six hundred fifty-five of the participants were female.

Bow Hunter Education

This course is designed for both the experienced and novice hunter. Course topics include the selection of equipment, safety, ethics, bow-hunting methods, and care and handling of game. Students may bring their own 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.

Sixteen courses were conducted. Course length ranged from 8-12 hours. A total of 394 students participated; 388 successfully completed the course; three failed and three did not complete the course. Sixty-four students were under 14 years of age and forty-one were 15-17 years of age. Fifteen minorities and 53 women participated.

Trapper Education

Mandatory for all first-time trappers, this course includes both classroom work and field training. Students learn the proper use of traps and how to set them, the identification of furbearing animals and their habitats, trapping laws and ethics, and landowner relations.

Four courses were offered, with a total of 313 participants. Courses were 11-12 hours in length. Two hundred and eighty-two participants successfully completed the course; 31 did not complete the course. Six students were under 14 years old and seven students were 15-17-year-old minors. Six minorities and 23 women participated.

Black Powder Education

Topics addressed in this program 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 prerequisite for all students under 18 years of age.

Two courses were conducted, with a total of 24 participants. Courses were 10 hours in length. All students successfully completed the course. One minor under 14 years of age, two minorities, and five women attended.

Map, Compass & Survival

This 1-day course includes both classroom work and field training. Topics include instruction on wilderness survival in addition to the use of a compass and topographical map for land navigation.

Nine courses were conducted (two in Lenox and seven in Westminster). Courses range from 8-10 hours in length. A total of 142 students participated; six did not complete the course. Seven minorities, 16 minors (10-14 years old), seven minors in the 15-17-year-old age range, and 29 women participated.

Waterfowl Identification

This course 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.

Two courses were held with 32 students participating; three did not complete the course. Two women and one 15-17-year-old minor participated.

Shooting Range Development and Enhancement

It is the DFW's objective to provide access for the public to range facilities for hunter-education and

* Because of its size and importance, the Hunter Education Program stands alone in the organizational structure of the DFW. It is incorporated into this section of the Annual Report because of its close functional relationship to the I&E Section's skills programs.

shooting-sports purposes by assisting shooting club range development and improvement activities. A total of $50,000 was made available to clubs for Shooting Range Maintenance and Enhancement projects in FY 13. The Request for Proposals (RFP) and all associated documents was mailed to 99 interested prospective organizations. A total of three clubs responded with three project proposals. One proposal did not specify any scheduled time that it would be directly open to the public and therefore since no public access was proposed it was not eligible. Two other project proposals required additional information before they could be ranked. Letters were sent to both clubs for additional information, but neither club responded.

Angler Education Program

Jim Lagacy, *Angler Education Program Coordinator*

The Angler Education Program is an outreach/education program within the I&E Section of the DFW. It is the main component of the Aquatic Resource Education Program. The other component is Aquatic Project WILD, which the DFW's Education Coordinator oversees. The Angler Education Program has several components designed to introduce people to fishing and the outdoors, including Family Fishing Festivals, Fishing Clinics, and our own Fishing Tackle Loaner Program.

The Angler Education Program is in part a volunteer-run program. Each year the program gains and loses volunteer instructors, and depending on the year there can be anywhere from 100 to 150 instructors on the roster. All instructors complete a volunteer application and are checked through the Criminal Offender Record Checks (CORI) system, then they are brought on by apprenticing within the program at program events. Currently there are 131 established volunteer instructors on the roster. Seventy-one, or 54%, were active during the segment. We advertise for instructors through press releases, the various winter sportsmen's shows, and from positive publicity by word of mouth. The Angler Education Program was on display at only one sportsman's show during FY 13, the Springfield Sportsmen's Show held at the Big E Fairgrounds in West Springfield.

Family Fishing Festivals and Derbies

There were a total of 21, mostly weekend, family fishing events for FY 13. Included here are our family fishing festivals, fishing derbies, and other fishing events we assist with. In FY 13, these events ranged in size from approximately 30 people to as many as 1,000. The fishing festivals are set up as an introduction to fishing where we make available rod-and-reel combinations, terminal tackle, and bait at no charge, and when the manpower allows, instruction in casting, fish identification, knot tying, baiting, cleaning, and filleting. Also in this category are fishing derbies and special-needs events that we support with volunteer instructors and equipment. Total estimated participation for Family Fishing Festivals and Derbies for FY 13 was 4,437 people.

Fishing Courses and Fishing-Related Short Programs

Two basic fly tying courses were offered in FY 13. A total of 21 participants were involved in these two courses. Our fishing clinics, while short in duration, are a very popular program component. These clinics are generally two hours long, involving a short lecture on fish and fishing, followed by casting instruction, and a healthy dose of fishing. Fishing educational handouts are generally provided, and class participation is kept small enough to allow the instructors to work with participants one on one. Also in this category: trout stocking programs; casting programs; and angler-education talks, typically to school or scout groups. There were a total of 65 fishing short programs during the segment in various parts of the state presented by the Coordinator and numerous volunteer instructors. Approximately 1,800 people (mostly children) participated.

Tackle Loaner Program

The Angler Education Program keeps and maintains fishing equipment onsite (West Boylston) for loan to various groups throughout the state. We loaned equipment on 21 separate occasions during FY 13, with 500+ rod-and-reel combinations loaned. Our equipment was loaned to various groups and agencies, including the Massachusetts Department of Conservation and Recreation, the U.S. Army Corp of Engineers, the U.S. Fish and Wildlife Service, various sportsmen's clubs, scout troops, as well as private citizens. Along with the rod-and-reel combinations, we also make available the necessary terminal tackle and various fishing education materials.

Becoming an Outdoors Woman Program

Marion Larson, *Coordinator*

Becoming an Outdoorswoman (BOW) is a program designed for women ages 18 and older, providing basic outdoor skills sessions. This fiscal year continued the scaled-back schedule of Outdoorswoman Programs. Because of continued I & E staff vacancies, the decision was made by the Coordinator to refrain from holding a weekend workshop in June of 2013. Planning efforts between BOW and DCR are in full swing at this time to expand the Family Camping Weekends offerings to four state parks in the upcoming summer camping season.

Table 3. BOW workshops held in FY 13

Date	Title of Program and Location	Number of Participants
August, 2012	DCR/BOW Family Camping Weekend; Otter River State Park, Templeton	49 (18 Fam.)
Oct., 2012	Deer Hunting Seminar, Devens	21
Dec., 2012	Deer Hunt, Devens	20
April 2013	Turkey Hunt Seminar, Devens	18
May 2013	Turkey Hunt, Devens	10
Total Participation		118

Massachusetts Junior Conservation Camp

In August 2012, the Conservation Camp held its 2-week session for the 10th year at the Chesterfield Boy Scout Reservation. Approximately 105 campers attended. As in the past, DFW staff assisted by providing instructors and coordinating arrangements with other state-based instructors. DFW staff and DFW program volunteers offered Basic Hunter Education and Bow Hunter Education courses to the campers; provided instruction in wildlife management, fisheries management, game preparation, and cooking skills; conducted the information quiz that evaluates the participant's comprehension of outdoor information and skills presented during the camp session; and participated in the graduation ceremonies.

Information and Education Staff

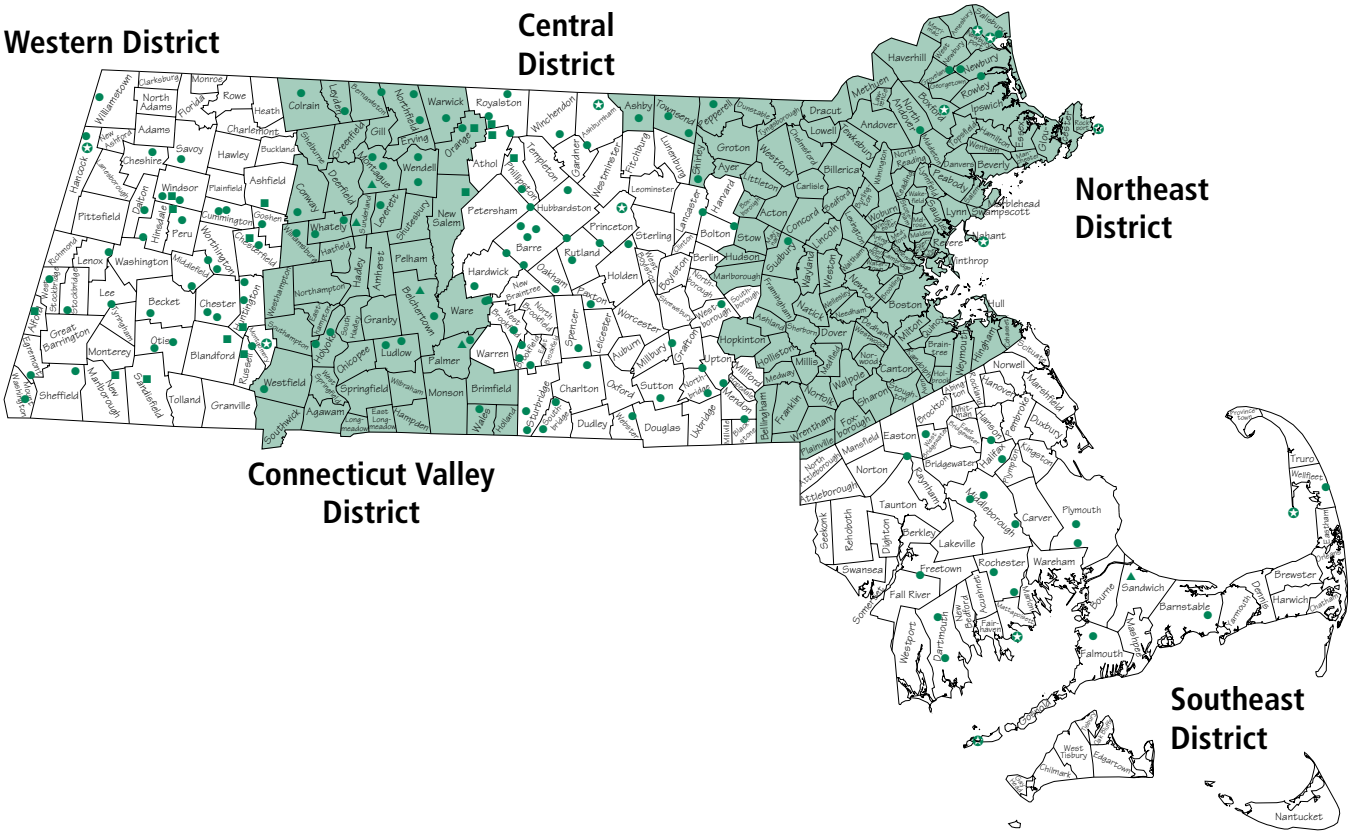
Marion Larson, *Chief*

Bill Byrne, *Senior Photographer*
Jill Durand, Massachusetts Wildlife *Circulation Manager*
Suzanne Fritze, *Receptionist*
Astrid Huseby, *Hunting and Angling Recruitment and Retention Specialist*
Jim Lagacy, *Coordinator, Aquatic Education Program*
Pam Landry, *Education Coordinator*
Susan Langlois, *Coordinator, Hunter Education Program**
Peter Mirick, *Wildlife Biologist and Publications Editor*
Susan Sacco, *Promotion Specialist* (part-year)
Gary Zima, *I&E Specialist*

* Because of its size and importance, the Hunter Education Program stands alone in the organizational structure of the DFW. It is incorporated into this section of the Annual Report because of its close functional relationship to the I&E Section's skills programs.

DISTRICT REPORTS

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



Overview

Most people who meet the DFW do so through one of the agency'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 regions.

District personnel sell hunting, fishing, and trapping licenses and stamps and selected permits; and they distribute licenses; Hunting, Freshwater Fishing, and Trapping Guides (formerly known as the "Abstracts of Laws and Regulations"); 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 ensure public adherence to wildlife laws and regulations, and they assist the staff of the Wildlife Lands Section in prioritizing lands to be acquired; locating titles, landowners, and boundaries; and in making other arrangements necessary for the acquisition of lands for wildlife.

Staff from all of the Districts conducted these administrative activities. They also participated in a wide variety of survey and monitoring programs initiated by the DFW's biological staff based at the Westborough Field Headquarters (FHQ; see the individual Section reports for the status of these projects). Among the survey projects conducted by District staff were the Bald Eagle Breeding Survey, a waterfowl inventory, banding/collaring of geese, and stream surveys. District personnel also conduct census counts of wild turkey, mourning doves, woodcock, ruffed grouse, and quail.

District staff members enhance recreational opportunities throughout the state by stocking brown trout, eastern brook trout, rainbow trout, tiger trout, and broodstock salmon into waters scheduled to receive them. Prior to releasing trout, they monitor the water quality of the designated lakes and streams. They release pheasants on Wildlife Management Areas (WMAs) and in open covers (suitable habitat on public land). They monitor and maintain the WMAs in their region by 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 also operate check stations, where sportsmen register deer, bear, turkeys, and furbearers taken during the designated hunting and trapping seasons.

District Supervisors are 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 matters pertaining to 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 dealing with 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 involve only some of the Districts; these are detailed, when and where applicable, below.

Northeast District

Administration

The Northeast District had no staff changes this year. Everyone was relatively healthy, with one shoulder injury and one back injury.

The former District office and garage in Acton were requisitioned for temporary storage of equipment during construction of the new Westborough FHQ, putting de-acquisition negotiations with town officials on hold. In the Ayer District office, staff painted the conference room and sealed cracks in its floor, as well as building additional shelving in the nine-bay garage.

The District Supervisor attended meetings concerning Mt. Watatic Reservation management, Parker River National Wildlife Refuge Comprehensive Conservation Planning, Essex County and Norfolk County league business, and DFW Senior Staff and District Supervisors' matters. NAWCA (North American Wetlands Conservation Act) grant application preparation started in earnest to complete a Great Marsh II package that includes salt marsh restoration and enhancement for waterfowl and acquisition of land. The Prudence Wright Memorial Overlook License Agreement in Pepperell was not renewed due to noncompliance. Staff delineated wetlands associated with the Pepperell Turner Dam removal project, and contractors were hired for preliminary design work.

Trespass issues were handled at Adams Pit, in Squannacook River WMA (Brookline Street ROW), Townsend Hill WMA, Mulpus Brook WMA, and Martin Burns WMA (an alpaca farm) with assistance from the OLE, the Northeast District Land Agent, Conservation Commission members, and our trusty compass and tape measure. The Sheridan trespass in Shirley is very near completion. The Willets trespass in Pepperell is stagnant as the town pursues relief in court. A little progress has been made on the trespasses along the ROW access to the Nissitissit River. Boundary work was conducted at the Ashby WMA (Dionne, Symonds tracts), Squannacook River WMA (Adams tract), and the Martin Burns WMA (Orchard Street tract).

The Georgetown Recreational Path continued with meetings and site visits for a rail trail, attended by District and NHESP staff, for a proposed rail trail impacting Priority Habitat species and Crane Pond WMA. The District Supervisor also attended the Wildlife Society's annual meeting.

The District Supervisor's land acquisition activities included reviewing parcels for their ecological and recreational significance on properties in Groton, West Newbury, Townsend, Newbury, Ipswich, Salisbury, and Shirley.

Research and Conservation

Wildlife

District staff conducted springtime waterfowl surveys in the Northeast and Central districts, where six waterfowl breeding plot surveys were checked (five in the Northeast and one in the Central District), and banded waterfowl from the airboat in August and September. District staff conducted dove, grouse, and woodcock census routes for the Annual Breeding Bird Surveys. Twenty wood duck boxes were visited, with the remainder checked by Westborough staff. The District collected pellet samples as part of the New England Cottontail status evaluation.

The fourth year of black duck banding resulted in 24 black duck (7 recaptures; 20 banded FY 12) and 4 mallards banded. There were 250 Canada geese banded across three counties.

Twelve deer check stations operated within the District. Seven hunters (5 FY 12) took part in the paraplegic hunt held at Devens, at which 2 deer (1 FY 12) were taken. The District tagged 22 coyotes (13 FY 12), 65 fisher (13 FY 12), 6 gray fox (2 FY 12), 7 red fox (6 FY 12), 1 mink (3 FY 12), 10 bobcat (1 FY 12), 11 otter, and 150 beaver (280 FY 12).

A black bear sow from the Townsend area was fitted with a satellite collar and two of three very plump (100+ pounds each) cubs (one ran away) received ear tags in a den survey conducted with the Central Wildlife District. One of the male cubs traveled into Newton Centre, climbed a tree overhanging the Mass Turnpike and the commuter rail line and was destroyed due to safety concerns.

Fisheries

During the summer, staff conducted stream surveys on 61 brooks and rivers (42 FY 12) in ten major watersheds. There were nine reports recorded for fish kills; eight were determined to be natural kills, and one had no evidence. Fisheries staff provided technical support to help complete GIS mapping of trout stocking locations, and continued with another GIS project to map directions to each site for use by staff to improve efficiency.

Natural Heritage and Endangered Species

Boulders were delivered to the side of Mt. Watatic to be put in place to protect the sensitive mountain top plant community. Northeast District biologists, with assistance from Franklin Pierce College intern Jen Jones, are again participating in a regional Blanding's turtle study at two sites. Springtime herpetological assessments at Crane Pond WMA were conducted by seniors from Masconomet High School for the fourth year. The students worked closely with UMass biologists to learn about herpetological research. Bald eagles nested in Tyngsborough, Amesbury, Methuen, Haverhill, and Framingham (new). Three chicks were banded from the Amesbury nest, and all successfully fledged. A snowstorm in FY 13 derailed the annual Bald Eagle Festival in Newburyport, where DFW usually covers a prime eagle-watching spot. Midwinter bald eagle surveys were replaced by springtime surveys along the Merrimack River and around lakes in Framingham.

Nine peregrine falcon nests were tracked, with Northeast District staff assisting chick-banding at the Lowell and Lawrence nests. The Lawrence parents were forced off their cozy clock tower nest by a noise machine intended to keep pigeons from roosting. Two piping plover (*Charadrius melodus*) nests were located through biweekly monitoring and roped off at two Gloucester beaches until hatched. The first nest hatched in July with two chicks.

Several staff members participated in the colonial water-bird survey on10 islands off the coast of Gloucester and Marblehead with boat assistance provided by OLE and the Division of Marine Fisheries.

Enhancement of Outdoor Recreation

Staff released 70 (60 FY 12) broodstock salmon from the Palmer Hatchery into four ponds throughout the District. Combined spring and fall trout numbered 121,725 (121,800 FY 12). In the fall, anglers saw 14,200 +12-inch rainbows released into two rivers and 18 lakes and ponds, followed in the spring by 107,525 rainbow, brown, and brook trout in 42 ponds, seven major rivers, and 66 brooks and minor rivers.

Five thousand pheasants were released into five WMAs and 11 open covers. No one applied for a Special Pheasant Stocking Permit at Martin Burns WMA. The Danvers Fish and Game Club ran a successful Youth Pheasant Hunt at Martin Burns WMA, with nine (9 FY 12) youngsters participating, and Walpole Rod and Gun Club held their hunt at Charles River WMA. The District Supervisor conducted the Youth Hunt Seminar sponsored by the Danvers Fish and Game Club. Controlled pheasant hunts were held at Martin Burns WMA and a controlled waterfowl hunt was offered at the Delaney WMA.

The popular pheasant hunting areas at Kent's Island and Corn Island areas of William Forward WMA in Rowley and Newbury had a total of 680 birds released. Due to the poor condition of the Kent's Island Bridge, birds were carried onto the island using a DFW off-highway vehicle.

Five (12 FY 12) sportsmen applied for waterfowl permits at the Delaney WMA. Forty-five (42 FY 12) field-trial permits, six horse-and-hound permits, no camping permits (0 FY 12), and 400 (357 FY 12) range permits were issued. The U.S. Coast Guard and the Peabody, West Newbury, and Groveland police departments used the shooting range at Martin Burns WMA for training purposes, and helped with clean-up. Dog field trials are held at Delaney WMA and William Forward WMA, with five clubs competing for access, as well as one horse-and-hound club.

Road and field maintenance occurred at Townsend Hill WMA, Martin Burns WMA, and Squannacook River WMA using the Terex PT100 with forestry package. Three acres of shrub management at Martin Burns WMA and 2 acres of field restoration at Squannacook River WMA will enhance upland game bird and pheasant hunting, as well as provide openings for nesting turtles. About 4 acres of field maintenance at Townsend Hill WMA will enhance grouse, woodcock, and resident turkey populations. Beavers were trapped at Martin Burns WMA again to save an important access road.

Outreach and Education

A great deal of wildlife education happens every day in the District during each wildlife-conflict call. The Northeast District public is naive about wildlife, so the staff guides them to a better understanding of each animal through listening and conversation, teaching people how to help themselves, directing people to the DFW website for our "Living with Wildlife" series of educational materials, or connecting them to appropriate local authorities that can assist them further.

Coordination, scheduling, and booth coverage for the Topsfield Fair were handled by District personnel with capable assistance from Westborough staff. Staff also worked the Worcester Sportsmen Show and contributed their services to the annual Massachusetts Outdoor Exhibition ("The Big MOE"). Three talks were given by the District Supervisor, and staff helped Montachusett Regional Vocational Technical School students and Boy Scouts to better understand wildlife.

Technical Assistance

Many hours were spent patiently listening to and helping the public with questions about wildlife they

see around their houses and in their yards. Highlights include helping a Shirley farmer with a baby raccoon that was cuddling up with a nesting hen, Marblehead turkeys chasing the neighborhood postman away, and a friendly family of black bears gorging themselves on day-old donuts in Townsend.

Southeast Wildlife District

Administration

There were no changes in Southeast District personnel in FY 13. There was one staff injury in FY 13, as Dick Turner cut his hand while using a table saw to cut lumber for nesting boxes. The injury required stitches and limited Dick's activities at work for several weeks. District staff attended and/or completed training programs required by the DFG Human Resources Department, as well as annual safety refresher courses associated with the use of prescribed fire as a habitat management tool and NHESP training to be certified to survey areas for listed turtle species prior to construction or land clearing activities. The District Supervisor attended a Laws of the Sea Shore Seminar, put on by the Massachusetts Harbormasters Association, in particular to address issues and concerns relative to the Colonial Ordinances of 1641-47 regarding hunting in the tidelands. The District also worked closely with Westborough staff to coordinate an event at the Sandwich Fish Hatchery, celebrating its 100th year in operation.

The District Supervisor and Land Agent continued negotiations with the Town of Barnstable regarding a bike path desired across the Hyannis Ponds WMA, and received a formal proposal from the Town. A mitigation package, in compliance with our policies and NHESP MESA regulations, was agreed upon and draft WCEs and a draft access easement were finalized among the parties and sent to the Chief of Wildlife Lands for review prior to bringing the proposal to the Fisheries and Wildlife Board. The District Supervisor also met with the Buzzards Bay Water District regarding their desire to install a second water withdrawal well near the District HQ, where the Zone I area associated with the well would extend onto DFW land. Both parties reached an agreement in principle, but negotiations and review will continue into FY 14. Another land-use situation, dealing with a request to site a septic system on land covered by a WCE at Betty's Neck, was dealt with, resulting in the abutter pursuing other options.

District staff worked diligently to clear roads and trails and restore District operations following two major storm events in FY 13, Hurricane Sandy in October and the Blizzard of 2013 in February. The blizzard rendered the District HQ without power for several days and without Internet or phones for nearly a week. The District also responded to a small oil spill that occurred near the western entrance of the Cape Cod Canal in March and assisted state and federal emergency response teams in evaluating damage to and protecting sensitive habitats along the coastline.

The annual Antlerless Deer Permit (ADP) over-the-counter sale was held at the District HQ in Buzzards Bay for the first time in about 10 years, since the major traffic issues that used to occur on Bournedale Road forced a temporary first-day set-up at the Myles Standish State Park Headquarters for that period. District staff worked hard to clear out and mark additional parking areas at the HQ and came in very early to assist in traffic management in anticipation of heavy volume, in spite of the new online *MassFishHunt* system. Unfortunately, the online system slowed to a crawl and we ended up with a line of well over 100 people at the office waiting for their chance to purchase a permit. Folks at other facilities and those trying to purchase permits online at home also experienced similar delays. The District was very pleased with the patience and civility shown by sportsmen at the office that day in what must have been a very frustrating situation.

The District hosted the highly-rated ABC television show *Ocean Mysteries* with Jeff Corwin several times this fiscal year to film segments highlighting various MassWildlife research and management projects. In the fall 2012, the show filmed the ongoing salter brook trout research being conducted on Red Brook, which forms the boundary between the towns of Plymouth and Wareham. That segment aired in January 2013. The show came back out with the Southeast District staff in summer 2013 to film our annual Bald Eagle banding efforts, the ongoing tern restoration project, and our new Northern red-bellied cooter research project for episodes that should air in Fall 2013/Winter 2014. The District is grateful to the show for allowing us this unique and exciting opportunity to showcase the agency's efforts to a national audience.

The District Supervisor worked closely with personnel at the Massachusetts Military Reservation (MMR) and the Town of Sandwich to begin to document and address a major encroachment onto the MMR, which is owned by the Division and leased to various arms of the U.S. Government, in this case the Coast Guard. The encroachment included multiple buildings, including an outhouse and a large garden, and the storage of boats, trailers, wood, etc. Following a letter to the abutter, evidence of the encroachment being remedied was observed late in FY 13.

Research and Conservation

Wildlife

District staff completed breeding surveys for ruffed grouse, mourning dove, woodcock, and various waterfowl species as assigned by Wildlife Section biologists at the FHQ. District staff also conducted annual winter American black duck trapping and banding, successfully banding a total of 616 ducks (284 FY 12) throughout Plymouth, Bristol, and Barnstable counties. District staff also reconditioned and tested rocket nets used to capture ducks in anticipation of utilizing them as part of the annual black duck banding effort. Annual

Canada goose banding was also completed. The District also assisted FHQ staff in completing duck banding at our West Meadows WMA and at New Bedford Reservoir using the DFW's airboat. Nesting boxes for wood ducks and eastern bluebirds were monitored and maintained on DFW lands and other public and private lands.

The District responded to a number of inquiries and complaints about aggressive or nuisance wild turkeys during this fiscal year. Most of the situations were resolved by educating the public, ensuring that they remove unnatural food sources (bird feeders primarily) and couple that activity with active harassment of the birds. One situation required further involvement, where several aggressive male turkeys were chasing and attacking students, parents, and teachers at the St. Vincent's School in Fall River, a school for children in need. District staff responded to assist in harassment of birds, attempted to capture the worst individual and worked with the school administration to direct hunting access to agricultural land behind the school to help solve the problem.

The District assisted an ongoing study evaluating Common Eider die-offs witnessed along the entire Massachusetts coastline, but along Cape Cod in particular. District Technician Steve Wright provided a great benefit to the project by utilizing his boat to assist in setting mist nets for eiders in Wellfleet Bay.

The Burrage Pond WMA restoration project continued this fiscal year with many important steps being completed. The District filed Notices of Intent with the towns of Hanson and Halifax, and the Department of Environmental Protection (DEP), under the Massachusetts Wetlands Protection Act and received permits in the form of Orders of Conditions. The District Supervisor finalized the Request for Response and worked with FHQ and Boston staff to put the project out to bid. The project was awarded to Iron Horse Contracting, Inc., a local business out of Middleborough that began work as soon as the notice to proceed was issued. Dan Fortier, District Technician, has been actively involved with the project from the outset and served as the on-site monitor for the work, assisting the contractor, making decisions on minor details of the project, and conducting in-kind labor associated with the NAWCA grant that is funding the majority of the project. This effort is ongoing and expected to be completed in early fall 2013. In addition to the NAWCA project, District staff has also continued to manage water control structures on the property and to control invasive shrubs and herbaceous plants within the bogs.

The Red Brook WMA restoration projects continued to move forward this year as well, with Princeton Hydro completing the 30% design phase. The project team intends to solicit responses for the final restoration design in early FY 14.

The District completed a number of habitat management and improvement projects in FY 13, including summer mowing of early-successional habitats at Frances A. Crane WMA, assisting with clearing of old-field habitats at Noquochoke and Hockomock Swamp WMA (Erwin Wilder Section), winter mowing of field habitats at the Myles Standish Cooperative WMA, and field mowing at Dartmoor Farms WMA. The District also assisted with the treatment of over 100 acres of WMAs with prescribed fire and the treatment of over 200 acres with prescribed fire on the MMR. Further, Dan Fortier continued along the path to becoming a certified burn boss by conducting nearly all the planning, notification, and implementation of several of the burns at Crane WMA.

The District assisted with ongoing New England Cottontail (and other early-successional species) habitat management at Mashpee Pine Barrens WMA by marking boundaries, reviewing cutting plans, and assisting with the girdling of large white pine trees in the treatment units.

Fisheries

Stream surveys, using electro-fishing and other techniques, were completed in a number of southeastern Massachusetts streams including Red Brook, Quashnet River, Mashpee River, Childs River, Third Herring Brook, and several others. Additionally, the District coordinated with officials on the island of Martha's Vineyard to survey more streams on the island, some of which were in response to growing concerns regarding water quality. Pond surveys and profiles were completed in several waterbodies, including Cliff Pond, Big Sandy Pond, Peters Pond, Sheep Pond, Little Pond, and Long Pond. The District Fisheries Biologist investigated a few reported fish kills in FY 13, including in Little West Pond, the Santuit River, and the Town River. Most often the cause is determined to be oxygen depletion.

Ongoing salter brook trout research and management in southeastern Massachusetts continued this fiscal year at Red Brook, our primary site, as well as the Quashnet, Childs, and Mashpee rivers. Further, District staff continued to survey several stream systems in the Westport and Dartmouth area where, historically, well-documented salter brook trout populations once existed, and they have been able to confirm many of the sites, as well as document new ones. District Fisheries Manager Steve Hurley continued to lead this effort and gave a number of presentations on salter brook trout to a variety of organizations and agencies. The District also installed additional solar panels to power the PIT antennae, greatly reducing the amount of staff time needed to monitor and operate the systems.

The District continued our excellent relationship with the Sandwich Fish Hatchery in FY 13 by assisting with a variety of day-to-day projects and helping to unload feed truck deliveries. In addition, District Technician Jeff Breton repaired the Hatchery's large stocking truck bed so that staff could continue to safely and effectively move and stock trout.

The District Fisheries Biologist continued our efforts to monitor stream temperature in many southeastern Massachusetts systems in order to better manage these systems, warn of dangers or issues, and provide a baseline set of data. He also cooperated with Trout Unlimited on a variety of projects, including the PIT-tagging research, as well as the national salter brook trout study. He also attended meetings on the management of Santuit Pond, the restoration of the Tidmarsh Farm cranberry bogs (including coldwater stream habitats), the management of the Town River in Bridgewater, and the River Herring Network annual meeting.

Natural Heritage and Endangered Species

The District cooperated with NHESP staff on a variety of projects this fiscal year. District staff focused a great deal of time and resources on assisting with the tern project, regularly moving and maintaining boats and equipment, conducting vegetation control on Ram Island, and rebuilding perch poles and nesting structures. District staff also spent a significant amount of time and effort assisting Scott Melvin with colonial bird nesting surveys on many islands along the coastline from Boston to Rhode Island. This project involved quite a bit of coordination and a number of long days of both boat and on-island surveys, primarily of gull and cormorant nests, but also some heron and waterfowl nests.

District staff also assisted with New England Cottontail research and management by building many new rabbit traps, conducting field reconnaissance of potential habitat areas, conducting active rabbit trapping and pellet surveys, and assisting with cottontail habitat management in the form of prescribed fires and timber harvests.

District staff participated in the annual Bald Eagle census, which was shifted this year (and in future years) to a spring/breeding survey, to better identify potential nesting territories in the state. Staff covered portions of Middleborough, Lakeville, Fall River, Westport, Dartmouth, Plymouth, and Wareham. District staff also monitored our four known eagle nest sites. Unfortunately, two of the four nests failed; the Sampson's Cove nest was partially destroyed in a storm event and the Pocksha nest failed for unknown reasons. District staff successfully climbed the other two active nests and banded a total of four healthy eaglets (North Watuppa 2; Halfway 2).

District staff also monitored our four known peregrine nesting sites, in Fall River, New Bedford, Brockton, and Sandwich. Further, a new site was investigated in Taunton, which turned out to be active and reportedly has been for several years. Chicks were banded at several of the sites but not at all of them, due to access constraints. District staff assisted in the capture, banding, and release of a chick trying to fledge from the Sagamore site that had landed on the ground in a construction area. The staff coordinated with FHQ staff to install a nesting box at the Brockton site and is planning to install boxes at two of the other sites in FY 14 to improve nesting success as well as our own access to the nesting areas for monitoring and banding.

District Staff again monitored and provided protection to nesting Piping Plovers at our Fox Island WMA in Wellfleet, and continued to provide technical support and advice to several towns that had beach closures associated with nesting shorebirds.

District staff assisted with a new research effort initiated in FY 13 by Chief of Conservation Science Jon Regosin to evaluate the ongoing Northern Red-bellied Cooter head-starting program. Staff assisted with the annual PIT tagging and release of head-started turtles and coordinated with NHESP staff to survey nesting areas and conduct trapping and hand/net capture and radio-telemetry of turtles in and around East Head Reservoir in Myles Standish State Forest to evaluate survival and reproduction of released turtles. Deb Silva, District Clerk, again assisted NHESP by routinely visiting both the Ocean Spray and Decas Cranberries processing plants to take possession of, identify and catalog, and then release offsite the turtles and frogs rescued from the processing equipment, some of which were state-listed species.

Enhancement of Outdoor Recreation

District staff stocked its fall 2012 allocation of trout into 25 ponds and stocked its spring 2013 allocation of trout into 47 ponds and 33 streams.

The staff provided birds for another safe and successful upland game bird hunting season, stocking just over 7,900 pheasant and 3,500 quail on six WMAs and over 12 open covers throughout the District. Eight-week-old pheasants were again delivered to the Samoset Rod and Gun Club and the Shawme Fish and Game Club as part of the DFW's Club Bird Program. The District also provided pheasants to the Carver Sportsmen's Club and the Falmouth Rod and Gun Club for use in the DFW's Young Adult Pheasant Hunt and assisted with the operation of the hunts at both clubs.

The District coordinated with the Cape Cod National Seashore to offer spring turkey hunting for the first time ever on the Seashore. The hunt was available through a first-come, first-served permit system and was a success, with all the permits being issued by 10 A.M. on the first day available. A number of sportsmen that participated reported back with positive experiences.

The District operated and managed controlled-access hunting opportunities for white-tailed deer, wild turkey, and coyotes on the MMR. These efforts provided hundreds of sportsmen with the opportunity to hunt on roughly 9,500 acres of open territory. A total of 60 deer and 7 turkeys were taken during the regular 2012 deer seasons and 2013 spring turkey controlled hunts on the MMR, respectively. Further, the District worked closely with base personnel and many volunteers from the Barnstable County League of Sportsmen and the

Otis Fish and Game Club to offer the Division's annual paraplegic deer hunt. The District also worked with MMR staff to again provide a very successful Youth Turkey Hunt Program at the MMR on April 27, 2013.

The District Supervisor issued permits for a total of 23 special winter game bird hunts, two at the Erwin Wilder WMA and 19 at the Frances A. Crane WMA. A total of 40 pheasant and 644 bobwhite quail were stocked during these hunts. A variety of field dog trials were reviewed and permitted by the District Supervisor, including two Labrador retriever trials at Burrage Pond WMA and five upland game bird dog trials at Frances A. Crane WMA.

The District continued to maintain and improve roads, trails, and parking areas on our WMAs to provide for safe and effective access to our properties for all forms of passive outdoor recreation. Significant roadway and parking lot repairs were again completed at Burrage Pond WMA; however, the access roadbed lends itself to potholing and we know that this will be an ongoing management issue. Other significant repairs or improvements made in FY 13 include road and trail repairs at Rocky Gutter WMA; road and trail repairs at Rochester WMA (including repairs to several water control structures); and repairs to parking lots at Hockomock Swamp WMA, Frances A. Crane WMA, Red Brook WMA, Haskell Swamp WMA, West Meadows WMA, and Copicut WMA. Signage and gates were also installed or maintained at many WMAs this fiscal year.

The District Supervisor dealt with two major access interruptions in FY 13, at Burrage Pond WMA and Frances A. Crane WMA. The Burrage south access was eliminated due to a recent abutter survey that found the majority of the access driveway to the parking area to be on private land. In spite of multiple attempts to remedy the situation, the abutter decided to post his property, therefore the access had to be closed and District staff worked with Town officials and sportsmen to get the word out about the access closure. The other access issue was at Frances A. Crane WMA, where, similarly to the Burrage situation, an abutter questioned the property line. However, in this case, although a portion of the access drive was on the abutter's land, the District found recorded documentation and a recorded plan showing an easement across the land, which preserved the access.

District staff coordinated with DEP and the Middleborough Fire Department to address the illegal dumping of an anhydrous ammonia tank at our Rocky Gutter WMA western parking lot. The tank presented a significant public health and safety risk and required removal by Clean Harbors, a professional hazardous-materials company.

Boundary marking is ongoing on many WMAs throughout the District. Portion of the boundaries of several properties were surveyed and marked in the field this fiscal year, including the District HQ, Mashpee Pine Barrens WMA, Hyannis Ponds WMA, Rocky Gutter WMA, Old Sandwich Game Farm WMA, Clapps Pond Access Area, and Agawam Mill Pond Access. Further, the District delineated wetland resource areas on the Agawam Mill Pond Access in support of the Office of Fishing and Boating Access's effort to renovate the access. District staff also coordinated with town officials in Provincetown to head off a small local effort to try and gate off the access to Clapps Pond WMA due to unfounded illegal dumping reports.

Outreach 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 and presentations and by 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, Freetown State Forest Fun in the Forest Day, Falmouth Rod and Gun Club's Youth Day, and Standish Sportsmen's Association Show. The District assisted in manning our permanent display at the Marshfield Fair, which was again very popular and provided a unique opportunity for the Division to interact with and educate members of the general public. The informational tags created by District Clerk Debra Silva for our District pelts proved very popular and informative.

The District Fisheries Biologist gave presentations on coldwater fisheries resources and salter brook trout management to Trout Unlimited, the Taunton 4H Club, and the Westport Watershed Association. Further, he presented our ongoing salter brook trout research at the first annual Fisheries Section symposium held in West Boylston. The District Supervisor gave a presentation on deer management and a biological deer checking demonstration to a class from the Upper Cape Technical High School, a presentation on wildlife management at airports to the Massachusetts Airport Manager's Association, and a presentation on furbearers at the Plympton Public Library. District staff also attended and participated in the New England Chapter of The Wildlife Society's annual spring workshop focusing on raptor and reptile handling techniques.

Technical Assistance

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 to 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.

District staff provided technical advice and support to many local animal control officers, police departments, boards of health, and conservation commissions, as well as to the OLE on issues dealing with fish, wildlife, and their habitats. Many of these issues relate 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, particularly nuisance or damage complaints and reports of sick or injured wildlife. The entire staff assisted with the many calls received, primarily in the spring and early summer, pertaining to coyotes, foxes, fisher, Canada geese, wild turkey, and other common suburban species. The "Living with Wildlife" publication series and educational messages were provided to many individuals and organizations to assist in dealing with these human-wildlife conflicts.

The District Fisheries Biologist served as the DFW representative on the Santuit Pond Preserve Management Team and the Assawompset Pond Complex Management Team, and was actively involved in monitoring the MMR cleanup activities as a member of the Plume Containment Team. The District Supervisor served as the DFW representative on the Southeastern Massachusetts Bioreserve Management Team, the Cape Cod Rabies Task Force, the Mashpee National Wildlife Refuge Management Team and the Comprehensive Conservation Plan (CCP) Planning teams for Mashpee, Monomoy, Nantucket, Massasoit, and No Man's Land Island National Wildlife Refuges.

The District Supervisor attended monthly meetings of the Barnstable, Bristol, and Plymouth county leagues of sportsmen, providing them with information on DFW activities and answering fish-and-wildlife questions. The District Fisheries Biologist attended several meetings and provided technical advice regarding the potential removal of dams along Third Herring Brook.

Central Wildlife District

Administration

District Wildlife Biologist Bridgett McAlice transferred to the FHQ in West Boylston, and the duties of the Wildlife Biologist are being handled by the District Supervisor. FHQ Technician Bruce Walker transferred to the Central District office during FY 13, as there was no need for a maintenance position at the temporary, leased office space in West Boylston. Central District Land Agent Brandon Kibbe submitted his resignation to the Department of Fish and Game to take a position in the private sector; he remained at the District through the end of the fiscal year.

Hunting, fishing and trapping licenses and antlerless deer, bear and turkey permits were sold at the District headquarters. District staff worked to help license buyers transition to the all-electronic system instituted in 2012.

License agreements were maintained with 18 central Massachusetts farmers, who were primarily growing hay and corn. Agricultural fields were put out to bid at the High Ridge WMA. One farmer moved out of the District and relinquished his license agreement for 12 acres at the Winimusset WMA.

Work to repair the Burnshirt River Dam (Wine Brook) at the Phillipston WMA continued in cooperation with the town and consulting engineers from the Office of Fishing and Boating Access and Tighe and Bond. The berm of the dam was cleared of vegetation and test borings conducted to determine the structural integrity of the dam. In addition, dam assessments were conducted by the OFBA on two dams at the Merrill Ponds WMA and one dam at the Lackey Pond WMA. Discussions were held with the Department of Transportation (MassDOT) regarding the Williamsville Pond dam in Hubbardston and its proximity to a planned bridge replacement project immediately downstream. No action was deemed necessary.

New siding, windows, doors, and barn doors were installed on the barn at the Bolton Flats WMA. A house and multiple outbuildings were demolished on the Quaboag WMA in East Brookfield by a contractor; gates were acquired using funds from the Off-highway Vehicle Program. A Request for Responses (RFR) was developed soliciting bids to remove the condemned Slein Barn at the Winimusset WMA. The RFR was written to encourage contractors to bid as little as $1 to remove the barn and retain all salvageable materials, but no bids were received as costs for disposal of non-salvageable materials were prohibitive. A surplus ATV was acquired from the Operational Services Division. Six ATVs, used for training by the Office of Law Enforcement, were serviced by District staff.

Multiple trespass, motor vehicle, and illegal cutting of trees incidents were investigated on District WMAs. An illegal snowmobile bridge was identified and removed from the High Ridge WMA. The responsible party was given a verbal warning by the OLE officer. A trespass of fencing and pasture was identified at the Wolf Swamp WMA. The abutter was notified by certified letter and given 90 days to remove the property. A dumping trespass of landscaping and personal property was revisited at the Leadmine WMA access to Leadmine Pond. The abutter was notified by certified letter and given 90 days to remove its property. The OFBA is assisting with improvements to the site for fishing and the boundaries of the access are being surveyed and marked.

The MassDOT hosted planning meetings for bridge reconstruction over the Quaboag River at the Quaboag WMA, and improvements to river access were discussed. Issues with an abutting landowner have precluded the start of any bridge work.

The District participated in Lands Committee and Parcel Ranking meetings throughout the year.

Research and Conservation

Wildlife

Canada Goose leg banding was conducted in Central District with Waterfowl Project Leader H Heusmann; 151 geese were banded at 14 sites. Ruffed Grouse, American Woodcock, and Mourning Dove censuses were

completed. Wood Duck nesting boxes were checked and new boxes erected at various wetland sites. Donations of metal poles, wood duck boxes and rough cut lumber were accepted from sportsmen and the general public. Turkey brood reports were submitted during the 3-month study period. Beaver, otter, coyote, fisher, bobcat and fox pelts were tagged and recorded.

Radio telemetry studies were continued, focusing on tracking collared female black bears. GPS collars were deployed on two additional sows, one of which was immobilized in a den in Townsend and a second captured in a barrel trap in Oakham. Two yearling male bears were ear-tagged at the Townsend den in cooperation with Northeast District staff.

Fisheries

Central District staff surveyed 40 sites on streams to assess fish populations and water conditions, focusing on the Millers, Blackstone, Nashua, Quinebaug, and French river basins. Baseline water quality data on acidity/alkalinity, conductivity and temperature were recorded.

A survey on an unnamed tributary in Leominster that was impacted by a retention pond failure was conducted to document changes in the distribution of native trout.

Two tributaries to the Whitman River in Westminster were surveyed, and monitors for temperature, oxygen level, and conductivity installed and maintained by a contractor for the MBTA and Westminster Business Park.

Sampling studies were conducted at Congamond Lake, Quaboag Pond and Chauncy Lake to determine species composition and growth rates. A target study of northern pike and chain pickerel reproduction and growth continued at Quaboag Pond and in the Quaboag River. The District assisted with continuing research on bass survival at Congamond Pond in Southwick. A creel survey continued at Wachusett Reservoir with the assistance of the Department of Conservation and Recreation's (DCR) Division of Water Supply Protection (DWSP).

Town of West Brookfield officials and the Lake Wickaboag Preservation Association were notified in writing that their local bylaw prohibiting boats within 50 feet of a dock or swim float while fishing is illegal, requiring approval of both the Director of the DFW and the Director of the OLE.

Reported fish kills were investigated in Spencer, Clinton, Berlin, and West Brookfield.

Natural Heritage and Endangered Species

Peregrine falcons were present in downtown Worcester and nested in the tray on a balcony of the People's United Bank building on Front Street; two chicks were produced. The resident female was captured by Assistant Director for NHESP Tom French and banded along with the chicks. The nest box installed on the Printers Building was not used nor was the nest tray that had been placed under the I-190 bridge in Holden.

District personnel assisted in the first Bald Eagle Breeding Survey, which was held in April. The Breeding Survey replaces the Midwinter Bald Eagle Survey. Resident nesting eagles were documented at Wachusett Reservoir, Pine Hill Reservoir, and Webster Lake. The Bald Eagle nesting territory at Wachusett Reservoir in Boylston was active and produced a single chick. The nest, on Wood Island, could not be reached by climber Kurt Palmateer (Assistant Fish Culturist; kindly loaned for his climbing expertise by the McLaughlin Hatchery) due to small branches that would not support the necessary weight. The Quaboag Pond eagle pair failed after incubating for nearly 60 days. The Lake Shirley territory appears to be re-forming, with an adult male and subadult female showing interest in the two available nests. The pair at Pine Hill Reservoir in Paxton produced a single chick that was banded in cooperation with the Worcester Water Department. The first successful eagle nest at Webster Lake was documented on Little Island and a single chick banded. There were no successful eagle nests on the east side of Quabbin Reservoir in Petersham or Hardwick. Eagles were present on four territories but did not produce young. Bands and remains from two eagles fledged in 2012 at Quabbin were recovered by shoreline hikers; the cause of the eagles' deaths could not be determined. Kurt Palmateer climbed all nests for the Central District.

Ten kestrel boxes were made for a pilot project in the Pioneer Valley being coordinated by State Ornithologist Andrew Vitz. Bluebird, Kestrel, and other cavity-nesting bird boxes were constructed and erected on WMAs. The bluebird nest box trail and sign were maintained at the High Ridge WMA. A new Common Raven nest was reported on a fire tower in Oxford and another on a railroad bridge in East Brookfield.

Active osprey nests were documented at two sites in Sturbridge, both on cell towers. The known nests in Westborough, Auburn, Sterling and Grafton were also active. The Westborough pair continued to use a nest pole installed by District staff.

Common Loon nesting rafts were floated by DCR at Quabbin and Wachusett reservoirs. The District compiled statewide loon nesting data for submission to the NHESP database. Former District Wildlife Biologist Bridgett McAlice will continue to compile loon data from her desk at the FHQ.

Enhancement of Outdoor Recreation

Sixteen WMAs were maintained with efforts directed at fields, roads, parking lots, gates, and illegal dumping and ATV deterrence. Permitting for road repairs at the Little Chauncy Pond fisherman's access was continued in cooperation with the Northborough Town Engineer and Conservation Commission. Twenty-one gates, 10 surveillance cameras, and several loads of boulders

were acquired using funds from the Off-highway Vehicle Program to deter illegal motor vehicles on WMAs.

Six boat ramps were visited and trash removed. Assistance was provided to the OFBA as requested.

District personnel oversaw the operation of 14 deer check stations, 15 turkey check stations, 12 coyote check stations, and one black bear check station. The Chronic Wasting Disease monitoring study was discontinued as funding was unavailable. As it was across the state, electronic game checking was initiated at the District office with the spring 2013 turkey season.

Scheduling and stocking of 12,850 Ring-necked Pheasant was completed and 6,000 7-week-old pheasants were distributed to 13 sportsmen's clubs and two correctional institutions for rearing. Pheasants were released on 17 WMAs, four town coverts, and participating club properties. Bolton Flats WMA and Winimusset WMA were available for the winter pheasant hunting opportunity in the Central District; one application was received for Bolton Flats.

Hatchery-raised trout were stocked in 36 ponds and lakes as well as 23 rivers and 27 streams in the Central District. Stocking participants included Cub Scout dens, school groups, youth groups, the New England Fly Tiers, Trout Unlimited, and local sporting clubs. Broodstock salmon were stocked in Comet Pond and Quinsigamond, Whalom, Wallum and Webster lakes; the salmon were obtained from the Roger Reed Hatchery in Palmer and the Nashua National Fish Hatchery in Nashua, New Hampshire.

The Tags 'n Trout program was sponsored at Pratt Pond, Upton; Lake Quinsigamond, Worcester; and Mill River, Blackstone.

Outreach and Education

District personnel helped staff the Division's displays in the Agricultural Exhibits Building at the Spencer Fair and the Eastern Fishing and Outdoor Expo at the Worcester DCU Center; the latter was shortened due to the severe snowstorm and consequent travel ban in early February 2013. The Tags 'n Trout program was sponsored at Pratt Pond, Upton; Lake Quinsigamond, Worcester; and the Mill River, Blackstone.

The 300-seedling American chestnut orchard was maintained at the District in cooperation with the American Chestnut Foundation and the DCR. Additional chestnut sprouts were maintained at the Moose Brook and Winimusset WMAs. Five blight-resistant seedlings were transplanted from behind the FHQ at the Westborough WMA to make room for the new building. Plans were formulated for the construction of a seed orchard at the Westborough WMA.

DFW Habitat Management Project Leader John Scanlon hosted an informational meeting for the public at the McKinstry Brook WMA in the wake of the extensive damage from the 2011 tornadoes with support from District and West Boylston staff.

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 U.S. Army Corps of Engineers, the DCR, the DEP, the Massachusetts Audubon Society, the North Quabbin Trails Association, the Birch Hill Rangers Snowmobile Club, the Spencer Snowbirds Snowmobile Club, the American Chestnut Foundation, the Ecotarium, the Midstate Trail Committee, Wachusett Greenways, the East Quabbin Land Trust, the Northboro Trails Committee, the Central Mass. Regional Planning Commission, the Westborough Trails Committee, the Princeton Land Trust, and the Friends of the Upton State Forest.

Technical Assistance

The District Supervisor and staff interacted with other state and federal agencies; NGOs; and other groups, including the DCR, the DCR/DWSP, the DEP, the USFWS and its law enforcement arm, New Hampshire Fish and Game, the Worcester County League of Sportsmen's Clubs, and officials from multiple towns throughout Worcester County. Technical assistance was provided to the town of Lancaster for the proposed removal of the Bartlett Pond dam.

Nuisance-animal reports were addressed and recorded using the newly redesigned Animal Report Data Forms and the forms were then forwarded to FHQ. Technical assistance was provided and site visits conducted where necessary; the majority of reports related to beaver, coyote, bear, fisher, bobcat, and fox. Reports of suspected illegal activity were forwarded to the OLE.

Several moose/vehicle collisions were documented and data collected from specimens that could be salvaged. Large Animal Response Team (LART) calls were undertaken by District staff for moose and bear, in cooperation with officers of the OLE.

Connecticut Valley Wildlife District

Administration

All licenses, permits, and tags were sold and tracked through the *MassFishHunt* System as of this year.

The District Manager continues to serve as a CORE team member for the Silvio O. Conte National Fish and Wildlife Refuge (Conte Refuge), helping to define its Comprehensive Conservation Plan. The District Supervisor also became a member of the Mount Tom Partnership along with The Trustees of Reservations, the Conte Refuge, the Holyoke Boys and Girls Club, and the DCR. Working with the DFW Chief of Wildlife Lands and the DFW Conservation Steward, the District Supervisor helped to create the public access plan for the newly acquired Paul C. Jones Working Forest Wildlife Conservation Easement (WCE) on 3,500 acres in Leverett/Shutesbury.

Wildlife

Valley District staff completed Ruffed Grouse drumming routes and assisted with the resident Canada goose survey and the wild turkey brood survey. Staff banded 100 Canada geese at six sites. Ninety wood duck nesting boxes were checked and maintained at 24 sites. Bird and kestrel nesting boxes were maintained at several WMAs as well. In addition, staff collected 43 samples of rabbit pellets at 22 sites and 15 carcasses throughout the district as part of the New England Cottontail survey.

Staff monitored the survival and reproduction of 19 radio-collared female bears during the reporting period. One adult collared female was shot as a nuisance bear causing damage to corn. Females were checked in their dens during February and March to determine reproductive success and first-year cub survival. Seven GPS collars were affixed to bears to monitor locations every 45 or 80 minutes. This is a cooperative study with the University of Massachusetts at Amherst (UMass/Amherst). District wildlife biologist trapped 9 bears (5 male, 4 female) during the spring and summer of 2013 to increase the sample of radio-collared female bears and to replace collars on bears missed during the den season.

The District office is staffed to check all required species. In addition, the Valley has eight deer, seven turkey, three bear, and three furbearer check stations throughout the district. District staff also manned five biological deer check stations during the first week of the Shotgun Deer hunting season.

The District Wildlife Biologist installed seven remote-control cameras at three WMAs (Facing Rock, Montague Plains, and Southwick) to monitor illegal off-road vehicle use and illegal dumping. These cameras uploaded pictures to a website maintained by the District Manager. This website was made available to the OLE, which was able to use the photos to pattern illegal use and issue several citations.

Staff removed 14 cubic yards of trash from Montague Plains, including 15 trash bags (25-gallon-size) of used diapers, TVs/computer monitors, mattresses, and construction waste. Four yards of trash was removed from Satan's Kingdom WMA, including mattresses and old furniture.

All WMAs were posted with rules and regulations. These signs are posted at public access entrance points at about 35 WMAs throughout the District. In addition, six parking areas were created, boundaries posted to allow public access, and vehicle access restricted at the The Paul C. Jones Working Forest WCE in Leverett/Shutesbury.

Approximately 40 acres of fields were mowed at five WMAs (Southwick, Southampton, Herm Covey, Poland Brook, and Leyden). One and one quarter miles of access trails to four duck blinds were cleared for the annual Ludlow WMA controlled duck hunt. The Lud-

Extensive ATV damage to grassland habitat important for many rare species, Southwick WMA, seen from the air.

Photo taken by remote-access camera system at the Southwick WMA showing damage done by illegal ATV use.

low-controlled duck hunt trail clearing requires the use a skid-steer with brush mulching head, a tractor with brush hog, and about 32 man-hours of labor per year.

Fisheries

Stream surveys were conducted throughout the district. Surveys of a variety of stream types were planned and completed, and included those streams that have not been sampled in the past. An electro-shocking survey was conducted in conjunction with FHQ and Central Wildlife District staff on Lake Congamond in Southwick to monitor bass production. There were no fish kills investigated during the 2012 Fiscal Year. The Valley District continues to be a weigh station for the Freshwater Sport Fishing Award Program, and several nice pin fish were recorded. The Fisheries Biologist attended meetings of the American Fisheries Society, the USFWS's Atlantic salmon meeting, and several other professional and informational meetings.

The District worked closely with FHQ staff, local officials, and other state agencies to mitigate the effects of tornado damage to Fosgett Mill Brook (Brimfield).

The District Supervisor and the District Fisheries Biologist provided guidance and monitored a project to modify stream flow during high water events in the Sawmill River (Montague); this project was the first of its kind in the state, and was initiated mainly because the river flows through land owned by the DFW. The project is designed to take water during a high-flow event, direct it onto the adjacent floodplain, and channel it through the historic, though most often dry, stream channels.

Natural Heritage and Endangered Species

The Valley District is monitoring 27 breeding Bald Eagle territories and banded 16 eaglets in trees that could be safely climbed at the Quabbin Reservoir and west to the New York line in FY 13. District staff assisted in the spring eagle nesting survey, new in 2013 (the midwinter survey has been discontinued), at the Quabbin Reservoir and on the Connecticut River.

Staff banded three peregrine chicks at the UMass/Amherst Library. Staff also checked the nests at Mt. Tom (Easthampton) and at Mt. Sugarloaf (Deerfield); each produced at least two chicks, but these were not banded. Staff also constructed four peregrine nesting boxes for Heritage staff to place at bridges throughout the district.

Enhancement of Outdoor Recreation

In the fall of 2012, 14,200 trout were stocked into Valley District waterbodies; over 102,725 rainbow, brook, brown, and tiger trout were stocked for Valley District anglers over the course of spring 2013 stocking. Snowfall was not a delaying factor this year; the stocking season started in mid-March and ran through Memorial Day weekend. A significant stocking once again took place following the annual July 1 regulation change on the Swift River, capitalizing on the unique combination of coldwater and short transfer and handling time between the McLaughlin Hatchery and the Swift River to provide a unique fishing opportunity to anglers.

District staff stocked 120+ surplus broodstock salmon from the Reed Hatchery (Palmer) into Lake Mattawa (Orange), Lake Metacomet (Belchertown), Five Mile Pond (Springfield), and Lake Congamond (Southwick) in December 2012; in addition, 70+ surplus broodstock salmon were stocked out of the Nashua National Fish Hatchery (Nashua, New Hampshire) into Lake Mattawa, Lake Metacomet, and Five Mile Pond in January 2013.

Four fishing derbies were supported by the Valley District, at Five Mile Pond, Piper Mill Pond (West Springfield); Dean Pond (Brimfield), and at the USFWS Open House (Hadley). Staff stocked 10,000 pheasants on 33 town covers and 10 WMA covers during the 6-week pheasant hunting season.

Six sportsmen's clubs within the Valley District participated in the Club Pheasant Program; district staff distributed 1,496 7-week-old pheasants to these clubs in July and provided pheasant for the Fin, Feather, and Fur Club Youth Pheasant Hunt.

District Staff administered the controlled waterfowl hunt at the Ludlow WMA. Seven hunters applied for permits and participated in the hunt.

Outreach and Education

District Staff set up the DFW display at the Franklin County Fair, manned it over the fair's 4 days of operation with help from FHQ staff, and provided river fish shocked at the Oxbow on the Connecticut River for the Fish and Game building's display tanks. District staff also provided a presence at the Springfield Sportsmen's Show in West Springfield, selling licenses, stamps, and permits and answering questions from visiting sportsmen.

In continued support of Westfield State University, staff provided field trips for Dr. Dave Christensen's Aquatic Biology class. Students observe and participate in both stream electro-shocking and boat electro-shocking in the Westfield area, as well as being presented with an overview of Division and District activities as part of their course work.

The District Supervisor attended regular meetings of the Hampden County Sportsmen's Council, the Hampshire County League of Sportsmen, and the Franklin County League of Sportsmen, where he gave presentations of interest to these groups. The District Supervisor and the District biologists participated in various meetings with federal, state, and local agencies and land trusts, focusing primarily on land acquisition, management, and informational talks. The District Wildlife Biologist gave a presentation on Black Bear Management to Grade 8 math and science classes at the Pioneer Valley Regional High School.

A public event held to celebrate the 3,500-acre Paul C. Jones Working Forest WCE was coordinated and attended by District staff. Also, a public event was held to celebrate the acquisition of a scenic 180-acre parcel on Flagg Mountain in Conway/Buckland.

Governor Deval Patrick and numerous media outlets attended a black bear den research expedition and a Bald Eagle banding session. The media and the Governor brought awareness and helped promote wildlife restoration and management work done by the Division.

Technical Assistance

District staff fielded hundreds of calls requesting technical assistance for wildlife and fisheries concerns. Also, the needs of walk-in visitors were addressed, often including nuisance-animal complaints and requests for information. District personnel were often called upon to provide technical assistance to other agencies or user groups. Numerous injured hawks and owls were transported to rehabilitators. Additional field responses included assistance sought on behalf of deer, moose, and bear.

Western Wildlife District

Administration

There were no personnel changes in the Western Wildlife District in FY 13. Capital funding allowed the demolition of a dilapidated barn on the Chalet WMA in Cheshire. The condition of the barn made it unsightly and represented a potential safety hazard. The District acquired a new Bobcat compact track loader with a forestry-cutting head that will be used to create habitat on WMAs.

The District initiated a monitoring schedule to conduct site visits to WCE properties. Western District easements are held from private landowners and land trusts or other conservation organizations. DFW has an obligation to ensure that the interests of the easements are protected. In FY 13, District Wildlife Technicians monitored WCEs in the towns of Monterey, Goshen, Ashfield, Alford, and Windsor.

The District office hosted two meeting of the Fisheries and Wildlife Board as well numerous staff and informational meetings. The District Supervisor and the District Biologists provided input to the DFW Lands Committee on potential land acquisition projects, focusing on wildlife habitat and recreational opportunities.

Research and Conservation

Wildlife

Annual surveys for woodcock, grouse, doves, and waterfowl were conducted in cooperation with Wildlife Section biologists at the FHQ. Staff also cleaned, constructed, and installed nest boxes for bluebird, wood duck, and kestrel. District Wildlife Manager Tony Gola and Wildlife Technician Morris-Siegel participated with songbird identification to assist State Ornithologist Andrew Vitz.

Western District personnel provided support for Wildlife Project Leaders through game check stations, radio-telemetry monitoring, Chronic Wasting Disease monitoring, goose-banding, and habitat work. Rabbit pellets were collected at multiple sites throughout the District and submitted for genetic analysis to identify potential and historical New England Cottontail sites.

District technicians maintained open-field habitat by mowing on 10 WMAs spanning the majority of the district geography. These activities require a substantial investment of hours and equipment but are necessary to maintain biodiversity and recreational opportunity on DFW lands. Cooperative license agreements with farmers were also utilized to maintain open or actively managed habitats.

Fisheries

In FY 13, District staff continued annual monitoring of fish populations in Laurel Lake in Lee. This moni-

toring effort is designed to assess changes in the fish community since the discovery of Zebra Mussels in the lake in 2009.

Fish community surveys were conducted on nine ponds and 30 stream sites in FY 13. Pond survey efforts focused on unsampled waterbodies or those lacking recent information. Stream sites included small, previously unsampled headwaters. In addition, staff surveyed fish communities at five dam removal projects throughout Berkshire County. The objective of this monitoring is to describe changes to fish communities where connectivity has been reestablished by barrier removal.

The District Fisheries Manager continued her involvement with the Eastern Brook Trout Joint Venture, which included project review and planning. She also visited numerous sites to assist in environmental review and worked closely with the MassDOT and the DEP.

District personnel provided support for the Fisheries Section by providing technical information, assisting in Atlantic salmon fry stocking, responding to fish kills, and participating in meetings.

In May 2013, the diatom *Didymosphenia geminata* (Didymo) was confirmed by Western District personnel in the Green River in Egremont. This represents the first known occurrence of the algae in Massachusetts. Didymo has generated great concern because, unlike most algae, it occurs in cold, flowing waters. Didymo has specific and limited habitat requirements that will likely determine the extent to which it establishes in other watersheds. Western District staff posted informational signs, answered numerous inquiries, and will continue to monitor the situation in FY 14

The dramatic impact of Hurricane Irene and the consequent habitat alteration carried over into FY 13. The District Supervisor and District Fisheries Manager served on the enforcement group for the Chickley River, which was extensively altered. The Fisheries Manager spent many days onsite, advising restoration specialists and providing technical expertise. Both the Fisheries Manager and District Supervisor were acknowledged for their efforts with Citations for Outstanding Performance from the DEP.

Natural Heritage and Endangered Species

District biologists provided support in the form of local knowledge and biological input to the NHESP on environmental reviews and listed-species issues. The District Wildlife Manager continued his association with the New England Plant Conservation Program and supported that organization by conducting botanical surveys for rare plants.

District staff participated in the Bald Eagle Nesting Survey. This effort yielded sightings of 13 eagles and the discovery of two new Western District nest sites. District staff also conducted winter surveys for hibernating bats in cooperation with the USFWS.

District Biologists and Wildlife Technicians worked with NHESP to establish beneficial grazing on a WMA to enhance habitat for turtles. Efforts included land clearing, fence construction and biological surveys.

Enhancement of Outdoor Recreation

Enhancement of outdoor recreation is a core function of the District office. Trout were stocked into 24 lakes and ponds and 56 streams and rivers to enhance recreational fishing. District staff also stocked broodstock salmon into three Western District lakes. Staff maintained open areas on five WMAs where pheasants are stocked. District staff released 4,000 pheasants onto 14 areas (including WMAs and local covers). These areas represent the best available opportunities for pheasant hunting and cover all regions of the District. Pheasant chicks were provided to the Lee and Ashfield sportsmen's clubs. District Wildlife Technicians constructed and installed signs and maintained parking areas and access for the public. Two boat access sites managed by the DFW were maintained by District Wildlife technicians. Staff also provided support for the DFW's special deer hunt for paraplegic hunters.

In FY 13, we continued to install routered wooden signs and informational signage on District WMAs. The remainder of the FY 12 land acquisitions and many of the FY 13 parcels were marked with boundary signs and scribes.

Outreach and Education

District field staff interacts with the public on a daily basis, providing information and sharing enthusiasm for outdoor activities. In addition, Western District staff also participated in more formal events focused on educating the public about the agency and the environment, including the Berkshire BioBlitz and the Cummington Fair. We continued to develop relationships with the schools adjacent to our headquarters in Dalton, making informational presentations to both middle and high school students and participating in the high school internship program.

The District Supervisor attended monthly meetings and provided updates to the Berkshire County League of Sportsmen and to the Hampshire County League of Sportsmen's Clubs when the meetings occurred in the Western District.

The District Supervisor gave numerous information presentations and was a repeat guest on the National Wildlife Federation TV show. The District Fisheries Manager presented to the Trout Unlimited Taconic Chapter, and participated in an educational tour for Swedish environmental managers.

Technical Assistance

The District Clerk fielded hundreds of calls requesting technical assistance. District personnel 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, District personnel were often called upon to provide technical assistance to other agencies or user groups. The Wildlife Manager responded to numerous calls seeking advice on dealing with black bear. These calls frequently required a site visit to discuss options with landowners. The District loaned and installed temporary electric fence to help alleviate bear problems.

Because the District office is the first point of contact with the agency for the local public, we receive many calls regarding wildlife in distress. Numerous hawks and owls were transported to wildlife rehabilitator Tom Riccardi. Other calls that warranted additional field responses included reports about fawns, moose, bear, bobcat, otter, and fox.

The District Supervisor represented the agency at meetings involving resource conservation in the region. He attended public informational meetings as well as quarterly meetings of the Citizen's Coordinating Council addressing PCBs in the Housatonic River. He served as the alternate state representative to the Westfield Wild and Scenic River Committee. He also contributed as a member of the Berkshire County Sustainability Consortium, a multi-discipline group developing a comprehensive plan to establish long-term regional priorities.

District Personnel

Northeast Wildlife District

Patricia Huckery, *District Supervisor*
Erik Amati, *Wildlife Manager*
David Critchlow, *Wildlife Technician*
Bob Desrosiers, *Wildlife Technician*
Travis Drudi, *Wildlife Technician*
Anne Gagnon, *Land Agent*
Sue Ostertag, *Clerk*
John Sheedy, *Fisheries Manager*

Southeast Wildlife District

Jason E. Zimmer, *District Supervisor*
Aaron Best, *Wildlife Technician*
Jeff Breton, *Wildlife Technician*
Daniel Fortier, *Wildlife Technician*
Steve Hurley, *Fisheries Manager*
Joan Pierce, *Land Agent*
Debra Silva, *Clerk*
Dick Turner, *Wildlife Manager*
Steve Wright, *Wildlife Technician*

Connecticut Valley Wildlife District

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

Central Wildlife District

Bill Davis, *District Supervisor*
Mark Brideau, *Fisheries Biologist*
Bob Chapin, *Wildlife Technician*
Scott Kemp, *Wildlife Technician*
Brandon Kibbe, *Land Agent*
Priscilla MacAdams, *Clerk* (part-year)
Debra Manty, *Clerk* (part-year)
Jessi Manty, *Wildlife Technician*
Bridgett McAlice, *Wildlife Biologist* (part-year)
Bruce Walker, *Wildlife Biologist* (part-year)
Michael Morelly, *Wildlife Technician*

Western Wildlife District

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

WILDLIFE LANDS ACQUISITION & INVENTORY

Craig A. MacDonnell
Chief of Wildlife Lands

Overview

The Realty Section had an eventful FY 13 on both administrative and acquisition fronts. In terms of administration, staff proposed a revised system of categorizing DFW's real estate holdings and undertook a wide-scale review of nomenclature for these holdings. These efforts were designed to simplify managing DFW's lands inventory. For example, the WMA category definition was expanded to include Natural Heritage Areas, Marshes, Forests, and other areas that are generally available for multiple recreational uses. All conservation easements that include public access were assigned to the category Wildlife Conservation Easement (WCE), regardless of whether they abut a Wildlife Management Area or stand alone. A new category of Wildlife Conservation Restriction (WCR) was created for conservation easements (mostly gifts) that do not include a provision for public access; these do not appear on public maps. Many (but not all) WMA and WCE names that were based on the name of the town in which the property is located or were saddled with project-related nomenclature were changed to something geographic or more site-specific, usually a feature visible on a topographic map (for example, the Tyringham WCE has become the Steadman Pond WCE). Finally, all properties for which access to water or other locations is the primary use were consolidated into one Access Area category. These changes were reviewed and approved by the Fisheries and Wildlife Board.

The categories are now as follows:

Wildlife Management Area (WMA): Multiple-use recreational opportunities, as defined and limited by WMA regulations.

Wildlife Conservation Easement (WCE): Conservation Restrictions (CR) that includes a public-access provision; generally multiple-use recreational opportunities, but with some site-specific limitations as described in the CR document.

Wildlife Conservation Restriction (WCR): CRs lacking a provision for public access.

Access Areas: Properties whose primary recreational opportunity is access to a water body or other lands not owned by the agency; usually relatively small acreage.

Wildlife Sanctuaries: Properties designated as such by statute; separate regulations apply.

Installations: District offices, hatcheries, etc.

Other: A catch-all category for nature preserves, deed restrictions, rights-of-way, etc.

Fiscal Year 2013 Acreage Cost, by District

Western Wildlife District	
Expended	$4,053,000.00
Acreage	1,711.78
Cost per acre	$2,367.71
Connecticut Valley Wildlife District	
Expended	$475,000.00
Acreage	348.22
Cost per acre	$1,364.07
Central Wildlife District	
Expended	$1,166,556.00
Acreage	552.58
Cost per acre	$2,111.11
Northeast Wildlife District	
Expended	$430,500.00
Acreage	745.44
Cost per acre	$577.85
Southeast Wildlife District	
Expended	$1,650,000.00
Acreage	167.08
Cost per acre	$9,880.24
Total Expended	**$7,775,056.00**
Total Acreage Conserved	**3,525.10**
Average Cost per Acre	**$2,205.63**

These acreage figures and costs are for properties acquired with FY 13 funds and recorded on or after July 1, 2012, and on or before June 30, 2013. Ancillary costs, such as appraisals, surveys, title examinations, and other related transaction expenses are not included.

Land Acquisition

Fiscal year 2013 was another excellent year for land protection at the DFW. Our land agents experienced an evolving real estate market that began to show signs of price recovery and to inflate landowner expectations.

Despite these changing market conditions, staff completed 32 projects conserving 3,525 acres of valuable habitat at a cost of approximately $7.8 million. As usual, these funds derived from two sources. The bulk of the funding for land acquisition is provided through bond capital that is administered by the Department of Fish and Game (DFG). This year, the total of such funds was $6,318,400. The other source of funding is the Wildlands Fund, which contributed $1,456,656 in FY 13.

Land acquisitions were well distributed around the state. This year, the Western District amassed the greatest total of acreage, with 1,712 acres conserved. The Northeast District also had a very good year, with 745 acres protected. All of the districts had successful years, however, with the Central District adding 553 acres, the Valley District conserving almost 350 acres, and the Southeast District protecting 167 acres. Nine acquisitions were recorded in the Central District, eight in the Northeast District, six each in the Western and Southeast districts, and three in the Valley District. Most transactions involved additions to existing areas, while two new WMAs and four WCEs were added.

Acquisitions were configured and financed in a variety of ways. They were primarily in fee (2,851 acres), but also included important acreage in the form of easements (673 acres). A number of our large projects received funding from both bond capital and the Wildlands Fund, including large additions to the Oak Hill WMA in Chesterfield and the Savoy WMA in Windsor. Staff also secured an impressive collection of donations: 976 acres, of which approximately 639 were easements. There were nine project over 100 acres, including the massive 906-acre Long Mountain WMA and the 513-acre Groton Town Forest WCE. Other relatively large fee acquisitions included a 190-acre addition to the Maple Hill WMA in West Stockbridge, a 189-acre addition to the Savoy WMA in Windsor, a 182-acre addition to the Green River WMA in Colrain, and the new 160-acre Flagg Mountain WMA in Conway.

As is the case every year, our non-profit partners made invaluable contributions to our success this fiscal year. Land trusts and other environmental organizations assisted directly on numerous acquisitions and provided valuable input on others. Direct assistance was provided by The Nature Conservancy, the Berkshire Natural Resources Council, the Buzzards Bay Coalition, the Essex County Greenbelt Association, the Mount Grace Land Trust, the East Quabbin Land Trust, the Franklin Land Trust, and The Wildlands Trust.

On balance, the land protection program enjoyed great success in FY 13. There was consistent and effective collaboration between and among DFW Realty staff; the joint DFW-DFG Lands Committee; and the DFG Commissioner, Land Agents, Counsel, and Capital Planning Director. Good planning and administration encouraged early, vigorous acquisition activity that enabled transactions to be well distributed among the year's four quarters.

The 3,525 acres protected in FY 13 bring the total protected acreage to over 200,441 acres, or approximately 313 square miles of permanently protected wildlife habitat across the Commonwealth.

Western Wildlife District

The Western District completed six acquisitions in FY 13 and protected a total of 1,711 acres at a cost of $4,053,000. The most notable conservation project in this district was the addition of the new 906-acre Long Mountain WMA in Otis and Tyringham. The Long Mountain project was a broad partnership effort between and among DFG, DFW, the Berkshire Natural Resources Council, and the Executive Office of Energy and Environmental Affairs (EEA). In large part, the project was enabled by a $1,800,000 Landscape Partnership Grant from EEA, which completely funded the Long Mountain WMA acquisition. Successful completion of this project provides massive biodiversity and wildlife habitat protection, ensures sound sustainable forest management on a vast forest block, and secures public access for passive recreational activities across significant acreage. Other important acquisitions included a 366-acre addition to Oak Hill WMA and a 190-acre addition to the Maple Hill WMA in West Stockbridge.

The Western District now has nearly 60,826 acres under conservation management and control.

Connecticut Valley Wildlife District

The Valley District completed three projects in FY 13 and protected just over 348 acres at the surprisingly low cost of $475,000, which was due primarily to receiving to over 165 acres via donation. One of these donations created the new Flagg Mountain WMA in Conway, which includes the summit of Flagg Mountain, a prominent hill with spectacular views. Another featured project in this district was the acquisition of the 182-acre Devine-Mitchell Farm in Colrain as an addition to the Green River WMA. This farm property is located along the Green River and contains exceptional natural resources, including habitat for three Species of Special Concern, an extensive section of Stafford Brook (a beautiful coldwater stream holding native brook trout and featuring a deep gorge several hundred yards long), two other small perennial streams, and three nice woods roads transecting the property and providing excellent access.

The Valley District now has over 26,766 acres under conservation management and control.

Central Wildlife District

The Central District had another excellent year of land conservation, completing nine acquisitions. A total of over 550 acres was protected in seven municipalities at a cost of $1,166,556. Key projects included a 130-acre addition to the Stone Bridge WMA in Templeton, the addition of two new parcels (34 acres together) to the Hitchcock Mountain WMA in East Brookfield, and a 58-acre addition to the Muddy Brook WMA in Hardwick.

The Central District now has nearly 45,017 acres under conservation management and control.

Northeast Wildlife District

The Northeast District also had a very fine year of land conservation in FY 13. Despite the challenge of high property values, the Northeast District completed eight projects in seven municipalities and protected 745 acres of land at a cost of $430,500. The relatively low cost of this acquisition was enabled by staff securing donations of conservation easements over 563 acres of land and fee interest in another 108 acres. One of these donations resulted in the creation of the 513-acre Groton Town Forest WCE. The other added 108 acres to the Mulpus Brook WMA in Shirley.

The Northeast District now has over 15,867 acres under conservation management and control.

Southeast Wildlife District

The Southeast District completed six land conservation projects in FY 13 involving a total of 167 acres in three towns at a cost of $1,650,600. Our land agent in the Southeast completed the second and third phases of a 2-year project expanding our conservation of the shoreline of Halfway Pond in Plymouth, a beautiful coastal plain pond. The Halfway Pond area contains an incredibly rich array of natural resources. It is habitat for 18 state-listed rare species (three Endangered, three Threatened, and 12 Special Concern). This year the District added 58 acres to the Halfway Pond WMA and created the adjacent 28-acre Halfway Pond WCE, which together protect over 3,000 feet of pond frontage in this very special area.

The Southeast District now has over 51,964 acres under conservation management and control.

Stewardship Activities

The Stewardship Coordinator continues to work with the Districts, Wildlife Section, Natural Heritage Program and others to incorporate Conservation Restriction (CR) stewardship and monitoring into the day-to-day activities of the agency. Objectives include:

Accessible Recordkeeping – All management plans and monitoring reports received in 2013 are now stored on a file directory accessible to all FHQ staff.

Consistent Procedures – A two-page Monitoring Report form has been created as well as written summary of monitoring procedures and expectations.

Regular Property Visitation – Staff training sessions for CR monitoring have been held in two districts, with the remaining three to be scheduled soon. A Stewardship Intern completed much-needed boundary reconnaissance and mapping on selected CRs in Orange and Royalston.

Landowner Outreach – A mailing and management questionnaire was distributed to all CR landowners, with an encouraging rate of return.

Timely Review of Management Activity Requests – Most CRs require landowners to submit forest management and forest cutting plans to us for review and approval by both Natural Heritage and the Wildlife Section, which provides great opportunity to affect management of these lands in order to help reach agency wildlife habitat goals.

Coordinated Response to Suspected Violations – Known violations fortunately have remained minimal in number, but a process is in place to respond in a timely manner to known or suspected violations of the terms of the Conservation Restriction.

Land Agents / Realty Staff

Anne Gagnon, *Northeast Wildlife District*
Brandon Kibbe, *Central Wildlife District*
Sam Lovejoy, *Connecticut Valley Wildlife District*
Peter Milanesi, *Western Wildlife District*
Joan Pierce, *Southeast Wildlife District*
Phil Truesdell, *Stewardship Coordinator*

Land Inventory

Western Wildlife District	**Acres**
Wildlife Management Areas (35)	
Abbott Brook WMA	167.59
Agawam Lake WMA	779.8
Ashfield Hawley WMA	284
Barre Falls WMA (by agreement)	0
Barton's Ledge WMA	88.6
Becket WMA	234
Bullock Ledge WMA	15.5
Chalet WMA	7,109.61
Cummington WMA	288.97
Day Mountain WMA	382.45
Dolomite Ledges WMA	319.85
Eugene D. Moran WMA	1,669.92
Fairfield Brook WMA	164.9
Farmington River WMA	1,848.60
Fisk Meadows WMA	620.17
Flat Brook WMA	270.56
Fox Den WMA	4,739.72
George L. Darey Housatonic Valley WMA	590.83
Green River WMA	639.32
Hancock WMA	491.5
Hawks Brook WMA	509.83
Hinsdale Flats WMA	1,694.47
Hiram H. Fox WMA	4,013.69
Hop Brook WMA	424.8
Housatonic River East Branch WMA	27.5
Hubbard Brook WMA	195.92
John J. Kelly WMA	267
Jug End Fen WMA	53.54
Jug End State Reservation and WMA	1,169.80
Jug End WMA	20
Kampoosa Fen WMA	72
Knightville Dam WMA (by agreement)	0
Lilly Pond WMA	192.7
Long Mountain WMA	906
Maple Hill WMA	578.05
Maxwell Brook WMA	36.4
North Egremont WMA	2.56
Oak Hill WMA	583.8
Peru WMA	4,820.62

Powell Brook WMA	402.58
Ram Hill WMA	230.25
Richmond Fen WMA	22.9
Savoy WMA	1,808.34
Shaw Brook WMA	153.33
Stafford Hill WMA	1,042.60
Taconic Mountain WMA	157.34
Tekoa Mountain WMA	1,383.30
Three Mile Pond WMA	1,141.82
Tracy Pond WMA	225.07
Upper Westfield River WMA	310.32
Walnut Hill WMA	983.5
Williams River WMA	35
Total	**44,170.92**
Wildlife Conservation Easements (29)	
Abbott Brook WCE	1,782
Alford Spring WCE	854.82
Allen Mountain WCE	208
Boulders WCE	634.4
Cold Brook WCE	405
Cole Meadow WCE	101
Hawks Brook WCE	23.19
Housatonic River East Branch WCE	102
Jug End Fen WCE	81.57
Jug End WCE	262.48
Knightville WCE	676
Lilly Pond WCE	157
Mt. Darby WCE	319.29
Mt. Plantain WCE	1,337.44
North Egremont WCE	21.5
Ram Hill WCE	190.35
Rockhouse Mountain WCE	78
Scout Pond WCE	505
Shales Brook WCE	5.6
Silver Brook WCE	162
Stage Brook WCE	581
Steadman Pond WCE	1,170.95
Thorpe Brook WCE	322
Tower Brook WCE	300
Umpachene River WCE	239
Upper Westfield River WCE	12.5
Westfield Watershed WCE	2,300
Windsor Brook WCE	3,284.43
Total	**8,187.84**
Wildlife Conservation Restriction (1)	
Windsor Brook WCR	69.4
Total	**69.4**
Access Areas (3)	
Hoosic River Access	5.9
Housatonic River Access	17
Konkapot River Access	8.8
Total	31.7
Wildlife Sanctuaries (2)	
E. Howe Forbush Sanctuary	365.5
Grace A. Robson Sanctuary	69.5
Total	**435**
Installation (1)	
Western District - Old HQ	2.35
Total	**2.35**
Total Western Wildlife District	**60,825.89**

Connecticut Valley Wildlife District	**Acres**
Wildlife Management Areas (35)	
Bennett Meadows WMA (by agreement)	0
Brewer Brook WMA	213.99
Catamount WMA	413
Darwin Scott WMA	27.3
East Mountain WMA	454.86
Facing Rock WMA	1,366.10
Flagg Mountain WMA	160.48
Great Swamp WMA	663.73
Green River WMA	231.75
Herman Covey WMA	1,492.98
Honey Pot WMA	178.42
Lake Warner WMA	98
Leyden WMA	759
Montague Plains WMA	1,504.80
Montague WMA	1,805.07
Mt. Esther WMA	190.95
Mt. Toby WMA	551.8
Mt. Tom WMA	73.1
Orange WMA	880.6
Palmer WMA	1,260.48
Pauchaug Brook WMA	161.3
Poland Brook WMA	608.45
Satan's Kingdom WMA	1,789.28
Shattuck Brook WMA	178.8
Shepherd's Island WMA	45.9
Southampton WMA	170.6
Southwick WMA	265.24
Sunderland Islands WMA	15
Tully Mountain WMA	645
Wales WMA	207.15
Warwick WMA	379
Wendell WMA	601.48
Westfield WMA	232.67
Whately WMA	283.1
Williamsburg WMA	88
Total	**17,997.38**
Wildlife Conservation Easements (12)	
Amythyst Brook WCE	36.9
Chestnut Hill WCE	146
Facing Rock WCE	190
Great Swamp WCE	0.94
Honey Pot WCE	52.74
Lake Rohunta WCE	59
Little Tully Mountain WCE	466.38
Ludlow Reservoir WCE	1,750
Orange WCE	472.2
Paul C. Jones Working Forest WCE	3,486
Satan's Kingdom WCE	404
Tully Mountain WCE	692.87
Total	**7,757.03**
Access Areas (11)	
Connecticut River Access	94.8
Deerfield River Access	21

Lake Lorraine Access	0.26
Lake Rohunta Access	2.49
Little Alum Pond Access	0.5
Mill River Access	14.15
Millers River Access	52.8
Packard Pond Access	0.54
Sawmill River Access	52
Ware River Access	39
Westfield River Access	79.4
Total	**356.94**
Installations (3)	
Bitzer Fish Hatchery	150.64
Reed Fish Hatchery	316
Sunderland Fish Hatchery	45.58
Total	**512.22**
Other (1)	
Wilbraham Nature and Cultural Center	143.09
Total	**143.09**
Total Connecticut Valley Wildlife District	**26,766.66**

Central Wildlife District	**Acres**
Wildlife Management Areas (48)	
Bennett WMA	281.2
Birch Hill WMA	3,665.25
Bolton Flats WMA	1,329.88
Breakneck Brook WMA	707
Chockalog Swamp WMA	52.5
Clinton Bluff WMA	42
Coy Hill WMA	865.8
E. Kent Swift WMA	157
Fish Brook WMA	142.5
Four Chimneys WMA	200
High Ridge WMA	2,232.47
Hitchcock Mountain WMA	268.41
Hubbardston WMA (by agreement)	0
Lackey Pond WMA	174.54
Lawrence Brook WMA	357
Leadmine WMA	826
Long Pond WMA	220.48
Martha Deering WMA	180.6
McKinstry Brook WMA	65
Merrill Pond WMA	852.47
Millers River WMA	3,221.43
Mine Brook WMA	1,062.15
Moose Brook WMA	452.94
Moose Hill WMA	640.1
Mt. Pisgah WMA	88.8
Muddy Brook WMA	1,936.92
Oakham WMA	742.2
Phillipston WMA	3,475.65
Popple Camp WMA	1,459.91
Poutwater Pond WMA	391.74
Prince River WMA	897.59
Quaboag WMA	965.62
Quacumquasit WMA	179.82
Quisset WMA	388
Raccoon Hill WMA	645.5
Richardson WMA	467.22
Savage Hill WMA	930.96
Scripture Hill WMA	121
Stone Bridge WMA	129.82
Sucker Brook WMA	102.6
Thayer Pond WMA	131
Ware River WMA	185.36
West Hill WMA (by agreement)	0
Westborough WMA	979.58
Whortleberry Hill WMA	324.4
Winchendon Springs WMA	674.8
Winimusset WMA	670.17
Wolf Swamp WMA	1,184.01
Total	**35,069.39**
Wildlife Conservation Easements (24)	
Benjamin Hill WCE	223
Breakneck Brook WCE	526
Burnshirt River WCE	100
Carter Pond WCE	425.5
Fish Brook WCE	75
Fitchburg Watershed WCE	1,875
Hitchcock Mountain WCE	610
Lawrence Brook WCE	719.7
Leadmine Mountain WCE	825
Long Pond WCE	8.85
McKinstry Brook WCE	31
Millers River WCE	204.72
Mt. Pisgah WCE	19.12
Nineteenth Hill WCE	623.75
Potter Hill WCE	90.8
Quisset WCE	247
Savage Hill WCE	234
Secret Lake WCE	212
Slater Woods WCE	73.9
Stuart Pond WCE	28.7
Taft Hill WCE	266.8
Wekepeke WCE	564
Whitmanville WCE	116.5
Winchendon Springs WCE	87.5
Total	**8,187.84**
Wildlife Conservation Restrictions (5)	
Breakneck Brook WCR	176
Five Mile River WCR	17.27
McKinstry Brook WCR	26
Raccoon Hill WCR	121.3
Williamsville Pond WCR	5.64
Total	**346.21**
Access Areas (18)	
Bare Hill Pond Access	1.45
Blackstone / West River Access	28
Cusky Pond Access	23
Fisherville Pond Access	1.6
Five Mile River Access	178.52
Glen Echo Lake Access	1
Leadmine Pond Access	0.05
Moose Brook Access	400.31
Mossy Pond Access	17
Natty Brook Access	95.17
Quag Pond Bog Access	31
Quinapoxet River Access	32
Quinsigamond Marsh Access	59

Sevenmile River Access	77
South Meadow Pond Access	0.25
Sputtermill Pond Access	58.5
Ware River Access - Barre	40
Webster Lake Access	1.7
Total	**1,045.55**
Wildlife Sanctuaries (2)	
Mount Watatic Sanctuary	228
Susan B. Minns Sanctuary	139.91
Total	**367.91**
Total Central Wildlife District	**45,016.90**

Northeast Wildlife District	**Acres**
Wildlife Management Areas (24)	
Ashby WMA	849.76
Boxborough Station WMA	124.1
Crane Pond WMA	2,165.85
Delaney WMA (by agreement)	0
Dunstable Brook WMA	131.6
Eagle Island WMA	5
Elbow Meadow WMA	210.33
Fessenden Hill WMA	21
Flagg Swamp WMA	54
Harold Parker WMA (by agreement)	0
Hauk Swamp WMA	61
Hunting Hills WMA	422.02
Martin H. Burns WMA	1,958.60
Mulpus Brook WMA	456.13
Nissitissit River WMA	383.22
North Shore Salt Marsh WMA	341.12
Pantry Brook WMA	449.95
Salisbury Salt Marsh WMA	770.07
Squannacook River WMA	1,359.62
Townsend Hill WMA	473.27
Trapfall Brook WMA	45.38
Upper Parker River WMA	16
Whittier WMA	36
William Forward WMA	2,122.45
Total	**12,456.47**
Wildlife Conservation Easements (14)	
Concord River WCE	18.9
Cow Pond Brook WCE	127
Great Meadows WCE	16
Great Swamp Brook WCE	157
Groton Town Forest WCE	513
Hunting Hills WCE	84.59
Martin H. Burns WCE	99.44
Meadow Pond WCE	58
Pepperell Springs WCE	255
Squannacook River WCE	181.7
Sucker Brook WCE	12
Surrenden Farm West WCE	169.7
Throne Hill WCE	177.5
Wright Pond WCE	148
Total	**2,017.83**
Wildlife Conservation Restrictions (2)	
Mill Creek WCR	59
Squannacook River WCR	68
Total	**127**
Access Areas (14)	
Baddacook Pond Access	0.16
Concord River Access	0.25
Flint Pond Access	89
Ipswich River Access	1.79
Knops Pond Access	0.6
Lake Attitash Access	6.03
Long Sought For Pond Access	1.0
Mascuppic Lake Access	0.25
Nashua River Access - Dunstable	15.0
Nashua River Access - Groton	10.1
Nashua River Access - Pepperell	11.2
Nashua River Access - Shirley	30.7
Sudbury River Access	51.86
Weymouth Back River Access	16.5
Total	**234.44**
Wildlife Sanctuaries (5)	
Carr Island Sanctuary	110.5
Henry Cabot Lodge Bird Sanctuary (Egg Rock)	2
J. C. Phillips Sanctuary	390.98
Milk Island Sanctuary	29
Ram Island Sanctuary	20
Total	**552.48**
Installations (3)	
Acton Installation	1.4
Ayer Game Farm	90.72
Northeast District HQ	15.7
Total	**107.82**
Other (3)	
Governor Thomas Dudley Park	4.5
King Phillip Woods	87.2
Mount Watatic Reservation	280
Total	**371.7**
Total Northeast Wildlife District	**15,867.74**

Southeast Wildlife District	**Acres**
Wildlife Management Areas (60)	
Bearse Pond WMA	5.8
Black Brook WMA	392.32
Blueberry Pond WMA	1.5
Brayton Point WMA	2.2
Burrage Pond WMA	1,904.10
Camp Edwards WMA	15,013.16
Canoe River WMA	116.6
Chase Garden Creek WMA	56.4
Church Homestead WMA	163
Clapps Pond WMA	68.35
Cooks Pond WMA	69.18
Copicut WMA	3,992.56
Dartmoor Farm WMA	473
Dennis Grassy Pond WMA	7.24
Eastham Salt Marsh WMA	7.44
English Salt Marsh WMA	288.5
Erwin S. Wilder WMA	933.53
Fisk Forestdale WMA	235
Fall River/Freetown WMA (by agreement)	0
Fox Island WMA	71.1
Frances A. Crane WMA	2,165.31

Freetown Swamp WMA	337
Gosnold WMA	3.45
Halfway Pond WMA	122.64
Haskell Swamp WMA	3,074.96
Head of the Plains WMA	2
Hockomock Swamp WMA	4,146.86
Hog Ponds WMA	24.5
Hyannis Ponds WMA	365
Katama Plains WMA	18.57
Maple Springs WMA	129.2
Marconi WMA (by agreement)	0
Mashpee Pine Barrens WMA	184.35
Mashpee River WMA	41.6
Meetinghouse Swamp WMA	123.0
Miacomet Heath WMA	3.83
Muddy Pond WMA	72
Myles Standish State Forest WMA (by agreement)	0
Noquochoke WMA	204.5
North Attleborough WMA	36.46
Old Sandwich Game Farm WMA	93.13
Olivers Pond WMA	12
Peterson Swamp WMA	250
Pickerel Cove WMA	15.9
Plymouth Grassy Pond WMA	25.5
Poor Meadow Brook WMA	117.21
Provincetown Corridor WMA	122.0
Purchade Brook WMA	106
Quashnet River WMA	463.04
Red Brook WMA	683.2
Rochester WMA	70
Rocky Gutter WMA	3,083.83
Sandwich Hollows WMA	224.2
Sly Pond WMA	192
South Shore Marshes WMA	22.4
South Triangle Pond WMA	47.5
Taunton River WMA	349.17
Triangle Pond WMA	92.16
Wasque Point WMA	99.5
West Meadows WMA	231.82
Total	**41,156.77**
Wildlife Conservation Easements (24)	
Acushnet River WCE	30.2
Agawam Mill Pond Access WCE	0.5
Agawam River WCE	3.98
Angeline Brook WCE	50.7
Assawompsett Pond Complex WCE	3,065
Bettys Neck WCE	329.22
Billington Sea WCE	69.74
Brandt Island Cove WCE	109.52
Bread and Cheese Brook WCE	5.52
Camp Cachelot WCE	789
Halfway Pond WCE	28
Lake Nippenicket WCE	8.35
Pickerel Cove WCE	78.3
Pilgrim Springs WCE	16.05
Plymouth Pine Hill WCE	240.7
Plymouth Town Forest WCE	296
Poor Meadow Brook WCE	101
Quashnet River WCE	14.1
Santuit Pond WCE	293
Sippican Woods WCE	390.14
Stump Brook Reservoir WCE	174
Taunton River WCE	125.07
Watuppa Reservation WCE	4,300
Weweantic River WCE	10.08
Total	**10,528.17**
Wildlife Conservation Restrictions (2)	
Plymouth Grassy Pond WCR	33.9
Taunton River WCR	4
Total	**37.9**
Access Areas (18)	
Agawam Mill Pond Access	1.4
Bakers Pond Access	1.75
Barnstable Harbor Access	2.78
Big Sandy Pond Access	0.2
Childs River Access	0.25
Cook Pond Access	3
Dogfish Bar Beach Access	2.4
Great Herring Pond Access	1.06
Johns Pond Access	0.52
Mashpee-Wakeby Pond Access	25
Nemasket River Access	0.46
Popponesset Beach Access	1.5
Robbins Pond Access	1
Scorton Creek Access	5.48
Shubael Pond Access	0.35
Snipatuit Pond Access	0.5
Spectacle Pond Access	0.5
Tispaquin Pond Access	6
Total	**54.15**
Wildlife Sanctuaries (4)	
Billingsgate Island Sanctuary	6.5
Penikese Island Sanctuary	60
Ram Island Sanctuary	2
Tarpaulin Cove Sanctuary	4.5
Total	**73**
Installations (3)	
Lobster Hatchery	14.8
Sandwich Fish Hatchery	69.76
Southeast District HQ	29.8
Total	**114.36**
Total Southeast Wildlife District	**51,964.35**

Total Massachusetts Wildlife Lands Acreage, by Area Type

Type	Acres
Wildlife Management Areas (218)	150,850.93
Wildlife Conservation Easements (103)	44,607.39
Wildlife Conservation Restrictions (10)	580.51
Access Areas (64)	1,722.78
Wildlife Sanctuaries (13)	1,428.39
Installations (10)	736.75
Other (4)	514.79
Total Massachusetts Wildlife Lands	**200,441.54**

FEDERAL AID PROGRAM ADMINISTRATION

Michael S. Sawyers
Federal Aid Coordinator

Overview

The Federal Aid Coordinator, acting through the Deputy Director of Administration, implements the DFW's Federal Aid program, including oversight of documentation, reporting, compliance with acts and regulations, and other requirements for the administration of federal grants, as well as serving 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, $5,265,754, was an increase over last year's apportionment. These funds are available for wildlife restoration projects and hunter education. The following 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 $3,598,719 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 $539,807 (15%); and the balance of $3,058,911 was equally divided between the Division of Marine Fisheries and the DFW ($1,529,456 each).

Twelve projects were obligated with the OFBA and DFW shares of the Dingell-Johnson and Wallop-Breaux funds. The OFBA, in cooperation with the DFW, had seven boat accommodation grants active in FY 13. 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 13 State Wildlife Grant apportionment of $688,279 was a decrease 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, regional conservation needs, and in the development and implementation of our Comprehensive Wildlife Conservation Strategy (CWCS), also referred to as the State Wildlife Action Plan (SWAP).

Through a multi-state regional effort, the states of New Hampshire, Connecticut, New York, Maine, and Massachusetts were successfully awarded a total of $2,000,000 through the FY 10 and FY 11 national State Wildlife Grant competitive programs to implement the Rangewide New England Cottontail (NEC) Initiative. Massachusetts' share of the funds ($501,000) will be used to restore NEC habitat in Massachusetts. Implementation of the NEC Initiative will continue through FY 14.

The DFW was also awarded $58,000 through the 2011 national State Wildlife Grant competitive program to fund the Northeast Blanding's Turtle Initiative. The DFW is partnering with the states of Maine, New Hampshire, Pennsylvania, and New York.

The Endangered Species Act (Section 6)

DFW's apportionment of $45,000 was an increase over the previous year apportionment. Funds will be used to reimburse the Federally-listed Plant Monitoring and Management project and Piping Plover Piping Plover Monitoring, Management, and Research.

Near the close of FY 11, the DFW was awarded $15,600 under the USFWS White-nose Syndrome Funding Opportunity to acquire materials used to initiate long-term summer bat surveys. Grant implementation occurred in FY 12 and the grant was closed in early FY 13.

Landowner Incentive Program (LIP)

The federal government did not fund the LIP in FY 13; as a result the DFW could not apply for federal funding for its state program. The DFW is actively pursing funding to continue the implementation of this program.

The DFW used prior funding to complete the implementation of the FY 13 projects. In FY 07, the DFW had received a combined award of $1,029,510 under this highly competitive program, which was an increase when compared to the FY 06 award of $180,000. The LIP awards are divided into two tiers. Our FY 07 Tier I

apportionment of $180,000 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 activities under the Landowner Incentive Program, please see page 43.

Environmental Protection Agency

In FY 11, the DFW was successfully awarded $280,000 through the competitive Wetland Program Development grant program for the development and implementation of a vernal pool and rare species information system. Implementation of the project was completed and closed in early FY 13.

Audits

The office of the State Auditor typically conducts a state audit of the DFW Federal Aid Program once every two years and the U.S. Department of Interior, Office of Inspector General, conducts a federal audit of the program once every 5 years. No audits were active in FY 13.

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.

Federal Aid Program Personnel

Kris McCarthy, *Assistant Director of Finance and Administration*
Michael Sawyers, *Federal Aid Coordinator (part-year)*
Lori Cookman, *Fiscal Program Coordinator*
Jessica Lane, *Assistant to the Federal Aid Coordinator*
Debbie McGrath, *Federal Aid Bookkeeper*

MAINTENANCE & DEVELOPMENT

Mark S. Tisa, Ph.D.
Project Manager

Overview

FY 13 was a busy and exciting year for us at the Division of Fisheries and Wildlife.

The Division of Fisheries and Wildlife had its Field Headquarters located in a three-storey brick building known as the Richard Cronin Building (named after a former Director of the Division of Fisheries and Wildlife) from the 1970s until the summer of 2012. The building was originally constructed as a Division of Youth Services dormitory in 1932 for the Lyman School Complex. The Cronin Building was not accessible under current codes and standards, and life-safety systems were not in place. Building systems such as the electrical, plumbing, heating, and ventilation were outdated, and there was no air conditioning system or fire-suppression system. The building was also found to contain hazardous materials, including asbestos and lead-based paint. The facility lacked full accessibility from the building site, within the building, and to restroom facilities.

Within the last 10 to 15 years, DFW outgrew its space in the Cronin Building, and three trailers located adjacent to the building were added to accommodate staff. These trailers had no plumbing or restroom facilities and there were only two bathrooms in the Cronin Building serving 90 staff and visitors. The Division began efforts to secure funding for a new Field Headquarters starting in the year 2000. Between 2000 and 2011, three extensive building studies were conducted by two different architectural firms costing hundreds of thousands of dollars as well as a significant investment of DFW's senior management's time. These studies explored all options, from renovation of the existing building to the construction of a new zero-net-energy building. Finally, just days before Thanksgiving in 2011, the Division received word from the Dept. of Capital Asset Management (DCAM) that the new building was being funded. It was one of just three projects selected by Governor Patrick's Zero Net Energy Building Taskforce and it will be the first public sector zero net energy building in the Commonwealth of Massachusetts.

With funding for the new building now in place, it was time to get started. Demolition of the old building Field Headquarters and its trailers and storage shed facilities was to commence in late summer/early fall of 2012. We knew we had a lot of work ahead of us. The first action that needed to be taken was to secure temporary office space for the duration of the building project, which was slated to take approximately 2 years from the start of demolition. Working with DCAM, DFW explored finding vacant office space in a 10-15-mile radius of Westborough. Unfortunately, nothing was available within the time frame that we had to be out of our existing building. Again working with DCAM, we were able to acquire leased office space in nearby West Boylston at 100 Hartwell Street. The lease is for 2 years, starting in September 2012 and running through September 2014, with a 6-month extension option if needed.

Now that we had secured our temporary office space, our next mission was the massive undertaking of cleaning out and packing up our old office. Essentially, it took the entire staff working together for 3 months (June, July and August of 2012) to get the job completed. The move went off according to schedule, without a hitch, and we were in our temporary office space by the first week of September 2012. Further, the temporary office space has worked out well to date without any major issues.

Demolition of the old building commenced immediately after our departure, with a formal groundbreaking ceremony led by the governor in December 2012. By June 30, 2013, all the steel for the new building had been erected, the roof was on, and the walls were going up. The building will be weather tight by the end of fall 2013. The new building is on schedule and anticipated completion date is late spring/early summer 2014.

Designed by Architerra, Inc., out of Boston, the new Field Headquarters will be 45,000 square feet *(the old facility was less than 10,000 square feet)*. The facility is designed to produce as much energy on-site from clean renewable sources as it consumes. The Field Headquarters building will produce all of its annual energy needs through a highly efficient, 290-kilowatt rooftop solar panel array. The energy needs of the building have been driven down to levels approximately 60% below typical buildings of this type through the design of a high-performance exterior building envelope and the use of energy-efficient heating and cooling systems, including a closed-loop geothermal well system, radiant ceilings, and outside-air ventilation with heat recovery. The building includes a number of other sustainable design elements, including orientation on the site to minimize heating and cooling energy use, use of natural light, on-site storm water recharge, use of low maintenance native plantings, and more. The building is designed to achieve either a LEED gold or platinum certification.

It will be a public destination offering new spaces for teaching and outreach, educational displays, and unprecedented access to the many wildlife and habitat resources and publications offered by DFW. The building will accommodate approximately 120 total employees, including about 90 Division of Fisheries and Wildlife employees that worked at the former Field Headquarters building. In addition, DFW will close one of its offices in Ayer and relocate approximately five employees in the Hunter Education Program to the New Field Headquarters building. Further, nine employees from the DFG's Office of Fishing and Boating Access working in outdated office space in Brighton, will also be relocated into the new facility. This is a dynamic, state-of-the art office building with ample meeting, support, and storage space. This program includes a 150-person flexible multi-purpose room, classrooms, environmental review conference rooms, reference library, Geographic Information Systems (GIS) laboratory, and field research (wet-bench) laboratories. At the heart of the building, a two-story central gathering space provides views to the wildlife management lands to the east, and access to an outdoor terrace perched on the edge of the hilltop.

Fleet Maintenance

Gary Zima, now with the Information and Education Section, continues to oversee the operations of the Division's vehicle fleet. In FY 13, DFW trade-in vehicles were surrendered to the state auction lot, vehicles were relocated among agency installations, the Division's database of fleet vehicles was maintained, and the Field Headquarters' pool vehicles were maintained and repaired. There were no additions to the fleet.

LEGISLATIVE REPORT

Jack Buckley
Deputy Director and Legislative Liaison

During FY 13, there were no legislative actions that had an impact on fish and wildlife in the Commonwealth.

PERSONNEL REPORT

Johanna Zabriskie
DFG Human Resources Officer

New Hires - Employees

Name	Title	Action	Date of Action
Hazelton, Peter D.	Conservation Biologist III	New Hire	06/16/13
Stolarski, Jason	Aquatic Biologist III	New Hire	01/13/13

New Hires - Contractors

Name	Title	Action	Date of Action
Frost, Karro A.	Scientists	New Hire	01/13/13
Cardoza, James E.	Researchers	Re-hire	11/18/12
Huguenin, Tara L.	Researchers	Transfer to Contract Position	08/26/12

Seasonals and Interns

LaPlante, Ethan D.	Tern Colony Project	Contracted Seasonal Hire	05/19/13
Correia, Jenna	Tern Colony Project	Contracted Seasonal Hire	05/12/13
Dion, Justin R.	Tern Colony Project	Contracted Seasonal Hire	05/06/13
LaFlamme, Derek	Tern Colony Project	Contracted Seasonal Hire	05/03/13
McCarron, Jordan	Stewardship Intern	Contracted Intern	05/01/13
Cunningham, Peter	Tern Colony Project	Contracted Seasonal Hire	04/29/13
Agri, James	Fisheries Technician - Merrimack River	Contracted Seasonal Hire	04/07/13
Mercer, Owen	Fisheries Technician - Merrimack River	Contracted Seasonal Hire	04/07/13
Pszybyzs, Tara	Fisheries Technician - Merrimack River	Contracted Seasonal Hire	04/07/13
Johnson, Jason	Fisheries Technician - Connecticut River	Contracted Seasonal Hire	03/31/13
Kipetz, Brian	Fisheries Technician - Connecticut River	Contracted Seasonal Hire	03/31/13
McDermott, Derek	Fisheries Technician - Connecticut River	Contracted Seasonal Hire	03/31/13

Terminations - Employees

Name	Title	Action	Date of Action
Bodary, Kimberly	Admin. Assistant to the Deputy Director	Resigned	05/22/13
English, Juliette	Admin. Assistant to the Director	Retired	02/06/13

Terminations - Contractors

Name	Title	Action	Date of Action
Hoenig, Amy S.	Researcher	Promoted	01/12/13
Maier, Sarah M.	Researcher	Promoted	08/25/12
Sawyers, Michael S.	Scientist	Promoted	05/18/13
Agri, James	Fisheries Technician - Merrimac River	End of Seasonal Employment	07/15/12
Correia, Jenna	Tern Colony Project	End of Seasonal Employment	08/11/12
Demoranville, Kristen	Tern Colony Project	End of Seasonal Employment	08/18/12
Dion, Justin	Tern Colony Project	End of Seasonal Employment	08/11/12
Herman, Rachael	Tern Colony Project	End of Seasonal Employment	08/18/12
Johnson, Jason	Fisheries Technician - Connecticut River	End of Seasonal Employment	09/29/12
Kipetz, Brian	Fisheries Technician - Connecticut River	End of Seasonal Employment	09/29/12
McDermott, Derek	Fisheries Technician - Connecticut River	End of Seasonal Employment	09/29/12
Mercer, Owen	Fisheries Technician - Merrimack River	End of Seasonal Employment	08/15/12
Pszybyzs, Tara	Fisheries Technician - Merrimack River	End of Seasonal Employment	07/15/12
Servison, Margo	Tern Colony Project	End of Seasonal Employment	08/11/12

Promotions

Name	Title	Action	Date
Sawyers, Michael S.	Aquatic Biol. III - Federal Aid Coordinator	Promotion from Contractor	05/19/13
Sacco, Susan M.	Prog. Coord. II - Executive Asst. to the Dir.	Promotion	03/24/13
Hoenig, Amy S.	Cons. Biol. II - Endang. Species Review Bio.	Promotion from Contractor	01/13/13
Cookman, Lori	Prog. Coord. II - Fiscal Prog. Coord. Federal Aid	Promotion	09/09/12
Maier, Sarah M.	Conservation Biologist I	Promotion from Contractor	08/26/12
Larson, Marion E.	Chief, Information & Education	Promotion to Management	07/15/12

Reclassifications

Maier, Sarah	Conservation Biologist	Reclassification	01/27/13
Arini, Robert	Aquatic Biologist	Reclassification	08/12/12

FINANCIAL REPORT

Administrative Staff

Kristin McCarthy, *Assistant Director of Finance and Administration*

Procurement and Payables

Yunus Khalifa, *Purchasing Coordinator*
Kathleen Plett, *Contract Coordinator*
Mary Cavaliere
Gail Gibson
Lillian Hew

Revenue

Robert Oliver, *Revenue Coordinator*
Carl Lui
David Manzer

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, 2012 to June 30, 2013

PROGRAMS/ASSESSMENTS	EXPENDITURES	PERCENTAGES
Administration:		
Administration	$1,484,743	
Information-Education	$836,760	
Rent	$269,410	
Total	**$2,590,914**	18%
Fisheries and Wildlife Programs:		
Hatcheries	$2,191,366	
Game Bird Program	$536,292	
Seasonals	$57,512	
Cooperative Units	$126,245	
Fisheries and Wildlife Management	$5,037,341	
Total	**$7,948,756**	55%
Other Programs:		
Land Acquisitions	$1,492,237	
Waterfowl Management Program	$65,000	
Hunter Safety Program	$346,521	
Total	**$1,903,758**	13%
Other Assessments:		
Payroll Taxes	$101,467	
GI and Other Fringe Benefits	$1,995,084	
Total	**$2,096,551**	14%
TOTAL EXPENDITURES	**$14,539,979**	**100%**

Summary
Revenues, Expenditures and Fund Equity
Natural Heritage & Endangered Species Fund
July 1, 2012 to June 30, 2013

REVENUES:	
Natural Heritage and Endangered Species Tax Checkoff Donations	$146,466
Sales	$7,642
State Wildlife Grant (SWG)	$659,773
NRCS Wildlife Habitat Incentives Program (WHIP)	$185,331
Environmental Protection Agency (EPA)	$225,085
Massachusetts Endangered Species Act Fees	$465,600
Contracts	$2,000
Direct Donations	$5,903
Interest	$203
TOTAL REVENUES:	***$1,698,002***
EXPENDITURES:	
Natural Heritage and Endangered Species Program	$939,562
Tern Restoration	$131,760
Wildlife Habitat Incentive Program	$120,688
State Wildlife Grant	$31,88
North American Wildlife Conservation Act	$50,135
TOTAL EXPENDITURES:	***$1,274,034***
FUND EQUITY AS OF JUNE 30, 2013	***$1,552,425***

Other Funds and Programs Expenditures Division-wide
July 1, 2012 to June 30, 2013

CAPITAL OUTLAY FUNDS:	
Land Protection - Habitat Management CR Stewardship	$68,160
BioMap2	$66,884
Staffing for Land and Infrastructure Programs	$398,855
Hatchery/District/Westborough Field Headquarters Repairs	$206,849
TOTAL CAPITAL EXPENDITURES	***$740,749***
INTERDEPARTMENTAL SERVICE AGREEMENTS:	
Massachusetts Highway Department	
Accelerated Bridge Program	$74,556
Executive Office of Energy and Environmental Affairs	
Off Highway Vehicle Trust ISA	$37,000
TOTAL ISA EXPENDITURES	***$111,556***
Natural Heritage and Endangered Species Line Item	**$149,370**
FEDERAL GRANT ACCOUNTS:	
Landowner Incentive Program Tier 1	$56,751
Landowner Incentive Program Tier 2	$36,180
Chronic Wasting Disease	$8,826
TOTAL FEDERAL EXPENDITURES	***$101,757***
OTHER TRUST ACCOUNTS:	
Upland Sandpiper	$14,145
TOTAL OTHER TRUST EXPENDITURES	***$14,145***
TOTAL OTHER FUNDS AND PROGRAMS EXPENDITURES	***$1,117,576***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2012 to June 30, 2013

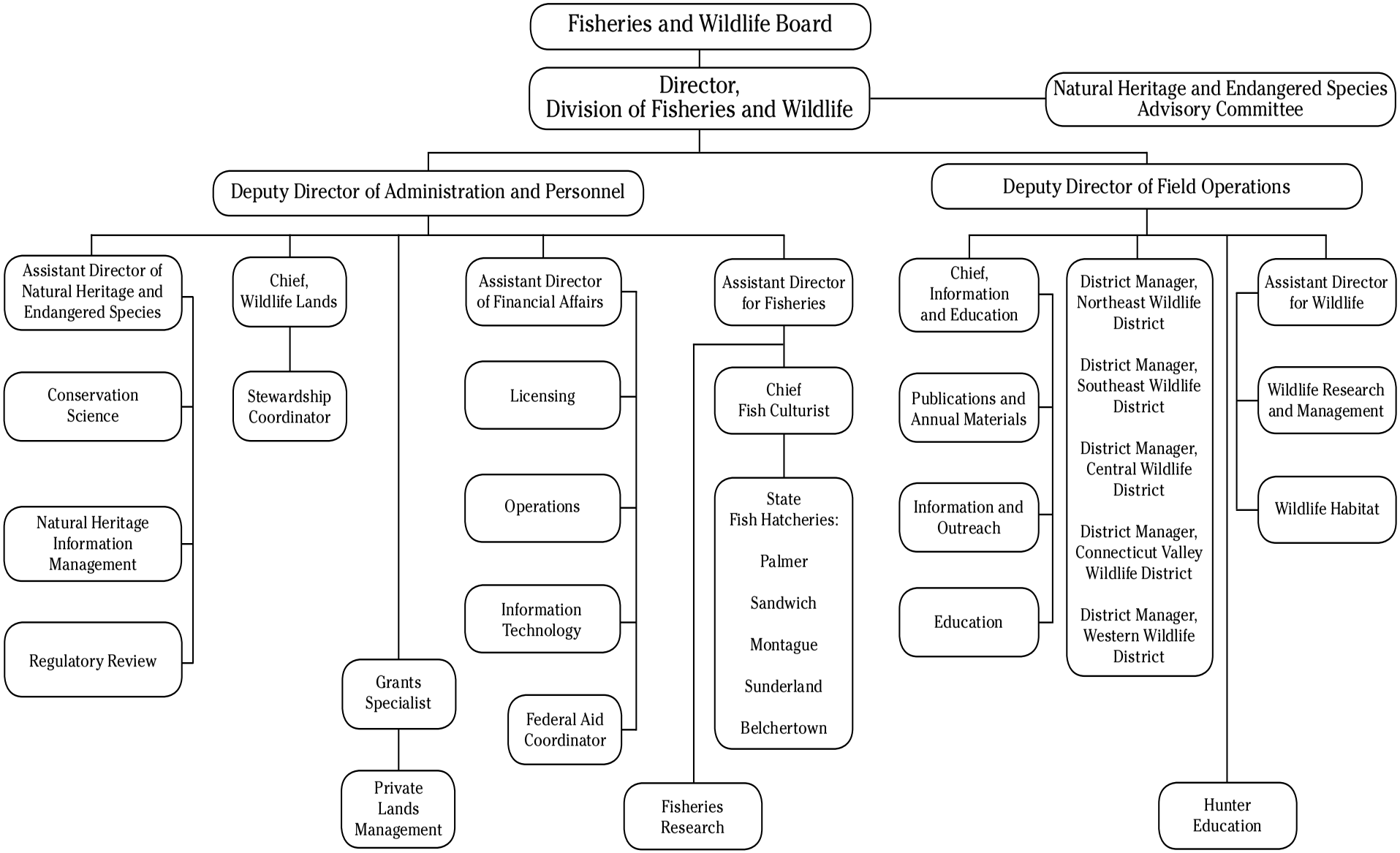
DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$5,001,393
Archery Stamps	$169,119
Primitive Firearm Stamps	$188,371
Waterfowl Stamps	$60,684
Wildlands Stamps	$932,495
Trap Registrations	$2,155
Antlerless Deer Permits	$170,280
Bear Permits	$46,800
Turkey Permits	$119,715
Special Licenses,Tags and Posters	$45,366
Magazine Subscriptions	$97,296
Sales,Other	$7,473
Fines and Penalties	$200
Rents	$28,365
Prior Year Refunds	$-
Donations	$33,522
Miscellaneous Income	$5,934
PAC	$22,883
NSF Charge/Debt Collection	$125
TOTAL REVENUES	***$6,932,176***
FEDERAL AID REIMBURSEMENTS:	
Dingell-Johnson (Fisheries)	$1,752,131
Pittman-Robertson (Wildlife)	$4,765,187
TOTAL REIMBURSEMENTS	***$6,517,317***
TAXES:	
Gasoline Tax Apportionment	$857,001
TOTAL TAXES	***$857,001***
OTHER FINANCIAL SOURCES:	
Reimbursement for Half-Price Licenses	$170,225
Investment Earnings	$2,268
TOTAL	***$172,493***
TOTAL REVENUE:	***$14,478,987***
FUND EQUITY AS OF JUNE 30, 2013	***$18,602,932***

License and Stamp Sales

July 1, 2012 to June 30, 2013

Code	Type of License	Unit Cost	Quantity	Amount
F1	Resident Citizen Fishing	22.50	106,890	$2,405,025
F2	Resident Citizen Minor Fishing	0.00	6,705	$-
F3	Resident Citizen Fishing (Age 65-69)	11.25	7,440	$83,700
F4	Resident Cit. Fishing (Over 70)	FREE	10,795	$-
F4	Resident Cit. Fishing (Handicapped)	FREE	290	$-
F6	Non-Res. Citizen/Alien Fishing	32.50	9,267	$301,178
F7	Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,507	$46,380
F8	Resident Fishing (3 day)	7.50	1,944	$14,580
F9	Non-Resident (Citizen) Minor Fishing	6.50	272	$1,768
	Quabbin 1-Day Fishing	5.00	3,143	$15,715
T1	Resident Citizen Trapping	30.50	467	$14,244
T2	Resident Citizen Minor Trapping	6.50	8	$52
T3	Resident Citizen Trapping (Age 65-69)	15.25	31	$473
H1	Resident Citizen Hunting	22.50	17,366	$390,735
H2	Resident Citizen Hunting (Age 65-69)	11.25	970	$10,913
H3	Resident Citizen Hunting (Paraplegics)	FREE	41	$-
H4	Resident Alien Hunting	22.50	164	$3,690
H5	Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,541	$240,125
H6	Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	1,047	$63,344
H8	Resident (Citizen) Minor Hunting	6.50	766	$4,979
S1	Resident Citizen Sporting	40.00	33,209	$1,328,360
S2	Resident Citizen Sporting (Age 65-69)	20.00	3,757	$75,140
S3	Resident Citizen Sporting (Over 70)	FREE	9,566	$-
S4	Resident Minor Sporting (Age 15-17)	8.00	728	$5,824
	TOTAL LICENSE SALES (GROSS)		***219,914***	***$5,006,222***
	Type of Stamp			
M1	Archery Stamps	5.10	33,148	$169,055
M2	Waterfowl Stamps	5.00	12,096	$60,480
M3	Primitive Firearm Stamps	5.10	36,938	$188,384
W1	Wildlands Stamps	5.00	170,866	$854,330
W2	Non-Resident Wildlands Stamps	5.00	15,634	$78,170
	Duplicate Stamps	2.50	0	$-
	TOTAL STAMP SALES (GROSS)		***268,682***	***$1,350,419***
	Previous Years Stamp Sales			
M1	Archery Stamps		24	$122
M2	Waterfowl Stamps		47	$235
M3	Primitive Firearm Stamps		12	$61
	TOTAL STAMP SALES (GROSS)		***83***	***$419***
	Fees Retained and Adjustments by Clerks			$(2,170)
	Refunds			$(2,827)
	TOTAL			$(**4,997**)
	TOTAL LICENSE/STAMP SALES (NET)			***$6,352,062***

Commonwealth of Massachusetts
Division of Fisheries and Wildlife Organizational Chart



June 2013