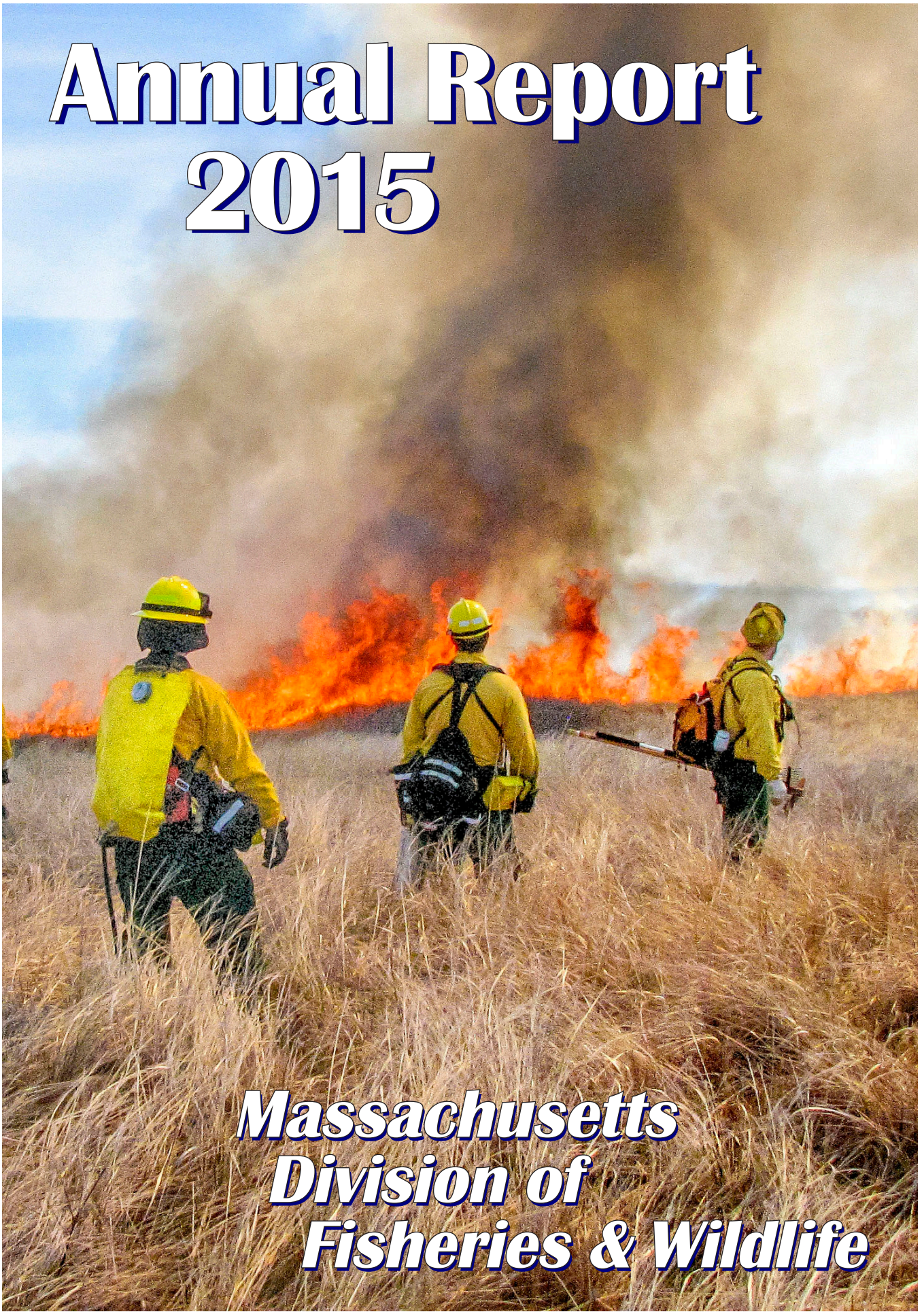
Annual Report 2015



Massachusetts Division of Fisheries & Wildlife

Annual Report 2015

Massachusetts Division of Fisheries & Wildlife

Wayne MacCallum (partial year)

Jack Buckley (partial year)

Director

Susan Sacco
Assistant to the Director

Jack Buckley (partial year)
Deputy Director
Administration

Jim Burnham
Administrative Assistant to the Deputy Director, Administration

Rob Deblinger, Ph.D. (partial year)
Deputy Director
Field Operations

Debbie McGrath
Administrative Assistant to the Deputy Director, Field Operations

Table of Contents

The Board Reports 6

Fisheries 16

Wildlife 30

Private Lands Habitat Management 47

Natural Heritage & Endangered Species Program 50

Information & Education 61

Hunter Education 71

District Reports 73

Wildlife Lands 88

Federal Aid Program 95

Maintenance and Development 97

Legislative Report 98

Personnel Report 99

Financial Report 101

DFW Organizational Chart 106

About the Cover:

Controlled burn on Penikese Island, to improve grassland habitat and nesting habitat for nesting terns. Photo © by Kimberley Justham, ***MassWildlife***.

THE BOARD REPORTS

George Darey
Chairman

Overview

The Massachusetts Fisheries and Wildlife Board consists of seven people appointed by the Governor to 5-year terms. By law, the individuals appointed to the Board are volunteers, receiving no remuneration 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 are brought before the Board each year, most of its meeting time is spent in review and scrutiny of proposals for regulatory changes and of agency programs.

The Division of Fisheries and Wildlife began a new chapter toward the end of FY 15 with the retirement of longtime Director Wayne MacCallum in March and the appointment of Deputy Director Jack Buckley as Acting Director, effective Mr. MacCallum's retirement. The Board members each voiced their gratitude to the outgoing Director and expressed their admiration for his many accomplishments during 25 years in the position.

Dr. Larson headed the committee charged by the Chairman to examine applications, conduct interviews, and make a recommendation to the Board for the permanent appointment of a Director. Dr. Larson reported to the May meeting that the committee unanimously recommended Jack Buckley, and the Board unanimously appointed him as the Division's new Director, effective immediately. All the Board members offered their congratulations to Director Buckley and expressed their excitement at being able to continue to work with him in his new capacity.

Administrative Matters

Conflict of Interest Disclosure

Director Wayne MacCallum reported at the July meeting of the Board that Department Counsel Rich Lehan had recommended he make some disclosures to the Board regarding certain activities he was engaged in as the Director of the DFW.

Director MacCallum explained that the Director of the DFW is the Clerk of the Massachusetts Outdoor Heritage Foundation (MOHF) by its bylaws, and that, because the Board is his hiring authority, he must make this disclosure to the Board. He elaborated that the MOHF was founded 14 years previously specifically to support the activities of the DFW by accepting funds for projects and creating educational materials, and that the formation of the MOHF was approved through to the Governor's office and by the State Ethics Commission. Director MacCallum explained that Counsel has said that there is an obscure provision in the conflict of interest law that indicates his role may compromise him in his dual roles, hence the disclosure.

The Director continued his disclosure by saying that the Massachusetts Sportsmen's Junior Conservation Camp (MSJCC), founded by the Division in 1949, is a co-ed camp to introduce young people to outdoor activities. As that camp has matured, the Director explained, it evolved into a 501(c)(3) to accept donations. There is now an MOU between the Division and the board of the camp; the Director and the Chief of I&E sit on that board. Director MacCallum stated that Counsel has advised that the two staff members disclose that relationship, and the appropriate disclosure forms were included in the Board's meeting packets.

Hyannis Ponds WMA Bike Path

In August, Chief of Wildlife Lands Craig MacDonnell explained that he was requesting a Board vote to approve a bike path easement along the northern edge of the Hyannis Ponds WMA property. He showed the Board a number of maps to provide the context and explain the details of the proposed transaction, stated that the Division was being given the Bridge Creek Conservation Area as a mitigation parcel by the Town of Barnstable, and that overall the exchange was very favorable to the Division. In response to a question from the Board, Chief MacDonnell reported that town conservation lands are currently open to hunting in Barnstable. He added that this project would add a level of perpetuity to that access. The Board voted unanimously in favor of approving the easement as requested.

Fiscal Year 2015 Spending Plan Review

Also in August, Deputy Director Buckley reported to the Board on the DFW's FY 2015 spending plan, detailing the revenues expected and the breakdown of how the money would be spent. He reported that there would be $3,085,000 in available monies, and that the total of new costs against those monies was going to be $2,985,000, leaving a balance of $100,000. Secretary Roche commented that, with the completion of the new Field Headquarters, the additional resources would advance the mission of the agency substantially.

Election of Officers

Board Secretary Michael Roche presided over the Board's annual election of officers at the October meeting. In a series of unanimous votes, the Board members reelected George Darey as Chairman, John Creedon as Vice Chair, and Michael Roche as Secretary.

Reorganization Proposal

At the other end of the fiscal year, then-acting Director Buckley responded in April to a mandate from the Board with a reorganization plan for the agency. The main differences from the old plan were the elimination of one of the Deputy Director positions and the creation of a new Assistant Director for Operations in charge of the Districts and permit issuance. Chairman Darey noted that Dr. Larson, Dr. Van Roo, and he had worked with Deputy Director Mark Tisa and other staff on this proposal.

Acting Director Buckley noted that he was asking for one year to implement and test the new structure, adding that it will be an experiment that could be altered in the future. The Board voted unanimously in favor of the reorganization plan as proposed.

McLaughlin Hatchery Pipeline

Director Buckley reported at the May meeting that a pipeline project to supply the McLaughlin Hatchery with water for its operations arose from a perfect set of circumstances, and came together in a few weeks. The EEA Secretary's office provided $2.5 million in slippage money, and the Massachusetts Water Resources Authority (MWRA) Board had voted to approve the withdrawals and was expected to sign the agreement on June 3. He reported that the EEA money will be spent first, and that he was requesting up to $500,000 from the Inland Game Fund, noting that all of it may not be needed. He also noted that with the electricity costs alone in the existing system, the money will be made back in 7 years, not counting labor. Chief of Hatcheries Ken Simmons provided an overview of the project, including detailing the current water-pumping system, the reasons why the proposed pipeline is needed, the multiple benefits it will confer, and the contingency measures and backup systems that will support it. The Board voted unanimously in favor of the proposal.

2015 State Wildlife Action Plan Update

Assistant Director for Wildlife John O'Leary reported at the June meeting that the State Wildlife Action Plan (SWAP; originally called the Comprehensive Wildlife Conservation Strategy when adopted in 2005) has to be renewed after 10 years, and that he and Habitat Protection Specialist Lynn Harper were coordinating the work of all the biologists to update and present the SWAP to the U.S. Fish and Wildlife Service for its approval by the September 2015 deadline, and it was time to put the draft SWAP out for public comment.

Assistant Director O'Leary stated that there are eight required elements to the SWAP:

1. Information on the distribution and abundance of the key species and their habitats
2. Descriptions, locations, and relative condition of key habitats and community types essential to the conservation of key species
3. Descriptions of the problems affecting the key species
4. Descriptions of conservation actions proposed to conserve key species and habitats
5. Descriptions of procedures for monitoring key species and habitats for plan effectiveness based on changing conditions and new information
6. Descriptions of procedures to review the SWAP at intervals not to exceed 10 years
7. Plans for coordinating the development, implementation, review, and revision of the SWAP with other agencies
8. Plans for public participation

Mr. O'Leary then discussed the other reports, projects, and associated data that had been used to update the information in the SWAP, including BioMap and *BioMap2*. The Board had been provided access to the document itself online.

Assistant Director O'Leary then highlighted the major changes from the first SWAP, which include the consideration of climate change as an influencing factor; the dropping of 33 species; the addition of plants (listed and uncommon), making a total of 555 SWAP species to that point; an expanded regional context (i.e., Regional Species of Greatest Conservation Need); and some of the accomplishments of the agency relative to SWAP species in the 10 years, 2005-2015. The Board voted unanimously in favor of the current draft and of putting it out for public comment.

Adopted Regulations and Other Votes of the Board

Display of Licenses (321 CMR 2.11) Regulations

At the July meeting, Assistant Director for Finance and Administration Kris McCarthy reviewed the proposed

regulation changes to 321 CMR 2.11, which had been the subject of a public hearing in the previous fiscal year and would clarify the use of an electronic signature through an online affirmation, clarify the possession of an electronic licenses on one's person, clarify harvest-tagging questions, and correct other housekeeping matters. Assistant Director McCarthy also stated that there were no comments received in the public comment period other than the approval stated during the public hearing by a representative of the Massachusetts Sportsmen's Council. The Board voted unanimously in favor of adopting the regulations as proposed.

MESA Listing and Delisting Proposals

Also at the July meeting, Assistant Director for the Natural Heritage and Endangered Species Program (NHESP) Tom French gave a presentation on recommended changes to the Massachusetts List of Endangered Threatened, and Special Concern Species. Invertebrate Zoologist Dr. Michael Nelson had coordinated the list-change effort and provided the details on the invertebrates and the plants. Assistant Director French reviewed the list-change process that NHESP staff follows and the specific criteria by which species are included in the MESA list. He said that species are listed as Endangered, Threatened, or Species of Special Concern, and that there are 432 species currently listed under MESA.

Assistant Director French provided handouts to the Board comprising the list of recommendations and a printed copy of the day's presentation, so that the Board would have the specifics. The Assistant Director showed the Board two detailed lists of the proposed status changes, and then either he or Dr. Nelson reviewed the specifics of each recommendation. There were a total of nine species to be removed from the list and four species (all of them plants) that should be added. In addition, seven currently listed species were recommended for a change in their status, either being down-listed or up-listed based on the circumstances. He reported that all of the proposed changes had been brought to the Natural Heritage and Endangered Species Advisory Committee at its last meeting, and that each proposed change had been reviewed and recommended by the NHESAC. The vote to take the proposed changes to a public hearing was unanimous.

To Establish Rules and Regulations Relative to the 2014-2015 Migratory Game Bird Seasons and Methods of Take

The August meeting brought Waterfowl Project Leader H Heusmann's annual presentation on the federal Migratory Game Bird Frameworks in a public hearing, wherein he noted that state seasons can be more restrictive than the federal frameworks but cannot be more liberal. He then presented the proposed regulations for the 2014-2015 seasons, by species.

Following the public hearing on the proposed dates and limits at which oral comments were accepted, the Board voted unanimously to adopt the Migratory Game Bird regulations as presented.

321 CMR 5.00: to Codify in Regulations the Division of Fisheries and Wildlife's Criteria, Procedures, and Related Definitions Used to Designate Waterbodies as Coldwater Fish Resources

After a brief recap of the presentation given at the public hearing held during the previous fiscal year and a review of changes made in response to public comments received by Deputy Director Buckley, the Board voted unanimously to approve the regulations as presented.

Bird Monitoring: Leyden WMA

Assistant Director for Wildlife John O'Leary introduced Andrew Vitz, the State Ornithologist, who was before the Board to talk about a migrating-songbird-monitoring project that was requesting permission to erect temporary radio towers, with no foundation or other permanent fixtures, on the DFW's property, and on the Leyden Wildlife Management Area in particular. Dr. Vitz's report detailed the request and the project, saying that the US Forest Service (Dr. David King) and the University of Massachusetts (Dr. Curtice Griffin, and Jennifer Smetzer) are initiating a project to establish a network of NanoTag receivers along the Connecticut River to track migrating birds during the spring and fall.

Dr. Vitz reported that the proposed study would deploy 8-12 receiving stations along a 100-mile stretch of the Connecticut River, and that the Leyden WMA is one of the team's proposed sites. He noted that the team plans to tag 150 birds per year for two years along this important corridor for migrating birds, whose stopover ecology is relatively unknown. The study will be looking at habitat use, migration rates, and stopover duration, with bird-tracking taking place from April through June and from August through September and focusing on species like Blackpoll Warbler, Swainson's Thrush, and White-throated Sparrow. The Board voted unanimously in approval of the research permit and the necessary permission to erect temporary structures on the WMA.

Concerning the Periodic Amendments to the List of Species Listed as Endangered, Threatened, and of Special Concern (321 CMR 10.90) and the Index to that List (321 CMR 10.91)

A review of the public-hearing presentation from October was provided by Invertebrate Zoologist Michael Nelson, who reported that the regulations as originally proposed are unchanged. The Board voted unanimously in favor of adopting the regulations as proposed.

To Establish and Amend Rules and Regulations Governing the Division of Fisheries and Wildlife's Designation of a Youth Deer Hunt [321 CMR 2.03(3) and 3.02(4)]

Assistant Director for Wildlife John O'Leary gave a brief review at the January meeting, including of the comments that had been received during and since the public hearing on the subject that had been held the previous October. The Board voted unanimously in favor

Photo © Caren Caljouw

State Ornithologist Drew Vitz with kestrel to be banded.

of adopting the regulations as presented, and to put the regulations into effect for the 2015 hunting seasons.

Relative to Proposed Rules and Regulations for the Hunting of Black Bear in Massachusetts [321 CMR 3.02(1) and 321 CMR 3.02(4)]

Also at the January meeting, Assistant Director for Wildlife John O'Leary gave a brief review of the changes proposed at the December public hearing on the regulations, including a discussion of the comments that had been received. He stated that the regulations as presented are unchanged from the original proposed regulations. The Board voted unanimously in favor of adopting the regulations as proposed.

The 2015 Antlerless Deer Permit Allocation Recommendations

After detailing staff findings on deer health and condition, age structure, and density-to-management-goals, first in the eastern and then in the central and western region of the state, Deer and Moose Project Leader David Stainbrook reported that the agency's future focus will be on two main areas: the rising deer numbers in areas with limited hunting access and restrictions to hunting, which is a major concern in the future because of expected forest, habitat, and wildlife impacts and human health and safety. He said that staff will begin investigating more aggressive approaches to address the issue under the regulated hunting framework. The second area of focus will be the collection of additional data, in the form of both forest health monitoring, which is crucial for understanding deer impacts across the state, and continued harvest-independent surveys, to verify our harvest-based estimates and to estimate deer densities in eastern Massachusetts.

Mr. Stainbrook then presented the proposed 2015 Antlerless Deer Permit allocation:

WMZ	Change from 2014	2015 Allocation
1	Θ	400
2	Θ	175
3	Θ	1,100
4N	Θ	375
4S	Θ	275
5	Θ	1,250
6	Θ	450
7	Θ	2,250
8	Θ	2,800
9	Θ	4,100
10	Θ	12,000
11	Θ	11,000
12	Θ	800
13	*Functionally Unlimited*	2,700
14		2,700

Secretary Roche asked when the Board could expect recommendations for the next phase of deer management. Mr. Stainbrook replied that he would come back the following year with substantial change recommendations. Director Buckley noted that we need to be careful that deer do not get to the point where people see them as they see beaver now, as a nuisance that should be exterminated. The Board voted unanimously in favor of adopting the allocations as proposed.

Proposals for New, Updated, or Amended Regulations

A List of the FY 15 Public Hearings, in Brief:

Public Hearing: to Establish and Amend Rules and Regulations Governing the Division of Fisheries and Wildlife's Designation of a Youth Deer Hunt

Public Hearing: to Amend the List of Species of Animals and Plants Protected by the Massachusetts Endangered Species Act

Public Hearing: to Establish and Amend the Division of Fisheries and Wildlife's Rules and Regulations Relative to the Hunting and Tagging of Bear.

Agency Program Reviews

Connecticut Valley District Reports

Connecticut Valley Wildlife District Supervisor Ralph Taylor gave two brief presentations on recent activities in his district, one at the July meeting and another at the May meeting.

In July, he reported on building repairs to the roof and siding of the mechanical and welding shop. He noted that he and his staff had finished its bear work for the season, with a total of 17 bears found; nine of them were new; three were females and they were collared; and all bears caught are ear-tagged. He also provided information about the District's monitoring of feeder

mortality, its barrel-trapping, and the winter den work. Supervisor Taylor reported that the Valley District has 22 active Bald Eagle pairs, with 14 of them on the Connecticut River, and that his staff had seen an increase in moose incidents.

Supervisor Taylor then gave an update on the ongoing work at the Southwick WMA to restore grassland habitat. He stated that he had had an information meeting in the town, and was happy to report that it looks like the berm-creating activities pictured in some early surveillance pictures are things of the past; he is hoping that will continue. He reported lots of patrols by OLE, Connecticut, and local police, including a recent high-fine violation. Also at Southwick, Supervisor Taylor reported the district's first controlled burn with our staff and DCR fire crews cooperating; he said it was spectacular to experience and very successful.

Relative to habitat restoration at the Green River WMA, Supervisor Taylor reported that he had been working on some drone (i.e., radio-controlled planes with cameras) experiments for possible monitoring activities. He reported that we need a certificate of authorization from the FAA to use the technology as an agency, then we can use it for quick looks at areas of interest (e.g., of eagles' nest), to conduct river surveys, to map an area, or to patrol a forest boundary.

Supervisor Taylor said that the other ongoing district activities, including stocking trout and following mowing regimes, had all gone very well this year.

At the May meeting the following year, Mr. Taylor reported that District staff would finish trout stocking the following week. He reported that one of the District's biggest problems recently was bear-feeding and consequent endangerment of both bears and people. He had GIS-based maps showing the routes collared females are following in their foraging routines and the number of times the bears were cycling back to the same feeding spots, crossing I-91 multiple times in the process.

Mr. Taylor stated that his District's eagle population is down by 2-3 birds this year, and that he was hoping to get more coming back next year. He also reported that he and his staff were getting to the end of the District's internal review of the Silvio O. Conte Refuge management plan.

Hunter Education Review

Deputy Director Rob Deblinger stated that the Chairman had set up a Board subcommittee to look at the Hunter Education Program (HEP) and try to assist in resolving any issues identified. The Deputy said that HEP Administrator Susan Langlois was unable to attend the Board meeting, but had been integrally involved in the review. He also noted that Secretary Roche had chaired the subcommittee, and that Dr. Van Roo and Ms. Booth had also served on it. He noted that the last review of the HEP was in FY 06.

Deputy Director Deblinger gave the meeting a brief overview of the mission, recent goals (2006-present), current organization and curriculum, extensive existing data about course enrollment and student demographics, and the identified needs of the program today. He then presented the recommendations of the subcommittee:

Create a four-member team of DFW-employed instructors to give classes at the Field Headquarters and in areas of the state with high demand that lack volunteer-instructor teams

Integrate hunter education with current recruitment-retention-reactivation efforts

Purchase additional equipment that is dedicated for the use of the DFW team.

Increase the use of the new database for prospective students to enroll more students more efficiently

Increase the quality of the student experience, including by reviewing the option to offer "live fire"

The Board voted unanimously in favor of adopting the recommendations as proposed.

Western District Report

At the September meeting, Supervisor Andrew Madden stated that the Western Wildlife District was winding down its summer work and transitioning to fall activities. He reported that some technicians were out mowing July through October, covering the entire length of the district, and would finish up by the end of the following week at Jug End. He reported that the district will begin fall trout stocking as soon as possible; he noted that he and his staff concentrate on the lakes and ponds, and also stock the Deerfield and the East Branch of the Westfield. He reported that his office is also getting a lot of calls and complaints about bears, that he has done a lot of talks with communities, and is also working with new local public safety officials. He noted that in Stockbridge only two bears were taken in the early hunt, while his office had nuisance-bear calls from that town every day in July.

Mr. Madden reminded the Board that his district had hosted a scholarship student from Wahconah High School with funds from the American Fisheries Society. He reported that the student worked full time for 8 weeks, 40 hours per week, paid by the American Fisheries Society. He stated that the district Fisheries Manager, Dana Ohman, gets credit for pulling the whole thing together, noting that the office also has and maintains an important relationship with Wahconah High School.

Supervisor Madden reported that the district had recently been able to replace inefficient sliding doors. He also reported that the new district Clerk, Deb Lipa, had started a month or so previously and was working out very well, adjusting well to District life. He noted that Ms. Lipa had already pulled her first bear tooth the previous week, and had earned many extra points for that effort.

Habitat Management Expansion

Chief of Conservation Science Jon Regosin began the October meeting presentation by reviewing the process and the selection criteria for the Key Sites project, which grew out of *BioMap2* (and was reported to the Board previously) and giving examples of important habitats on sites the DFW owns that require active management to persist and function, such as barrens, sandplain grasslands, and coastal plain ponds. Dr. Regosin also presented and reviewed the details of a flow chart that identified and tracked the funding sources that will be used to finance the management work proposed.

Habitat Program Leader John Scanlon then presented and discussed the projects that have already been completed, reporting that 445 acres on five WMAs had been selected on the basis of the Key Sites analysis and actively managed in FY 14, and providing detailed information on each project. Mr. Scanlon proceeded to list the projects on 580 acres in five WMAs that are planned for FY 15, and then offered the details of each, including pointing out the type of habitat and the other distinguishing features, such as the number of state- or federally listed species present. He closed with an extended analysis that began with the landscape habitat goals of the Division, which were approved by the Board in 1996, and then showed through a series of tables the total number of acres that were managed in FY 14, will be managed in FY 15, and would have to be managed annually in order to reach those goals, demonstrating the sustained effort on the agency's part that will be required for the goals to be achievable.

Deputy Director Buckley noted that these habitat-management projects were a true collaboration among the sections. In particular, Wildlife, Natural Heritage, and Administration are hugely collaborative to work together and make this happen seamlessly. He also observed that the projects have the added advantage of being appealing to the EEA Secretary's office because they are science-driven.

Social Media Presentation

Outreach and Marketing Specialist Nicole DeAngelis gave the Board a presentation on the I&E Section's proposal to launch a Facebook page for the agency. Ms. DeAngelis began by giving the Board an overview of what Facebook is, stating that it is the largest social media platform in the world, allowing users to share messages, pictures, videos, and events with their 'friends,' and she noted that many governments, organizations, and businesses are on Facebook. She then explained that the Division can use Facebook to interact and engage very directly with its constituents, noting that Facebook is the second most-accessed website in the U.S., behind Google; that over 70% of online adults use Facebook, including nearly 90% of young adults (18-29); and that half of adult Facebook users say they get their news on Facebook. The conclusion of her analysis was that the agency needs a presence on social media to continue to reach our constituents and that Facebook, with its flexibility of format and capacity for photos and video, is the best platform available to the Division to do that.

Ms. DeAngelis gave the Board a quick look at how other state agencies are using social media and how she would use feedback from social media to improve our outreach. She reported that, in Massachusetts, 26 state agencies use Facebook, adding that the majority of comparable agencies in other states also currently use Facebook (39 out of 50) and that they average about 34,000 followers. She then detailed the benefits of a Facebook presence for the agency, noting that it is a powerful tool to help staff share information, promote events and programs, listen to what constituents are saying and asking, and engage with them by responding and collaborating in a timely way. She concluded her presentation by showing the Board what the DFW page would look like initially by providing a tour of the general layout, component sections, and sample content on an unpublished version of a DFW Facebook page. The Board voted unanimously in favor of approving the creation of an agency Facebook page as proposed.

Trout Program Overview

At the November meeting, Chief of Hatcheries Dr. Ken Simmons reported on the DFW's hatchery operations. Dr. Simmons began by recounting the history of hatcheries in Massachusetts, which began with the first state trout hatchery, established by Theodore Lyman at Maple Springs in Wareham in 1868. The main reasons to stock hatchery-raised fish, he noted, are to augment natural fish populations and to provide quality angling opportunities and experiences statewide. He continued his report by discussing the DFW trout hatchery program's goals, the species spawned and grown, and detailed information and statistics for each hatchery, including the date of establishment; the species grown; the annual production goals; the particular programmatic focus of each, if any; and the type of water supply.

Dr. Simmons reported that the major factors that control hatchery production include water quantity and quality, rearing space available, the species grown, the permitted discharge limits (under National Pollutant Discharge Elimination System, NPDES, permits), disease and predation levels present, and the age of the fish when stocked. He also stated that the DFW produces such great trout because each hatchery determines and maintains its specific optimal rearing density by species and age, provides outstanding husbandry by a great staff, uses the best quality feed, and has budgetary support for infrastructure maintenance and upgrade.

Dr. Simmons then explained in detail that, in 1984, the Board made a decision to allow the hatchery system to favor increasing the size of the fish stocked over the number of fish stocked. He reported that this was important because a hatchery's yield in pounds of fish is the same given equal food, space, and water volume, so the hatcheries produce fewer fish, but it is the same amount of fish, which means, on average, each fish will

Time Period	Percent of fish at +12 inches	Average total number of fish stocked	Average weight per fish (pounds)
Pre-1984	2.3	1,159,955	0.42
1984 – 1990	36	831,972	0.59
1991 – 1999	56	760,556	0.68
2000 – 2008	71	628,025	0.70
2009 – 2014	75	583,349	0.78

be larger. Dr. Simmons presented a table to graphically illustrate the change in the size over time of the fish stocked by Massachusetts' hatcheries since 1984:

In summary, Dr. Simmons stated that hatchery production and the size of the fish are functions of rearing density, water quantity and quality, food quality, fish age at stocking, and good husbandry at each hatchery.

Stewardship of Wildlife Lands

At the following monthly meeting, Chief of Wildlife Lands Craig MacDonnell presented a detailed report on the agency's FY 14 work and its FY 15 ongoing and planned activities to catch up with its stewardship obligations with respect to fee lands and lands protected by WCEs. Chief MacDonnell went into great detail about the specific work in both fiscal years, which was and will be directed primarily at locating and marking boundaries on all properties; surveys needed to determine boundaries and settle encroachment issues; Baseline Documentation Reports (BDRs), which catalog the condition of the properties at the time of inspection; CR monitoring, including site walks and outreach to landowners on privately owned lands; forestry activities on WCEs, where landowners are filing management plans or cutting plans that may impact existing and future habitats; and staffing needs, which will be addressed by interns as well as six new positions, including a Stewardship Associate in the Realty section and five Stewardship Specialists, one in each of the Wildlife Districts.

Chief MacDonnell stated that some of the backlog of work will be accomplished by contractors who have experience in the types of work needed and are known to be skilled. He stressed that a long-term orientation is required for the work planned; there is a lot of work to do, and more projects in the pipeline, so he is encouraged by the resources available while also cognizant of the amount of work to be done.

Introduction to the Wildlands Viewer

Communications Specialist Emily Stolarski gave the Board a brief introduction to the agency's new Wildlands Viewer, which is a Web-based version of our old Wildlife Management Area maps that has many more helpful features, several different uses, and more possibilities in the future.

With 213 WMAs, 106 WCEs, and 68 Access Areas, Ms. Stolarski stated that the agency needed an efficient way to disseminate and share the maps with visitors to our Website, update the maps quickly whenever the boundaries changed with a new acquisition, and avoid the waste and redundancy of ready-printed maps. She reported that the new system allows a visitor to the Website to quickly find and print a map tailored to his/her needs by searching for the properties by name or by town, then selecting and downloading the maps, which come from their own datalayer on Mass GIS. The ease with which staff can update property boundaries using GIS software is a big improvement over the old system. The standardized look of the maps, combined with their customized scale, makes for a big improvement over the old PDF maps. Ms. Stolarski then gave the Board a 'test drive' by opening the software on the Internet and demonstrating its features.

Trends in Human-Wildlife Interactions in Massachusetts

Wildlife Biologist Michael Huguenin reported at the February meeting on a project the agency has been focusing on for the last 5 years: reports of interactions between humans and wildlife. He noted that we have been collecting these data for several decades, and the interactions have provided important connections with the public, regardless of their level of affinity or affiliation with the agency. Mr. Huguenin observed that, in many ways, fielding these reports is staff's main link to the general public outside of our traditional constituency.

Over the 5-year period, staff has used these data to organize and categorize reports, conduct site visits, and compile basic summaries. It was the objective of this study to evaluate how these data are collected and use the information to evaluate trends across the state. He stated that staff receives these reports in high volume and was interested in analyzing the data more closely in order to develop proactive management strategies. Mr. Huguenin reported that staff is using a science-based approach to investigate patterns in reports of human-wildlife interactions and to uncover variables that help predict the type and frequency of human-wildlife interactions. He discussed some of the ways staff uses these data, and showed some common ways that they can summarize the data in order to glean important information, and stressed that often this is the only contact we have with these individuals. Also, he noted that the interaction they are reporting may be the limit of their contact with wildlife, so we need to be sure we have the best information for providing the best advice.

Rare Species and Forestry Practices

At the March meeting, Environmental Review Chief Eve Schlüter reported that she was before the Board to inform its members of updates to the NHESP's review process for forestry operations and the resource-protective measures, or Forestry Conservation Management Practices (CMP), that are required for lands under forest management to protect MESA-listed species. Dr. Schlüter began by explaining that the goal is to protect listed species and their habitats while enabling the continued sustainable management of timber products through active engagement with stakeholders and the implementation of science-based guidelines for conservation of listed species during forest harvests. She stated that the key is a balance between resource protection and sustainable resource use, with opportunities for improvement that staff identified based on lessons learned in the review process since 2007, when the current CMPs were first adopted, and new scientific research into the effects of various aspects of forest harvesting on aquatic resources, listed species, etc. The NHESP adopted a two-pronged approach that sought to streamline NHESP review while evaluating existing management guidelines. She noted that this approach is in line with the Division's renewed emphasis on stewardship, may help keep forested lands in forestry, and addresses criticisms and concerns from practitioners and the public.

Dr. Schlüter introduced NRCS Review Biologist Brent Powers, who presented the majority of the report. Mr. Powers delved into the details of the plan, citing numerous species as examples to show the on-the-ground implications of the revisions, with clear before and after graphics that showed the differences in potential impacts to resources between the 2007 CMPs and the proposed 2015 CMPs. He then explained the process to come, including a public-comment period; multiple presentations and outreach events explaining the proposals and implications to landowners, foresters, and loggers; a period of field verification and feedback; and, eventually, future CMPs geared toward specific habitat types or suites of species.

In response to questions from the Board, Mr. Powers reported that DCR Service Foresters do site visits and monitoring and are charged with enforcement of NHESP measures. He elaborated that when a forest cutting plan is submitted, it is sent to the NHESP, and the reviewer adds CMPs and other requirements to protect listed species. Mr. Powers explained that the Service Foresters go out with the forester in charge and explain the requirements, and that a Service Forester also signs off on the result at the end of the cut. Asked for the rationale for the vernal-pool changes, Mr. Powers reported that there is a rough threshold of 45%-55% canopy retention on average in existing research and the literature. He explained that NHESP went with 65% in the 2015 revision, which is a little more protective, adding that 75% retention (2007) turns out to be very restrictive for loggers, while the agency actually wants to encourage landowners who want to harvest timber products and thereby will keep their lands out of development. Dr. Schlüter added that the process is also iterative, with biological staff able to review the practices and results again.

Acting Director Buckley provided some larger context, including the agency's positive relationship with the Massachusetts Forest Association. He also noted that the results of forestry operations are very different from traditional development. Many operations are very small, with correspondingly small margins. He also observed that Mr. Powers has been very effective, with his personal background, in talking to the foresters and making connections, and the review process has benefited as a result.

2014 Deer Review

In his annual report to the Board at the May monthly meeting, Deer and Moose Project Leader David Stainbrook provided updates on recent work and projects, explained the goals behind our deer management generally, and reported on the 2014 deer harvest and the trends associated with it. He also noted that, new this year, he would discuss deer issues in the state using two regions, the western and central region (WMZs 1-9) and the eastern region (WMZs 10-14), and would outline the issues and complexities of managing deer in each, including indicating the agency's future focus in each area, and would suggest a deer management range revision based on that discussion. Mr. Stainbrook closed his presentation with the Section's proposed 2015 Antlerless Deer Permit allocations, which are reported above.

Mr. Stainbrook stated that the section had many questions from the public about deer mortality during this winter of heavy, deep snow accumulations, but that the Section hadn't expected to see a lot of mortality, and they didn't. He stated that our deer population is adapted to the occasional harsh winter, but noted that he did have staff out looking in likely places that historically have been wintering areas for signs of starvation. He said that staff also looked into reports from the public, which yielded a handful of starvation cases, but all were in areas where deer numbers were really high from no hunting and the habitat was very poor from over-browsing. He explained that biologists use a bone-marrow fat index: They look at the inside of the femur bone to gauge fat and hence starvation in any dead deer found. He said staff had had a few deer with low fat indices, but nothing major.

Mr. Stainbrook explained the use of distance-sampling by staff as a form of harvest-independent estimates (HIE) to conduct deer-density surveys. He reported that they had done it in the Blue Hills, and that they also did it in Sharon on the Moose Hill Reservation just recently; he said that he will have a report when the data are processed. HIEs are great for estimating population in areas with little to no hunting where the harvest-based

model is not applicable. These surveys will help land managers better assess current deer levels. Mr. Stainbrook also reported that a human-dimensions study was being conducted by Wildlife Section Technician Susan Ingalls as part of her Master's degree work, looking at social tolerance for deer and for regulated hunting in suburban areas. Mr. Stainbrook also noted that a recent bond bill requires the DCR to work with the DFW to investigate deer impacts on their properties and assist with management plans using licensed hunters to lower deer numbers.

Relative to the agency's deer management goals, Mr. Stainbrook stated that one major part of our goal is to maintain a deer population in good physical condition with a balanced age and sex structure. Another is to ensure that deer numbers are below the point that can have major impacts to the forest, and to other species that our agency is responsible for managing, including game species like ruffed grouse and non-game species such as wood thrushes that rely on a healthy understory for nesting success. He reported that the literature suggests that this is achieved at densities below 20 deer per square mile of deer habitat in Northeastern Forests. The last part of the goal is to balance social desires and tolerance of deer. He reiterated here that the areas where we typically receive negative complaints, like public-safety, residential/agricultural property damage, and forest health, tend to be in areas with limited to no hunting, especially in the east.

Reporting on the statewide harvest by season, ––Mr. Stainbrook presented the following table:

He noted that the 2014 data showed no change in total harvest from the previous 3-year average, with

Season	Average Harvest 2011-2013	Harvest 2014
Archery	4,051	4,457
Shotgun	4,969	4,714
Primitive	2,128	1,989
Total	**11,154**	**11,166***

*Excludes 105 deer taken in the Quabbin Reservoir hunt.

Archery showing a 10% increase and Shotgun and Primitive seasons showing decreases, 5% and 7%, respectively, and he stated that statewide totals do not tell us anything about what is going on in each region of the state, which is why he discusses harvest trends regionally and by zone.

Other Presentations on Topics of Interest to the Board

Cronin Building Status

At the August monthly meeting, Deputy Director Mark Tisa was scheduled to give the Board an update on the completion of and move into the new Richard Cronin Building in Westborough, but Director MacCallum reported that Assistant Director Mark Tisa was unable to attend the meeting but that the move would start before Labor Day, and continue right before or right after Labor Day. He also noted that the Hunter Education Program will move on a different schedule, later in September. At the following meeting, in September, Director MacCallum reported that the move (opening day, September 8) into the new Richard Cronin Building was going well. FHQ staff was open for business on the previous Monday, while Hunter Education Program staff and the Office of Fishing and Boating Access would move in during the following week. The Director noted that a punch-list of final work items is being worked on, including some touch-up painting and balancing of the temperature throughout the building, and that the trout pool still needed parts.

Laurel Lake Public Fishing Access

Also during the September meeting, Assistant Director of the Office of Fishing and Boating Access Doug Cameron distributed copies of the plan for a Laurel Lake (Lee) fishing access ramp and improved parking lot to the Board members. He stated that, since July, the project has been put out to contract, noting that borings, the site survey, and a preliminary plan had been done earlier. OFBA had reviewed and commented on the preliminary plan, then made some modifications; Assistant Director Cameron stated that the current plan being provided to Board is the result of most of the changes. The plan is a total reconstruction of the existing facility. It was in the permitting phase; the Notice of Intent (NOI) has been given to the local conservation commission; the Order of Conditions (OOC) from it will enable the OFBA's state and federal permit applications. Simultaneously, the contractor will finalize the construction plans, and the OFBA is hoping that funding will be available when the permits are in order.

Chairman Darey noted that most of problems at the ramp were caused by the filling-in of wetland across the road little by little, so that in a heavy rain the water came right across the road and caused damage to the parking area. He also observed that he was concerned about the funding issue. Assistant Director Cameron noted that OFBA applies for a capital allocation every year to get funding for its projects.

OFBA Director Jack Sheppard stated that the OFBA has many expensive projects this year and must prioritize. He cited the example of Plymouth Harbor, a very important, high-priority project with a $600,000-$700,000 total budget; he stated that he is working presently to free up some additional money to complete it. He also pointed out that Laurel Lake's new boat ramp will be 4 feet deeper and employ a float system to make it easier to get in and out of boats. He also noted that the fishing will be right over the water, making access easier for everyone. Chairman Darey thanked Director Sheppard and Assistant Director Cameron for their work on this and other fishing-access projects and for their time in coming to this meeting.

2014 Sargeant Award Winner Senator Stephen Brewer (center) with previous Sargeant Award winners Mike Moss (left) and Bob Durand (right).

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. The Commonwealth is blessed with an abundance of freshwater resources. There are approximately 2,675 lakes and ponds totaling over 142,000 surface acres, as well as an additional 10,704 miles of rivers and streams. According to the U.S. Fish and Wildlife's (USFWS) *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*, more than 294,000 Massachusetts residents age 16 and older went freshwater fishing. That equated to almost 4.5 million angling days afield in the Commonwealth. In addition, more than 150,000 non-residents came to fish Massachusetts' fresh and coastal waters. The stocked (hatchery) trout program accounts for approximately half of all freshwater fishing effort in the state and is a significant economic driver. Freshwater anglers alone contributed more than $146 million in retail sales in Massachusetts. Further, there are over 2,100 jobs in the Commonwealth that are directly attributable to freshwater angling, with salaries, wages, and business earnings amounting to more than $86.5 million annually. This generates more than $17.5 million and $21 million in state and federal tax revenues, respectively. In all, the total economic multiplier effect for freshwater angling (our inland lakes, ponds, rivers and streams) in Massachusetts is approximately a quarter billion dollars annually (USFWS 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation). The protection, management, and enhancement of these inland fisheries resources and their associated habitats involved several ongoing fisheries projects.

Assistant Director of Fisheries, Dr. Mark S. Tisa served as acting Deputy Director of Field Operations from November 15, 2014 until January 29, 2015, at which point he was officially promoted to position of Deputy Director by the Fisheries & Wildlife Board. Dr. Tisa will continue to directly oversee the Fisheries section until his replacement is found.

Stream and River Research Project

Todd Richards, *Project Leader*

Fiscal Year 2015 Stream Survey project involved participation in the following segments:

1. Stream Habitat Restoration Project – Hamant Brook, Sturbridge, MA
2. Stream Flow Monitoring Project
3. Sustainable Water Management Initiative (SWMI)
4. Instream Flow Council activities

Stream Habitat Restoration Project – Hamant Brook, Sturbridge, MA

The Division is pursuing 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 include stakeholder meetings to review the 60% designs, subsequent completion of the 60% and 90% draft design drawings for the culvert replacement and dam removal, and continuation of permitting activities. Permitting work focused on cultural resources, sediment management, and ACOE (401) investigations. As designed, the existing 6 foot by 7 foot concrete box culvert will be replaced by a 32 foot wide concrete arch culvert with natural bottom substrate and three dams will be removed. The anticipated construction will begin by the summer of 2016. 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 im-

poundments; and 3) stream flow conditions downstream of unregulated impoundments. A total of five replicates are anticipated, of which two are complete and two 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 and are visited bimonthly to download data and maintain the equipment. Efforts to create stage/discharge relationships are nearly completed at all pressure transducer installation sites. Fish community sampling was conducted at all research sites.

Sustainable Water Management Initiative

Revised Water Management Act regulations were promulgated and public outreach meetings were conducted by state agencies. The Division provided guidance on SWMI implementation and coldwater consultation to stakeholders. Coldwater consultation refers to a process where water suppliers are asked to determine if their operations can be modified to protect Coldwater Fishery Resources (CFRs) within their permitted jurisdictions. Subsequent planning and consultation meetings were held with individual suppliers to review their potential to protect CFRs.

Instream Flow Council Activities

Todd Richards currently represents the Division in the position of past-President on the IFC executive committee. Richards attended an IFC workshop entitled "FLOW 2015" and gave a presentation about uncertainty in the extensive Sustainable Water Management Initiative Process on a panel of state experts in in-stream flow science. Richards also co-authored an IFC peer-review of the North Carolina Instream Flow Policy and is participating in the planning of the 2016 biennial IFC meeting.

Fisheries Survey and Inventory

Leanda Fontaine, *Coordinator*

Fiscal Year 2015 Stream Survey project involved participation in the following segments:

1. Annual Stream Survey Meetings
2. Statewide Fisheries Survey and Inventory
3. Lake Trout PIT Tagging on Quabbin and Wachusett Reservoirs

Annual Stream Survey Meetings

Annual stream survey meetings were held with each of the District Fisheries Biologists and Technicians between June and early July 2014, to discuss the Stream Survey Priority Lists for the 2014 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 were made during the meetings, as well as any logistics in coordinating with the Field Headquarter staff on particular survey requests. A brief overview of the stream survey protocols were 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 15, sampling 239 sites in 22 watersheds (Table 1) and capturing 32,642 individuals (Table 2). A large part of the focus for the 2014 summer field season was to collect fisheries data on as many unsampled streams and rivers as possible, a continuation of previous years' sampling goals. As a result of this intense sampling effort, a total of 109 new rivers and streams were surveyed and added to DFW's Fisheries Survey Database. Of these 109 new waters, 23 of which were found to support coldwater species.

Three lakes were surveyed in FY 15 as well: Congamond Lake (Middle Basin) in Southwick, Lake Warner in Hadley, and the Oxbow in Northampton. The surveys conducted on Congamond Lake 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 and number of samples on rivers and streams in each watershed sampled in FY 15

Watershed	Number of Surveys
Nashua	45
Deerfield	37
Connecticut	36
Westfield	35
Housatonic	28
Taunton	24
Chicopee	15
Concord	15
Millers	13
Buzzards Bay	9
Hoosic	9
Cape Cod	8
Merrimack	8
North Coastal	8
South Coastal	8
Blackstone	6
Ipswich	5
Neponset	5
Farmington	3
French	3
Mt.Hope/Narragansett	2
Parker	2

Table 2. Species, number, and length of information for fish captured in rivers and streams during FY 15

		Length in mm		
Common Name	**Number Captured**	**Avg**	**Min**	**Max**
American Brook Lamprey	14	114	80	160
American Eel	480	248	50	700
Atlantic Salmon	999	145	89	207
Banded Sunfish	48	67	48	92
Black Crappie	14	187	73	268
Blacknose Dace	9108	58	10	103
Blueback Herring	18	43	35	50
Bluegill	450	135	27	208
Bluntnose Minnow	236	62	30	118
Bowfin	2	383	360	405
Bridle Shiner	23	48	39	55
Brook Trout	5377	94	32	345
Brown Bullhead	119	109	40	360
Brown Trout	508	124	48	471
Central Mudminnow	25	72	38	91
Chain Pickerel	144	137	45	444
Common Carp	11	592	97	870
Common Shiner	1271	64	21	149
Creek Chub	866	82	21	182
Creek Chubsucker	6	65	38	139
Cutlips Minnow	54	91	27	129
Fallfish	2218	68	22	277
Fathead Minnow	1	-	70	70
Fourspine Stickleback	25	34	25	51
Golden Shiner	280	82	32	249
Green Sunfish	13	73	37	101
Lake Chub	8	105	100	114
Lake Trout	402	554	430	1010
Landlocked Salmon	619	91	50	612
Largemouth Bass	244	115	25	487
Longnose Dace	3789	75	14	551
Longnose Sucker	66	113	33	184
Margined Madtom	1	-	78	78
Northern Pike	2	723	584	862
Pumpkinseed	238	93	25	193
Rainbow Trout	55	181	53	471
Redbreast Sunfish	16	102	63	162
Redfin Pickerel	204	118	44	196

Rock Bass	56	156	57	290
Sea Lamprey	16	125	89	180
Slimy Sculpin	2709	63	19	103
Smallmouth Bass	86	143	20	515
Spottail Shiner	14	98	50	120
Swamp Darter	10	48	39	55
Tesselated Darter	324	64	27	96
Tiger Trout	3	270	214	350
Walleye	3	477	462	500
White Perch	19	178	130	393
White Sucker	1037	146	20	545
Yellow Bullhead	118	129	21	349
Yellow Perch	293	121	47	257

Lake Trout PIT Tagging on Quabbin and Wachusett Reservoirs

2014 was the ninth year field crews have conducted PIT tagging efforts with Lake Trout on Quabbin Reservoir in Belchertown. It was also the first year Lake Trout PIT tagging has been conducted on Wachusett Reservoir in Boylston/Clinton/Sterling/West Boylston.

On Quabbin Reservoir, sampling was conducted along Winsor Dam over four nights between October 28 and November 12, 2014 and along Goodnough Dyke on November 13, 2013. This was the second year that Goodnough Dyke was utilized as a capture and tagging location. Field crews for the Quabbin tagging operations included staff from DFW Field Headquarters, Connecticut Valley District and Central District offices. A total of 292 Lake Trout were captured and of those, 261 fish were implanted with PIT (Passive Integrated Transponder) tags and released back into the reservoir. Along Winsor Dam, a total of 196 Lake Trout were PIT-tagged and 11 previously-tagged Lake Trout were recaptured. All of the recaptured Lake Trout along Winsor Dam had been originally tagged there as well. Along Goodnough Dyke, a total of 66 Lake Trout were captured and tagged. Three previously tagged fish were captured at Goodnough Dyke, all of which were originally tagged there the year before. Of the Quabbin Lake Trout captured in 2014, 84% were male, 14% were female, and 2% were gender undetermined.

2014 was the first year DFW expanded the Lake Trout PIT-tagging efforts to include Wachusett Reservoir. Division staff worked with Jamie Carr and Joy Trahan-Liptak of MA Department of Conservation and Recreation (DCR)'s Division of Water Supply Protection on Wachusett Reservoir on permissions and logistics for sampling the reservoir's Lake Trout population. Field crews for the Wachusett tagging operations included DFW staff from the Field Headquarters and the Central District office and assistance from Mr. Carr and Ms. Trahan-Liptak of DCR. With the use of DCR's boat, samples were conducted over seven nights from October 21 to November 20, 2014. Multiple locations of the reservoir were sampled to determine the most suitable areas for Lake Trout spawning. A total of 110 Lake Trout were captured and from that 98 were PIT tagged before being released; 77% of those captured were male, 15% female, and 8% were gender undetermined.

Fisheries Watershed Projects

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

Massachusetts Division of Fisheries and Wildlife pond maps are an essential tool for anglers. These maps provide information on species composition, catch trends, access, and bathymetry profiles but have not been updated for 20 years or in some cases even longer. Of particular concern are the bathymetry data, as they were collected in the 1940s and early 1950s using methods which, by today's standards, would be considered crude. We collected new bathymetry data on 21 ponds throughout the state as a part of a University of Massachusetts study researching the effects of lake drawdowns on the ecology of lentic fauna. Using modern technology and techniques, we are able to collect 100 times the amount of data used to create the original maps in similar amounts of time. Furthermore, the positional accuracy of the data and the statistical methods used to interpolate unsampled space combine to produce highly accurate bathymetric maps. These maps are paired with updated sampling information and provide the angler with the most current and accurate information available to plan fishing trips. Thus far, six new pond maps have been completed and placed online with the remainder in draft form currently being reviewed internally.

Work continues on the geo-referenced fisheries data layer which contains every scientific sample collected by the Division since the early 1970s. In GIS, users

may click on any sampling point and review associated summary information such as fish community statistics, date, gear, and stocking information, including hyperlinks back to the original scanned lake and pond or river and stream files and datasheets. New features incorporated this year include 326 new data points collected in 2014 and additional hyperlinks to scanned historic data files and documents. Historic data were largely recorded from 1900 to 1960 and were scanned to electronic format so they could be instantly accessed through this data viewer. In all, over 11 gigabytes or roughly 90,000 pages of historic documents were added to the database through this effort.

While scanning historic documents, fisheries data, largely from the statewide fish surveys conducted in the late 1940's and early 1950's, were segregated and entered into the fisheries database. These samples represent the earliest quantitative fisheries investigations in the Commonwealth and offer powerful insight into shifts in fish community structure over time. Furthermore, these data have been used to identify sites which have not been sampled since these early efforts were completed. Many of these streams, some recorded to have contained Brook Trout, have been added to the 2016 sampling list for investigation. In total, 462 sampling points were added to the fisheries database from the historic data files.

Other Projects

1) Spot pond temperature/oxygen profiles

2) Lake Trout sampling and analysis of annual catch and growth data from Wachusett and Quabbin Reservoirs

3) "Research Topics in Aquatic Sciences:" Presentation to Weston High School Environmental Biology class

4) Drafted section of the State Wildlife Action Plan regarding threats to lake and pond environments

5) Analysis and summaries of the fish communities of streams crossed by the proposed natural gas pipeline in northern Massachusetts

6) Analysis and summary of fish communities within streams that intersect lands managed by DFW for the online MassWildlife Lands Viewer

7) "Brook Trout Ecology at Large Scales:" Presentation given to the Squan a Tissit chapter of Trout Unlimited

8) Department of Environmental Protection (DEP) triennial update of designated use of streams. I queried our fisheries database to identify streams which met the DEP criteria for coldwater. In total, 126 streams met these criteria and are currently being reviewed by DEP for their inclusion into the DEP list of coldwater fisheries resources

9) Development and testing of a mobile bathymetry unit

Warmwater Fisheries Investigations

Richard Hartley, *Project Leader*

Esocid Stocking Program

The Division relies entirely on surpluses from other states for esocid stocking (Northern Pike and Tiger Muskellunge). Over the past decade, the Division's historic sources of esocids have begun to scale back their production of Northern Pike. Additionally, the Division's historic sources of surplus Tiger Muskellunge have also scaled back production or completely discontinued their programs. As a result, the Division has not stocked Tiger Muskies since 2006 while Northern Pike had not been available for stocking from 2008 to 2012. In the spring of 2015, 14,168 juvenile Northern Pike were made available to the Division and were stocked into Cheshire Reservoir, Cheshire/Lanesborough.

Freshwater Sportfishing Awards Program

Spring of 2015 marked 52 years of the Freshwater Sportfishing 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 are awarded a plaque and gold pin at an annual awards ceremony. New for 2015 was the addition of a long-awaited Catch and Release component that allows anglers to photograph their catch at the site of capture against a ruler and immediately release the fish. Also new for 2015 was the addition of the first new species to the program since 1979: Bowfin. Affidavits are still being received for 2015, so results from 2014 are presented here. After a record setting year in 2010 (1,131), the number of pins awarded annually have dropped slightly with 882 awarded in 2014 (up 44 from 2013). Pins were awarded in 21 of 22 categories for both adult and youth anglers (377 for Adult and 505 for Youth) for calendar year 2014. The Broodstock Salmon was the only category with no entries for either adult or youth due to the termination of the Atlantic Salmon restoration project (the source of the Broodstock Salmon). The Bowfin was added as a replacement for Broodstock Salmon.

For the third year in a row, Crappie was ranked number one overall for most pins awarded, as well as for Adult anglers, while Largemouth Bass was ranked number one for most pins awarded among Youth anglers. Beginning in 2013, both an Adult and Youth Angler of the Year have been awarded. The Angler of the Year Award is presented to the anglers who submit the highest number of the 22 eligible species. For 2014, there was a tie for Adult Angler of the Year; Mark Mohan, Jr., of Pembroke (the 2013 Adult award winner) and Todd Matera, Palmer (who also won in 2005) each submitted 10 species. The

Table 3. Freshwater Sportfishing Gold Pin Awards for 2014

Species	Adult	Youth	Gold Pin Adult	Gold Pin Youth
Broodstock Salmon	0	0	N/A	N/A
Brook Trout	34	24	4 lb. 2 oz.	2 lb. 15 oz.
Brown Trout	12	20	8 lb. 4 oz.	4 lb. 12 oz.
Bullhead	4	26	4 lb. 4 oz.	2 lb. 3 oz.
Carp	19	15	41 lb. 10 oz.	27 lb. 8 oz.
Chain Pickerel	22	56	7 lb. 10 oz.	5 lb. 11 oz.
Channel Catfish	7	3	18 lb. 13 oz.	9 lb. 3 oz.
Crappie	66	46	2 lb. 8 oz.	2 lb. 3 oz.
Lake Trout	20	6	21 lb. 0 oz.	7 lb. 12 oz.
Landlocked Salmon	12	9	6 lb. 0 oz.	5 lb. 6 oz.
Largemouth Bass	10	74	9 lb. 12 oz.	7 lb. 12 oz.
Northern Pike	21	17	23 lb. 8 oz.	27 lb. 2 oz.
Rainbow Trout	25	12	6 lb. 13 oz.	3 lb. 6 oz.
Shad	2	6	5 lb. 10 oz.	5 lb. 0 oz.
Smallmouth Bass	9	36	5 lb. 6 oz.	4 lb. 11 oz.
Sunfish	25	22	1 lb. 5 oz.	1 lb. 5 oz.
Tiger Muskie	1	1	12 lb. 9 oz.	13 lb. 8 oz.
Tiger Trout	16	43	3 lb. 3 oz.	2 lb. 10 oz.
Walleye	3	2	7 lb. 8 oz.	3 lb. 5 oz.
White Catfish	3	1	6 lb. 8 oz.	2 lb. 2 oz.
White Perch	31	31	2 lb. 10 oz.	2 lb. 9 oz.
Yellow Perch	35	52	2 lb. 9 oz.	1 lb. 14 oz.

Youth Angler of the Year was awarded to Jake Souza of Berkley (who also won Angler of the Year in 2012 and the first ever Youth Angler of the Year in 2013) who weighed in 11 species.

Bass Tournament Creel Analysis

For the past 19 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 which 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 to download on the Division's website and as of 2013, can be filled out and submitted electronically. The completed creel sheets are mailed to the Warm/Coolwater Project Leader at the Field Headquarters. The creel sheet gathers 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 the Division to detect long-term trends in the bass populations in some of the Commonwealth's most heavily fished waters. Over time, this data will aid in detecting possible changes to these important Largemouth and Smallmouth Bass fisheries. At the time of the publication of the Annual Report, analysis of the 2014 season was not completed.

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 annually 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 Department of Environmental Protection (DEP), the Division of Fisheries and Wildlife (DFW), the Division of Environmental Law Enforcement (DELE) and the Department of Food and Agriculture (DFA), DFW is the lead agency in coordinating fish kill response. In 2014, DFW received 32 calls relative to incidents which involved dead fish. Of these 32 reports, 12 (38%) required field investigations by DFW, DMF, DEP or local officials to determine the cause of the kills. The final disposition of the 32 calls was 25 natural events including winter kills and species specific kills involving Yellow Perch and sunfish, 1 kill due to agricultural practices (cranberry bog operation), 3 kills due to low water and/or low dissolved oxygen, 2 kills due to hooking mortality, and 1 possible pollution related kill.

Environmental Review

In 2014, the Fisheries Section of DFW reviewed and provided comments on all major projects affecting fisheries resources published in the Environmental Monitor. The Fisheries Section also provided technical information to a wide variety of consultants and town and state officials on local projects. Projects were reviewed potentially affecting 47 different waters (38 rivers, streams, and unnamed tributaries and 9 lakes and ponds) in 30 different cities and towns. Fifty percent of the requests were received from environmental consulting contractors to fulfill DEP and MEPA filing requirements. The remainders of the requests were from state agencies such as MassHighway and the Division of Marine Fisheries (31%), federal agencies such as the Army Corp of Engineers and the USFWS (6%), and town Conservation Commissions (13%). Fisheries resources were partitioned as follows: warm water (40%), coldwater (29%), trout stocked waters (13%), anadromous (4%), rare or special concern (4%), marine (2%), and unknown (8%). The majority of the projects reviewed consisted of bridge replacements/rehabilitations over rivers and streams and road reconstruction including culvert replacements and retaining walls (35%), and repairs or breaching of dams (16%). The remainder of the projects included lake management issues such as herbicide treatments, drawdowns, dredging, beach maintenance, and stream improvements (29%), utility work such as pipeline repairs (10%), and new construction projects (10%).

Anadromous Fish Investigations

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

General

In FY 15, the DFW hired three 6-month seasonal workers to 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 in Lawrence, MA. Holyoke Gas & Electric, as directed by the conditions of their FERC hydroelectric license, hired seasonal employees to staff the Holyoke Fishway and Firstlight Power monitored fish passage at the Turners Falls Fishways. The Project Leader supervised these activities.

The U.S. Fish and Wildlife Service has withdrawn its support and resources from the Connecticut River Atlantic Salmon restoration program including its egg and fry production at the White River Fish Hatchery and sea run broodstock operations at the Cronin Facility. Both of these USFWS operations were critical components of the program and without them, the Atlantic salmon restoration effort has no real viable chance of success moving forward. Therefore the Massachusetts Division of Fisheries and Wildlife has ended its efforts to restore Atlantic salmon to the Connecticut River after nearly 4 decades of effort. No Atlantic salmon fry were produced at the Roger Reed State Fish Hatchery in Palmer, and no Atlantic salmon fry were stocked in FY 15.

During FY 15, the Project Leader was actively involved in Federal Energy Regulatory Commission (FERC) Hydroelectric proceedings concerning:

- Revision of exemption at the Crescent Street Project on the Millers River in Athol.
- Application for a license at the Pepperell Paper dam on the Nashua River in Pepperell.
- A preliminary permit of the Lake Warner Dam Project on the Mill River.
- A preliminary permit of the Cheshire Harbor Project on the Hoosic River.
- Amendment of license in preparation to install downstream fish passage protection at the Holyoke Hydroelectric Project on the Connecticut River in Holyoke.
- Application for relicensing of the Holyoke City #1 Project on the Holyoke Canal in Holyoke.
- Application for relicensing of the Holyoke City #2 Project on the Holyoke Canal in Holyoke.
- Application for relicensing of the Holyoke City #3 Project on the Holyoke Canal in Holyoke.
- Application for relicensing of the Northfield Mountain Pumped Storage Project on the Connecticut River.
- Application for relicensing of the Turners Falls Project on the Connecticut River.
- Application for relicensing of the Bear Swamp Pumped storage facility on the Deerfield River.
- Application for relicensing of the Fife Brook Project on the Deerfield River.
- City of Cambridge conduit hydro feasibility.

The Project Leader worked with the Massachusetts Department of Energy Resources, commenting on the applications of numerous hydroelectric projects seeking to qualify for "Low Impact Hydroelectric Certification" and/or "Green Energy" credits in Massachusetts.

- Holyoke Project, Connecticut River
- Glendale Project, Housatonic River
- Red Bridge Project, Chicopee River
- West Springfield Project, Westfield River
- Crescent Project, Westfield River
- Lawrence Project, Merrimack River
- Ware River Project, Ware River
- North Village Project, French River
- Crocker Pond Project, Whitman River
- New Home Project, Millers River
- Glen Project, Mascoma River, NH
- Stevens Mill Project, Winnipesaukee River, NH
- Downer's Mills Project, Ottauquechee River, VT
- Clement Dam Project, Winnipesaukee R., NH
- Webster Pembroke Project, Suncook River, NH
- Gregg's Falls Project, Piscataquog River, NH
- Fifteen Mile Falls Project, CT River, NH/VT
- School Street Project, Mohawk River, NY
- Ashuelot River Project, Ashuelot River, NH
- Dodge Falls Project, CT River, VT
- Androscoggin Mills, Androscoggin River, ME
- Pembroke Project, Suncook River, NH

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 FERC Relicensing of five hydroelectric projects on the Connecticut River (Northfield MT, Turners Falls, Vernon, Bellow Falls, Wilder) continued this year. This is a 5-year process that will require close attention.

Because 2015 fish passage operations are ongoing at this time, this report summarizes the 2014 fish passage activities.

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 of 2013. The Project Leader supervised their activities.

Exploratory upstream fish passage operations were conducted on April 4 and 5, 2014 when water temperatures were below 5°C. Low temperatures and river discharge >40,000 cfs resulted in suspended operations until regular operations commenced on April 24 and continued through July 15, 2014. Fall passage operations were also conducted weekdays from September 15 through November 14, 2014. Exceptions to the passage schedule occurred during the spring and early summer due to periods of high flow and subsequent turbidity when poor visibility prevented observation for, and trapping of, Shortnose Sturgeon and Atlantic Salmon. Fish passage was suspended May 2 - 3, May 18 - 20, May 25, June 27 – 28, and July 4 – 6. Additionally, operations were suspended on June 16 due to an emergency outage (dewatering) of the Holyoke Canal System, and from September 22 – 26 due to a scheduled maintenance outage of the Holyoke Canal System. Six species of anadromous fish were identified and enumerated during the spring/summer fish passage season. Upstream fish passage counts included 3,780 fish of 25 resident species, including American Eel (N=2,111). Three Shortnose Sturgeon were collected during the spring season. One Atlantic Salmon and no Shortnose Sturgeon were collected during fall lifting operations.

Atlantic Salmon

Twenty-six Atlantic Salmon were counted during the spring fish passage season and one in the fall at the Holyoke Fishlift. 2014 passage (27) was 7% of the record passage of 1992, 50% of the previous five year mean, and 36% of the previous ten year mean. All salmon were released and allowed to continue their upstream migration. No salmon were radiotagged in 2014.

American Shad

A total of 370,506 American Shad were passed upstream. The total number of shad lifted in 2014, including shad transferred to trucks for transport (1,635) and sacrificed for biological sampling and agency studies (416), was 372,557. This was 52% of the record high passage of 1992. 2014 passage was 128% of the previous five year mean, and 167% of the previous ten year mean. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed on the 28th day of passage, 22 May. A total of 513 American Shad were sampled for biological data on 29 days from 26 April through 1 July. Fork length, weight, sex, and scale samples were collected from all individuals. This represents 0.14% of the total American Shad passed for the year and between 0.03% and 100% 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 82%. The weighted sex ratio of American Shad lifted at the Holyoke facility in 2014 was 66% males and 34% females. 1,635 shad were transported from Holyoke for in-basin and out-of-basin restoration efforts.

American Eel

In 2014, eel ramps were deployed beginning May 20 and were operated until November 7. This was the first full season of operation for a fixed-position eel ramp in the tailrace fish lift entrance channel. Juvenile eel passage during 2014 totaled 50,319 eels and was the highest yet recorded at Holyoke Dam, exceeding the previous high in 2012 (39,423) by 28%. The majority, 36,045 were collected from the new tailrace ramp; 13,946 were collected from the stilling basin ramp, 316 from the spillway ramp, 9 from the bypass reach ramp, and 3 from the South Hadley ramp (which did not operate most of the season due to the demolition activities at the adjacent Texon building). The majority of the annual count, 69% (N = 34,885), were collected during a protracted period of the summer between June 11 and July 8 when water temperature ranged from about 19–24.5°C (the seasonal maximum water temperature).

Other Anadromous Fish Species

Blueback Herring passage in 2014 was 976. This was 385% of the previous five-year mean and 459% of the previous ten year mean.

Sea Lamprey passage in 2014 was 22,136. This was 23% of the record passage in 1998 and was 97% of the previous five-year mean and 70% of the previous ten year mean.

Gizzard Shad passage in 2014 was 410. This was 101% of the previous five-year mean and 148% of the previous 10 year mean.

Turners Falls

The fishladders at Turners Falls were operated for a total of 55 days from May 9 through July 2, 2014. Operational problems were reviewed as needed on an ongoing basis by agency personnel (Massachusetts Division of Fisheries and Wildlife and United States Fish and Wildlife Service) and by the dam owner (Firstlight Power).

Upstream fish passage counts were made at the Spillway, Gatehouse, and Cabot Fishladders 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 fishladders remained open for passage 24 hours each day. 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, 27 adult Atlantic Salmon were allowed to pass the Holyoke fish passage facility. Eleven of these were documented passing through the Turners Falls fish passage facilities.

American Shad

The number of shad passing the Gatehouse fish ladder in 2014 (39,914) was 66% of the maximum passage of 1992, 200% of the previous 5 year mean and 358% of the previous 10 year mean.

The number of shad passing the Spillway fish ladder in 2014 (24,262) was 206% of the maximum passage of 1992, 453% of the previous x year mean and 685% of the previous 10 year mean.

The number of shad passing the Cabot fish ladder in 2014 (40,666) was 43% of the maximum passage of 1992, 120% of the previous 5 year mean and 186% of the previous 10 year mean.

Examining the cumulative percent of shad passed at Gatehouse, 50% of fish passed this ladder on the 33rd day of the migration, 27 May, 2014.

Examining the cumulative percent of shad passed at Spillway, 50% of fish passed this ladder on the 40th day of the migration, 3 June, 2014.

Examining the cumulative percent of shad passed at Cabot, 50% of fish passed this ladder on the 33rd day of the migration, 27 May, 2014.

Only 11% of the shad lifted at Holyoke (370,506) passed the Gatehouse observation window, well below the restoration goal of 50%.

Other Anadromous Fish Species

In 2014, 5,553 Sea Lamprey passed the Gatehouse Fishway. This represents 17% of the maximum passage of 2008, 102% of the previous 5 year mean and 58% of the previous 10 year mean.

Westfield River

In 2014, a fish ladder was operated for the 18th year at the A&D Hydroelectric Dam in West Springfield, MA. 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.

Fifty percent of the American Shad passage had occurred by the 30th day of the run, May 23.

An eelway for upstream passage of juvenile American Eel was constructed in the lower section of the fishway in August of 2001. The eelway was nonoperational and was replaced by a new structure in 2014.

Anadromous fish

The West Springfield fish passage facility operated for 93 days in the spring of 2014. The number of days that passage was greater than 1% of the seasonal total was considerably less than 93. 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, 89 % of 4,787 in 20 days; Sea Lamprey, 92% of 1,127 in 23 days; and, Atlantic Salmon, 100% of 2 in 2 days.

During the spring/summer season two Atlantic Salmon were trapped and transported by Division personnel to the East Branch of the Westfield River upstream of the Knightville Dam.

A total of 4,787 American Shad; 2 Atlantic salmon; 1,127 Sea Lamprey; 0 Striped Bass; 4 Blueback Herring; and 0 Gizzard Shad passed upstream in spring/summer 2014. The 2014 shad passage was 48% of the record high of 10,373 in 2012.

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 2014.

Merrimack River

Essex Dam

The Essex Dam fish elevator operated for 80 days between 22 April and 10 July 2014. 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 per weekday.

Atlantic Salmon

During spring 2014, 41 adult Atlantic Salmon were lifted at the Essex Fishlift. This was 10% of the record passage of 2011. Salmon returns were 28% of the previous 5 year mean, and 36% of the previous 10 year mean. No salmon were captured in the fall.

American Shad

The total number of shad lifted in 2014 (34,789) was 46% of the record high passage of 2001. 2014 shad passage was 164% of the previous five year mean and 175% of the previous ten year mean. Five hundred and fifty-seven shad were trapped and trucked to the USFWS Nashua Fish Hatchery for spawning where 7.8 million fry were produced, 7.7 million were stocked into the Merrimack River 90,500 were stocked into the Nashua River. Two hundred and thirteen shad were trapped and trucked to the USFWS North Attleboro Fish Hatchery for spawning where 3 million fry were produced and stocked in Charles River, MA. An additional 301 shad were trapped and trucked to the USFWS North Attleboro Fish Hatchery for spawning where 3.7 million fry were produced with 2.5 million fry released into the Pawcatuck River, RI, and 1.2 million fry released into the Pawtuxet River, RI. Three hundred and three shad were sampled for biological data collection over 20 days between May 19 and July 2.

River Herring

2014 passage was 33,517; this was 9% of the record high passage of 1991. 2014 herring passage was 577% of the previous five year mean and 720% of the previous ten year mean.

Other anadromous fish

Total number of Sea Lamprey, Striped Bass, and Gizzard Shad passing through the Lawrence Fishlift were 4,923, 144, and 29 respectively.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator began (13 May) one week after shad began passing at the Lawrence fishway, approximately 12 miles downstream, and concluded on July 11. 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 2014 was 3,403, this represents 10% of the shad passing through the Lawrence fishway this season. While nowhere near the 50% goal it is significantly better than the average. Enel will continue to experiment with the floating screen in the tailrace- designed to guide fish to the fishway entrance.

Thirty-four sea-run Atlantic Salmon were seen at the Lowell Fishlift. All sea-run Atlantic Salmon that entered the Lawrence fishlift downstream were allowed to pass upstream as they are no longer required for broodstock.

Assorted riverine species have been noted but not counted.

Atlantic Salmon Fry Survival

Selected salmon stocked streams were sampled for juvenile Atlantic salmon in 2013. In 2014, 52 sites on 45 streams were sampled by personnel from the Massachusetts Division of Fisheries and Wildlife.

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 2015 smolt production was produced by multiplying the population estimate of 1+ salmon by the estimated over-winter survival (0.6).

Fisheries GIS

David Szczebak, *Project Leader*

In FY 15, the Fisheries Section conducted bathymetric surveys of lakes and ponds and updated the pond maps available to the public. Pond map write-ups were updated based on recent sampling as well as information provided by the DFW District Offices. New pond maps begun in FY 14 and accompanying write-ups were posted to the DFW website. Bathymetric surveys were conducted on an additional 14 ponds and draft write-ups were completed for those ponds; these new maps and information will also be made available on the Division's website.

Using sampling data from the past year, we updated the Coldwater Fisheries Resource (CFR) data layer to be current as of June 2015. The updated CFR information was uploaded to the DFW website as both a searchable list and as an interactive web map. The updated data was also made publicly available through the state MassGIS website.

When updating our new stream sampling information, we have occasionally found sampling done on streams not mapped in the base map hydrographic layer, NHD (National Hydrographic Dataset). These locations were mapped in GIS and then passed back to the USGS for inclusion in the national data. The DFW copy of the data was then synched to the national model.

In FY 15, GIS staff devoted a good deal of time to testing and improving the Westborough GIS applications. After adopting a cutting-edge virtual server configuration in Westborough, GIS applications needed to be reconfigured to work with the new setups. Working closely with IT, GIS staff tested several new configurations and ultimately made several improvements in storage and performance.

Fish Culture Program

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

The Division's four trout hatcheries produced a total of 478,692 pounds of trout in FY 15. 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 permit that each hatchery is issued by the Massachusetts Department of Environmental Protection and the Federal Environmental Protection Agency. Overall, a total of 544,191 Brook, Brown, Rainbow and Tiger Trout were stocked during FY 15 (fall 2014 and spring 2015) (Tables 4 and 5).

During the fall of 2014, a total of 67,300 fish comprising 49,476 pounds were stocked. These fish consisted of 61,300 Rainbow Trout, comprising 22,950 fish in the 12+ inch size category and 38,350 fish in the 14+ inch size category. In addition, 6,000 Brown Trout in the 12+ inch size category were also stocked. A total of 45,337 pounds of Rainbow Trout and 4,139 pounds of Brown Trout were stocked during the fall.

During the spring of 2015, a total of 429,216 pounds of trout were stocked comprising a total of 476,891 fish. There were 294,263 pounds of Rainbow Trout stocked comprising 264,133 fish. 213,597 of the Rainbow Trout were in the 14+ inch size category and averaged more than 1.2 pounds apiece. Spring stocking also included a total of 45,321 pounds of Brook Trout comprising 91,764 fish that ranged between 6 and 18+ inches long. Forty-one percent of these Brook Trout were in the 12+ inch size category. 118,129 Brown Trout that ranged between 6 and 18+ inches long and totaling 85,708 pounds were also stocked. Thirty-eight percent of these Brown Trout were in the 13+ inch size category. Spring stocking also included 2,865 Tiger Trout totaling 3,924 pounds, all in the 14+ inch size category, that averaged 1.4 pounds apiece (Tables 4 and 5). 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.

Roger Reed Hatchery produced 12,000 landlocked Atlantic Salmon smolts reared from eggs obtained through a cooperative program between the Division and the Maine Department of Inland Fish and Wildlife in FY 15. 10,000 smolts weighing a total of 2,971 pounds were stocked in Quabbin Reservoir. 2,000 smolts weighing 471 pounds were transferred to the New Jersey Fish and Wildlife in trade for esocid fry (Northern Pike and Tiger Muskie) through a cooperative program between the Division and New Jersey.

Following the closure of the Atlantic Salmon restoration program in 2013, the Roger Reed Hatchery was re-tasked to become a Landlocked Salmon rearing station and a Brook Trout and Brown Trout broodstock station. In fall 2012, 600 one-year-old disease-free Brook Trout were transferred from Sandwich State Fish Hatchery to initiate the Brook Trout program. During the fall of 2014, a total of 569,000 Brook Trout eggs were produced. Most of these eggs were transferred to McLaughlin Hatchery for incubation (Table 6) and the resulting fry transferred to other Division hatcheries for rearing. A portion of eggs from each of the 236 mated pairs were kept at Palmer Hatchery to maintain the Brook Trout brood stock line. A Brown Trout brood stock line was started at Palmer Hatchery in December 2013 when 2,600 disease-free Brown Trout eggs were transferred from Sandwich Hatchery. In December 2014 a second lot of eggs from 203 mated pairs were transferred from Sandwich Hatchery to Palmer Hatchery. A total of 424,000 Brown Trout eggs were produced in 2015 (Table 6).

Table 4. Summary of the number of trout produced and stocked from each of the Division's four trout hatcheries in FY 15 (Fall stocking 2014 and Spring stocking 2015)

	Size Category	Number of Fish					Total No.
Species	**(Inches)**	**Bitzer**	**McLaughlin**	**Palmer**	**Sandwich**	**Sunderland**	**of Fish**
Rainbow	9+	7500	0	0	0	0	7500
Trout	12+	0	0	0	0	55046	55046
	14+	20200	202595	0	40092	0	262887
	Subtotal	**27700**	**202595**	**0**	**40092**	**55046**	**325433**
Brook	6 - 9	9550	0	0	0	0	9550
Trout	9+	0	0	0	0	44269	44269
	12+	21650	0	907	10205	3944	36706
	18+	0	0	426	813	0	1239
	Subtotal	**31200**	**0**	**1333**	**11018**	**48213**	**91764**
Brown	6 - 9	0	0	0	0	0	0
Trout	9+	22525	23168	0	0	27700	73393
	13+	23937	0	0	10175	15821	49933
	18+	0	0	0	803	0	803
	Subtotal	**46462**	**23168**	**0**	**10978**	**43521**	**124129**
Tiger	14+	0	0	0	2865	0	2865
Trout	**Subtotal**	**0**	**0**	**0**	**2865**	**0**	**2865**
Total		**105362**	**225763**	**1333**	**64953**	**146780**	**544191**

Photo © by Bill Byrne

2015 Sport Fish Award Winners with Fisheries Staff at DFW Field Headquarters, Westborough.

Several important infrastructure improvement projects were completed at the hatcheries in FY 15. The basement foundation and sills in the main office building at Sunderland Hatchery that had been severely damaged by water infiltration and insects were repaired. At Sandwich Hatchery, well #2 was cleaned and redeveloped and the turbine pump and motor replaced; a water control valve for well #2 was also replaced. Magnetic flow meters for measuring water output were installed on well #1 and well #2 at Sandwich Hatchery.

There were several personnel changes in the Hatchery Program during FY 15. Sandwich Hatchery Manager Craig Lodowsky retired after more than 25 years of service. John Garofoli, Wildlife Technician II at Sandwich Hatchery, transferred to the Southeast Wildlife District. Douglas Isles, Wildlife Technician III, retired from Montague Hatchery after more than 25 years of service. Alan Jackson was promoted from Wildlife Technician II to Wildlife Technician III at Montague Hatchery.

Table 5. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY 15 (Fall stocking 2014 and Spring stocking 2015)

	Size Category	Weight of Fish (lbs)					Total Weight
Species	**(Inches)**	**Bitzer**	**McLaughlin**	**Palmer**	**Sandwich**	**Sunderland**	**of Fish (lbs)**
Rainbow	9+	4155	0	0	0	0	4155
Trout	12+	0	0	0	0	36661	36661
	14+	19244	241467	0	38073	0	298784
	Subtotal	**23399**	**241467**	**0**	**38073**	**36661**	**339600**
Brook	6 - 9	1382	0	0	0	0	1382
Trout	9+	0	0	0	0	8821	8821
	12+	18770	0	687	10169	2716	32342
	18+	0	0	942	1834	0	2776
	Subtotal	**20152**	**0**	**1629**	**12003**	**11537**	**45321**
Brown	6 - 9	0	0	0	0	0	0
Trout	9+	8016	11336	0	0	8524	27876
	13+	23920	0	0	13839	21884	59643
	18+	0	0	0	2328	0	2328
	Subtotal	**31936**	**11336**	**0**	**16167**	**30408**	**89847**
Tiger	14+	0	0	0	3924	0	3924
Trout	**Subtotal**	**0**	**0**	**0**	**3924**	**0**	**3924**
Total		**75487**	**252803**	**1629**	**70167**	**78606**	**478692**

*Note: The Brown Trout eggs were spawned and fertilized at Sandwich Hatchery, transferred to Roger Reed Hatchery where they were incubated to until eye up and then transferred to McLaughlin Hatchery for hatching.

Table 6. Summary of landlocked salmon and Brook Trout eggs produced at the Roger Reed Hatchery in FY 2015

Species	Size Category (Inches)	Number	Weight (Pounds)
Landlocked Salmon	Smolts (8+)	12000	3442
	Subtotal	12000	3442
Brook Trout	Eggs	569000	Not determined
	Subtotal	569000	
Brown Trout*	Eggs	424000	Not determined
	Subtotal	424000	

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Montague

John Williams, *Manager*
Holly Hubert, *Assistant Manager*
Douglas Isles, *Wildlife Technician*
Alan Jackson, *Wildlife Technician*
Joe Kendall, *Wildlife Technician*

Roger Reed, Palmer

Daniel Marchant, *Manager*
Arthur Pellegri, *Assistant Manager*
Karl Zakauskas, *Wildlife Technician*

Sandwich

Craig Lodowsky, *Manager* (on leave)
Adam Davies, *Acting Manager*
John Garofoli, *Wildlife Technician*
Greg McSharry, *Wildlife Technician*

Sunderland

Charles Bell, *Manager*
Brian Guerin, *Assistant Manager*
Timothy Nye, *Wildlife Technician*
Andrew Ostrowski, *Wildlife Technician*
Heather Sadler, *Wildlife Technician*
Shasta Slade, *Wildlife Technician*

WILDLIFE

John O'Leary
Assistant Director, Wildlife Research

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, 17 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.

Habitat Management Programs

Landscape Analysis Projects

Jonathan Brooks, *Wildlife Population Ecologist*

Development of a web-based tool to help communities and agencies identify and reduce impacts of climate change on natural resources and man-made infrastructure is ongoing. This project will provide local decision-makers with: (a) access to the most current understanding of how climate change is likely to impact important natural resources they value and the man-made infrastructure they depend on; (b) the means to view and understand the vulnerability of these resources to climate change; and (c) a menu of clear adaptation actions which can be implemented at the local level to address vulnerability factors, making their communities more resilient to climate change impacts.

Wildlife Management Programs Habitat Program

John Scanlon, *Habitat Program Leader*
Brian Hawthorne, *Habitat Coordinator*
Benjamin Mazzei, *Habitat Biologist*
Rebecca DiGirolomo, *Habitat Biologist*
Caren Caljouw, *Habitat Biologist*

The Wildlife Section's 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 Restoration Ecologists from the Natural Heritage & Endangered Species 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 (Fig. 1). The BDI brings together ecologists, wildlife biologists, and foresters to accomplish this important work. Funding for habitat work is provided through the BDI Key Sites effort.

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 200,000 acres of state wildlife lands. Human land-use change has substantially limited spring flood events along major rivers (which formerly provided dynamic, open wildlife habitat), beaver impacts along hundreds of low-gradient streams across the landscape, and has greatly reduced the historical 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, invasive plant control, and limited use of prescribed fire. The BDI Key Sites effort specifically identifies the highest priority sites for management of open habitats, and these critical open areas complement existing DFW Forest Reserve lands to help conserve the biological diversity of species and communities across the landscape.

The Habitat Program also assists with monitoring forest cutting operations on over 50,000 acres of Wild-

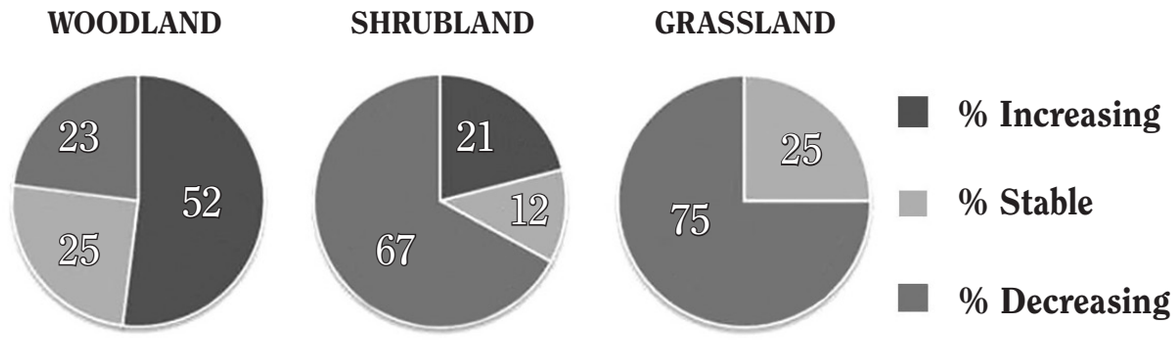


Figure 1. Data from the North American Breeding Bird Survey, indicating the declines in bird species that depend on shrublands and grasslands for some part of their life cycle.

life Conservation Easements (WCEs) that include >175 parcels of private land, 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 (Fig. 2) are science-based, have received broad public support, and call for about 20-25% open habitats (including grassland, shrubland, and young forest sites),

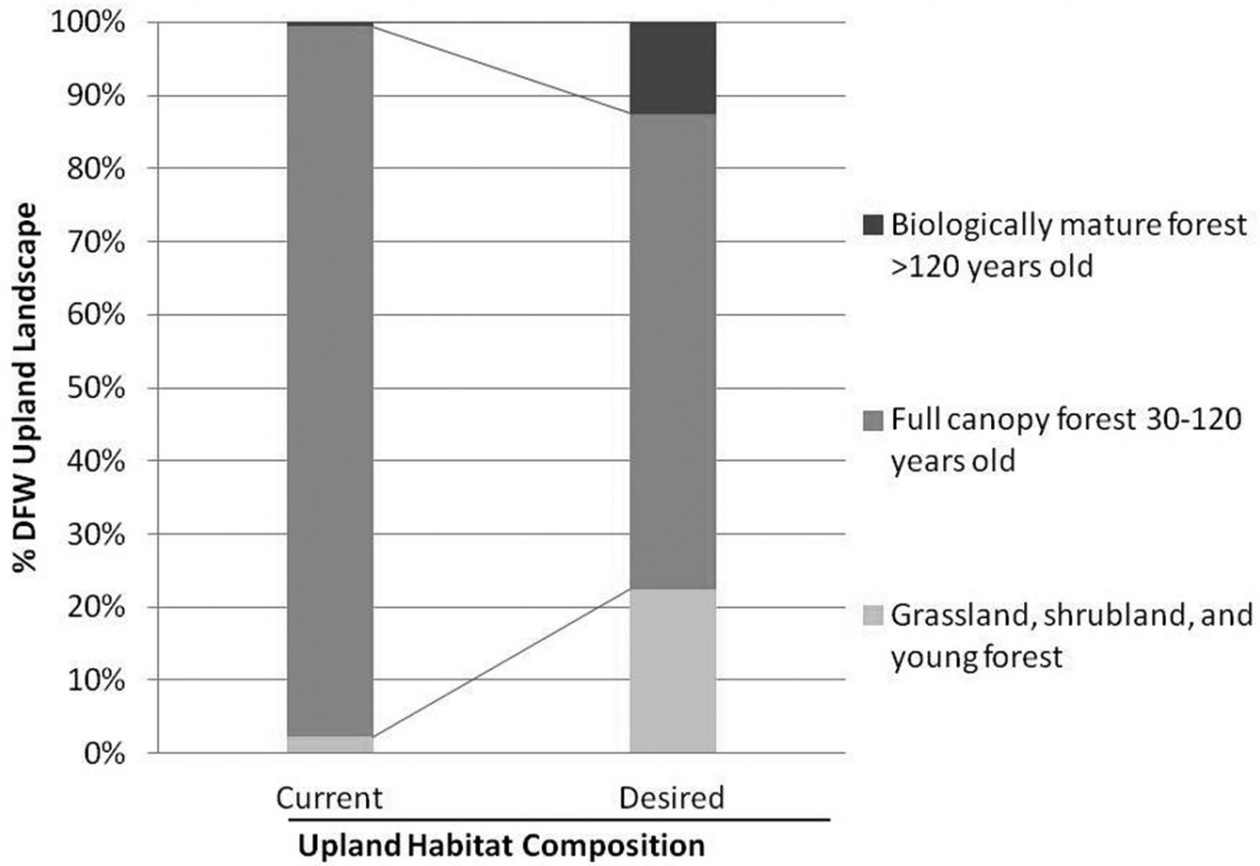


Figure 2. Current and desired habitat-composition goals for upland sites on DFW Lands.

and 75-80% full-canopy forest (including 10-15% forest reserves) across approximately 190,000 acres of state wildlife lands. The Habitat Program Leader and four Habitat Biologists plan and conduct tree clearing, brush mowing, invasive plant control, and biological monitoring statewide through a public, competitive bidding process to help move from current 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). Habitat management activities are also permitted through the Massachusetts Historical Commission, Massachusetts Tribal organizations, and Section 7 of the Federal Endangered Species Act.

The BDI made good progress towards achieving the landscape goals shown if Figure 2 by actively managing over more than 2,000 acres of grassland, shrubland, and young forest habitat in FY 15 (Table 1).

Table 1. BDI Active Habitat Management in FY 15

Habitat Type	FY 15 Acres	Management Interval
Grassland	517	1-2 years
Shrubland	1,452	3-8 years
Young Forest	123	20-30 years
Totals	2,092	

Grassland Habitat

Grassland management occurred on 517 acres across three different sites (Table 2), and included selective use of herbicide by Licensed Applicators to control invasive plants, mowing/mulching of small trees and shrubs, and prescribed burning to maintain these open habitats.

Frances Crane WMA North

A total of 132 acres of second-growth pine/oak woodlands adjacent to existing grasslands were tree-cleared, and 120 of those 132 acres were stumped, harrowed, and planted with native warms season grasses. The remaining 12 acres of tree clearing occurred in a frost-pocket depression, where the habitat goal is to provide dense shrubland habitat. Grassland habitat was maintained on102 acres of existing land via prescribed burning. In addition, invasive plant control work occurred on 62 acres of existing grassland habitat to control Mile-a-minute vine, Japanese knotweed, honeysuckle, buckthorn, multiflora rose, and bittersweet and to promote native warm season grasses including little bluestem.

Bolton Flats WMA

Mowing/mulching of invading trees was conducted on a 100 acre portion of this WMA to favor native warm season grasses including little bluestem. This mowing/mulching operation reduced woody fuel loads to the point where prescribed burning can be used in the future to maintain grassland habitat. In addition, another 25 acres of existing grassland were treated with herbicide to control invasive plants.

Southwick WMA

A total of 59 acres of tree hedgerows were cleared to connect existing patches of grassland habitat, and 51 of these 59 acres were stumped, harrowed, and planted with native warm season grasses. The remaining eight tree-cleared acres will provide shrubland habitat. In addition, 99 acres of existing abandoned fields were harrowed and seeded with native warm season grasses.

Shrubland Habitat

Shrubland management occurred on 1,452 acres across six different sites (Table 3), and included selective use of herbicide by Licensed Applicators to control invasive plants, mowing/mulching of small trees and shrubs, and prescribed burning to maintain these open habitats.

Frances Crane WMA South

A total of 198 acres of existing shrubland were mowed beneath a sparse pitch pine/oak woodland canopy. These 198 acres were scheduled for prescribed burning between 2006-2012, but logistical restrictions during those years precluded burning. As a result, these 198 acres were mowed to reduce fuel loads, and burning is now scheduled for 2016-2020. Of these 198 acres, 55 acres were treated to control invasive plants.

Frances Crane WMA North

On portions of the WMA both east and west of the existing grassland habitat described above, 354 acres of shrubland habitat were established beneath an open canopy of pitch pine/oak woodland. Of these 354 acres, 47 acres were subsequently mowed to establish fire breaks, and prescribed burning occurred on eight of these acres.

Camp Cachalot WCE

A 54 acre portion of this Wildlife Conservation Easement was partially cleared of trees then mowed to

Table 2. Grassland Habitat Management in FY 15

Site Name	Town	Habitat Type	Objective	Acres
Frances Crane WMA	Falmouth	Grassland	Restore/Expand	234
Bolton Flats WMA	Lancaster	Grassland	Restore	125
SouthwickWMA	Southwick	Grassland	Restore	158
Total				517

Table 3. Shrubland Habitat Management in FY 15.

Site Name	Town	Habitat Type	Objective	Acres
Frances Crane WMA South	Falmouth	Shrubland	Maintain	198
Frances Crane WMA North	Falmouth	Shrubland	Create	354
Camp Cachalot WCE	Plymouth	Shrubland	Create	54
Massachusetts Military Reservation	Falmouth	Shrubland	Maintain	545
Muddy Brook WMA	Hardwick	Shrubland	Maintain	8
Montague Plains WMA	Montague	Scrub Oak Shrubland	Create/ Maintain	293
Total				1,452

Table 4. Young Forest Habitat Management in FY-2014.

Site Name	Town	Habitat Type	Objective	Acres
Muddy Brook WMA	Hardwick	Young Forest	Establish	123
Total				123

establish dense shrubland beneath an open pitch pine/ oak woodland canopy.

Massachusetts Military Reservation (MMR)

DFW owns the fee interest in MMR lands, but currently the military still conducts all management activities on this property. As part of this on-going management, a prescribed burn of 545 acres was conducted on existing shrubland habitat in FY 15. MMR staff led the burn, with DFW staff participating.

Muddy Brook WMA

A total of eight acres of existing shrubland were mowed and/or burned in the Patrill Hollow section of this WMA.

Montague Plains WMA

A total of 293 acres were treated at Montague Plains in FY 15. Tree-clearing occurred on 209 acres to reduce fuel loads in full-canopy pine/oak forest in order to minimize the chances of a running crown fire. Portions of these 209 acres were also mowed to further reduce fuel loads in preparation for future prescribed burning. Mowing occurred on a total of 287 acres, including portions of the 209 tree-cleared acres, and portions of existing shrubland beneath a sparse pitch pine/oak woodland canopy.

Young-forest Habitat Project

Young forest management occurred on 123 acres on the Patrill Hollow section of the Muddy Brook WMA (Table 4) to establish an open canopy pitch pine/oak woodland over a mix of shrub and tree regeneration.

Biological Monitoring, Inventory, and Analysis

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 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 May-June 2015, breeding bird surveys occurred at 185 independent points on approximately 2000 acres across over 22 different areas using a combination of independent contractors and DFW field staff time (Table 5). During FY 15, Habitat Biologists conducted post-treatment vegetation monitoring occurred on managed portions Frances Crane WMA, Montague Plains WMA, and Phillipston WMA.

Table 5. FY 15 Breeding Bird Survey Sites

Site	Town	# of Survey Points	Year of abandonment or last mowing
Western District			
Fox Den WMA	Worthington	4	Aspen regeneration & abandoned orchard reclamation in 2006
Eugene Moran WMA	Windsor	7	Mowed annually since 2011.
Farmington River WMA	Otis	8	About 25-30 acres of a 54 acre harvest completed in winter 2014/2015 (5 points), plus potential sites nearby for future management (3 points).
Stafford Hill WMA, Barn	Cheshire	5	Matrix of abandoned pasturelands and hedgerows, reclaimed in 2012
Tracy Pond WMA	Peru	2	Timber harvest (Norway spruce plantation removal) on 19 acres completed in 2007
Southeast District			
Noquochoke WMA	Dartmouth	4	Reclaimed in 2010, grassland work ongoing
Frances Crane WMA, North	Falmouth	20	About 80-100 of 470 acres to be completed by June 30, 2015
Frances Crane WMA, South	Falmouth	7	Portions burned or remowed in 2013-2015
Quashnet Woods SR/WMA	Mashpee	4	Entire 42 acre site should be harvested before June 1, 2015 on this New England Cottontail restoration effort
Mashpee Pine Barrens, State	Mashpee	8	Extensive mowing/mulching completed in 2013 on this New England Cottontail restoration effort
Mashpee Pine Barrens, Town	Mashpee	7	Extensive mowing/mulching completed in 2013 on this New England Cottontail restoration effort
Camp Cachalot (abuts Myles Standish State Forest)	Plymouth	10	Wildfire in 1964, mowing in 2015
Myles Standish State Forest (abuts Camp Cachalot)	South Carver	20	Between 100-200 acres of this approximately 500 acre harvest completed in winter 2014-2015
Northeast District			
Bill Forward WMA, Kent's Island	Newbury	5	2 in active hayfield, 3 in 1960s
Bill Forward WMA, Canoe Access	Newbury	3	1997-1998
Dunstable Brook WMA	Dunstable	3	Abandoned Fields/Pasture reclaimed in 2010
Valley District			
Leyden WMA, South	Leyden	4	Abandoned pasture reclaimed in 2001
Leyden WMA, North	Leyden	4	Reclaimed meadows and blueberry barrens
Herm Covey WMA	Belchertown	5	Abandoned pasture reclaimed in late 1990

Central District			
Cass Meadows WMA	Athol	6	Abandoned field/pasture reclaimed in 2005 and 2012
Bolton Flats WMA	Bolton/ Lancaster	14	Agricultural fields, grasslands
Muddy Brook WCE	Hardwick	10	7 years post harvest
Muddy Brook WMA,Patrill Hollow	Hardwick	20	Some points forested, some points reclaimed in 2014-15
Phillipston WMA	Phillipston	5	Timber harvest 2013
Total		**185**	

The results from the various monitoring efforts indicated that target species of greatest conservation need benefit from Habitat Program management activities. Data continue to indicate that following initial reclamation work, target species abundances peak at 5-6 years following.

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

Compliance monitoring for WCEs involves review of long-term Forest Management Plans and individual Forest Cutting Plans (Chapter 132) on private and other public lands where the DFW holds development and public access rights. In FY 15, the Habitat Program reviewed forest management plans and/or forest cutting plans for 21 WCEs, including the Alford Springs WCE (Alford), Assawompsett Pond WCE (New Bedford), Boulders WCE (Dalton), Camilla WCE (Athol), Dalton Fire District WCE (Dalton), Fairview Sportsman's Club (Granby), Herbert (Charlton), Hull Forestlands' Ram Hill WCE (Chesterfield), Breakneck Brook WCE (Southbridge), and Mica Mill WCE (Cheshire); Jarvela WCE (Townsend), LaValley WCE (Bernardston), Lawrence Brook WCE (Royalston), LeBlanc WCE (Orange), Monterey Preservation Land Trust WCE (Monterey), Newton Reservoir (Athol), Paul C. Jones Working Forest WCE (Eddy Lot in Shutesbury); Tim Crane (Dalton), Townsend Conservation Land Trust (Townsend), Westfield Water District (Montgomery); and the J. David Young WCE (Warwick).

Compliance monitoring for fee ownership involves site visits to License Agreement locations where adjacent landowners are temporarily allowed to access or otherwise use WMA lands, site visits to portions of WMAs where adjacent private landowners are conducting forest cutting operations to avoid potential timber trespass, as well as addressing timber trespass onto WMAs by adjacent landowners. In FY 15, compliance monitoring License Agreements occurred at the Bolton Flats WMA (Pine Hill_Farnsworth), Frances Crane WMA (Falmouth_Hamilton Tree), Muddy Brook WMA (Samek_Hardwick), Wayne F. MacCallum WMA (Westborough_Harvard Forest), and the Tully Mountain WMA (Corser_Orange).

Technical Assistance and Outreach

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 15, provided technical review for DCR State Forestlands by reviewing seven proposed harvesting operations totaling 1,255 acres on state forest lands across Massachusetts.

Other public lands where the DFW Habitat Program provided technical assistance on using harvesting operations to enhance wildlife habitat in FY 15 included the town of Andover Conservation Commission Bald hill and Fish Brook lots, the town of Shirley Conservation Commission's Pumpkin Brook Conservation Area, and the New England Forestry Foundation Kemp Woods parcel in Groton.

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. DFW Habitat Program staff also participated in the 2015 Keystone Landowner Training Workshop at Harvard Forest to help inform a variety of private and public landowners and managers about the benefits of applied wildlife habitat management.

Upland Game Program

Dave Scarpitti, *Upland Game Biologist*

Wild Turkey Harvest

A total of 159 Wild Turkeys were harvested during the 2014 fall season, slightly higher than the long term 10 year average (137.2 turkeys). Overall, 71 male and 88 female Wild Turkeys were harvested. The proportion of turkeys harvested with archery equipment reached an all time high, at approximately 33% for the second year in a row, whereas in the spring typically 3-4% of turkeys are harvested with archery equipment. The relatively high proportion of harvest using archery equipment is likely attributed to archery deer hunters that capitalize on abundant fall turkey populations.

The 2015 Massachusetts spring turkey hunting season was held April 27-May 23, with the youth hunting day occurring on April 25. The 4-week regular season occurred in the Wildlife Management Zones 1-13. About than 21,300 Wild Turkey permits were issue for the 2015 spring season, the second highest permit issuance in the history of spring turkey hunting. Total harvest during the regular spring season was 2,626 turkeys during the regular spring season, and 84 turkeys on the youth hunt day. As is typical, approximately >70% of turkeys harvested were adult males (toms or gobblers), while about 29% were immature males (jakes); <1% of harvested spring turkeys were bearded hens which are legal during the spring season. Overall, the spring turkey harvest has not been less than 2,500 turkeys since 2008. Spring brood conditions in 2015 appear to have been highly variable across the state, potentially a consequence of the historic winter conditions experienced from January-March. However, generally speaking turkey populations are high and continue to provide excellent hunting and other recreational opportunities.

Ruffed Grouse

Roadside surveys to measure the conspicuous breeding activity (drumming) of Ruffed Grouse are conducted statewide from 20 April through 10 May each year. In 2015, grouse drumming events were slightly higher than the long-term average in the Western Districts, whereas drumming activity was near average in the Central and Connecticut Valley District survey routes. No drumming grouse were detected on random routes completed in the Northeast and Southeast Districts, though grouse are certainly locally abundant in areas with suitable cover in some locations. Overall statewide breeding activity as measured by the drumming survey has remained stable over the past decade. Some specific survey routes continue to demonstrate very high counts (3-4X greater than the average) of drumming activity, an indication that, where good quality habitat is available, very high grouse populations can be achieved. 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 to June across Massachusetts. This courtship display is surveyed as part of the U.S. Fish and Wildlife Service's Woodcock Singing Ground survey, 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 2015 from April 20 through May 10. The breeding population index (singing woodcock heard per route) in 2015 was 1.09, a slight increase over recent years. In general, population modeling conducted by the U.S. Fish and Wildlife Service 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 2014 hunting season was 2,100 by approximately 1,100 hunters. Overall, sparse early-successional habitat limits the statewide abundance of woodcock; however, like with Ruffed Grouse, woodcock may be locally abundant where adequate cover is found.

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. After more than 40 years of participation, the U.S. Fish and Wildlife Service cancelled the annual Mourning Dove Call Count Survey, a standardized survey to provide regional population data for Mourning Doves. However, in June 2015 a new dove survey was completed that involved utilizing the standard/historic call count route in central Massachusetts. To support various research and harvest management objectives of the USFWS, some limited banding of mourning doves will be completed in 2016; approximately 150 doves will be banded.

New England Cottontail

DFW participated in a regional monitoring survey to assess the range-wide distribution of New England cottontail (NEC) and Eastern cottontail across the state. These surveys primarily relied on collection of fecal pellet samples at designated sites. Survey efforts are planned to continue during the winter of 2015-2016, and are anticipated to focus again in southern Berkshire, Plymouth, and Barnstable Counties.

As part of the regional effort to conserve NEC, DFW staff live-trapped rabbits on several locations in Barnstable County and successfully transferred them to zoo facilities for inclusion in the captive propagation program documented in the NEC Conservation Strategy. Four males (bucks) and 2 female (does) NECs were sent to either the Roger Williams Park Zoo or Queens Zoo. Zoo-based husbandry resulted in several litters of rabbits, the survivors of which were introduced into priority areas within the New England region.

Waterfowl Program

H Heusmann, *Waterfowl Program Leader*

Division personnel conducted nest-box checks on 49 of 52 study sites used to monitor Wood Duck populations statewide. Three sites could not be checked in the Connecticut Valley because of excessive snow.

The spring of 2014 was cooler than normal but abundant snow fall and spring rains alleviated the drought or near-drought conditions over much of the state the previous summer and fall. Nesting was delayed.

Wood Duck nesting attempts declined from 2013 with only 297 nest starts compared to 321 nest starts last year. There were 237 Wood Duck hatches. Hooded Mergansers, a species that has increased substantially in the past two decades also declined from 157 nest starts last year to 138 in 2014 with 109 hatches. However, merganser

use of the 3 unchecked sites in the Connecticut Valley would have increased that count somewhat. Several hundred additional non-study sites were also checked and serviced.

Massachusetts participates in the Atlantic Flyway Resident-goose Banding Program. The Atlantic Canada Goose Resident Population Management Plan requires Massachusetts to band 550 geese but we band 800+ for the federal database. Geese are captured by roundups during the summer molt. A total of 897 Canada Geese were banded at 73 sites in 63 Massachusetts towns. This year again goose banding was carried out on Martha's Vineyard by the Ranger for the Wampanoag Tribe. The state total included 382 goslings and 515 adults. Crews also captured an additional 172 previously banded geese.

The FY 15 airboating season was shaping up to be the poorest in at least 20 years as far as number of birds banded, but was salvaged by a final night at the Great Meadows National Wildlife Refuge when 246 birds were captured, exceeding the old record of 244 set in 1999, also at Great Meadows. With rainfall 4-5 inches below normal this summer, low water complicated operations on some sites and prevented it on others. Access to some sites was also a problem. We boated on only 13 nights and banded 710 birds. Among birds banded, there were 435 Wood Ducks, 140 Mallards, 7 American Black Ducks, 1 Mallard x Black Duck hybrid, 55 Green-winged Teal, 9 Blue-winged Teal, 4 Northern Pintail, 1 Gadwall, 3 Hooded Mergansers and 1 Sora. Twenty-two previously banded birds were also recaptured.

During the period of September 2-25, 2014, Massachusetts conducted a state-wide resident Canada Goose hunting season, with a daily bag of seven. The U.S. Fish and Wildlife Service (USFWS) Harvest Information Program (HIP) report is delayed in harvest estimates for the current year. However, the USFWS estimated a September season harvest of 2,100 in 2013. This compares to 1,600 geese harvested in 2012, 2,200 geese in 2011, 2,200 in 2010, 4,200 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 increased to 70 days with a three-bird daily bag limit in the Central and Coastal waterfowl hunting zones as we moved into the moderate hunting season package for North Atlantic Population (NAP) geese and 50 days with a three-bird bag limit in the Berkshire zone for Atlantic Population (AP) geese.

The winter of 2014-2015 at the time of the survey was milder than normal with scant snow fall but significant rain. There were, however, several bouts of extremely cold temperatures. At the time of the midwinter waterfowl survey in late January, most coastal waters were open. American Black Duck numbers (21,978) were unchanged from last year and 11% above the 10-year average. Mallard numbers (1,642) were half of both last year's and the 10 year average. Canada Geese (13,914) were nearly identical to last year and 19% above the 10-year average. Atlantic Brant (953) were down 20% from last year and 42% below their 10-year average. Of the black and white birds, merganser counts were 57% above their 10 year average, goldeneyes up 25%, buffleheads 47% below the 10 year average, and scaup numbers were 94% above average. Eider counts were down (-24%) as were scoter counts (-31%) while and Long-tailed Duck numbers were up 43%. Normally, only a small portion of longtails wintering in Massachusetts are counted on the mid-winter survey as they fly out to sea at dawn.

During the period January 19 - February 14, 2015, Massachusetts held a late, resident Canada Goose season in the Central Zone and one in the North Coastal Zone January 31-February 14 with a five-bird daily bag in each zone. While January was mild with scant snowfall a series of 4 snow storms, including the Blizzard of 2015, impeded hunting opportunities in some areas and the severity of the winter resulted in reports of mortality in Canada Geese and other waterfowl. The USFWS is delayed in harvest estimates for the current year; however, the they have estimated a harvest of 1,300 in 2015 compared to 1,500 in 2014, 4,500 in 2012, 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 sixth year of a 5-year experiment to determine if two-season Black Duck banding efforts can improve the precision for Black Duck survival rates. Continued banding was requested while analysis of the first five years of banding was evaluated. Bait-trapping was carried out at 23 coastal sites in 13 towns from the New Hampshire to the Rhode Island borders. Trapping was carried out in January and February 2015. All Mallards and Mallard x Black Duck hybrids could be banded and broken down into five plumage types. Totals of 1,343 American Black Ducks, 250 black-plumaged hybrids, 8 intermediate types, 13 Mallard-plumaged hybrid, and 255 Mallards were banded. In addition, there were 287 previously banded birds including 33 birds by other banders. The severe winter resulted in significant increase in mortalities. By spring, we received reports of 25 dead banded ducks, mostly black ducks banded in 2015, compared to only 4 such reports the previous year.

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 1,310 plots checked in this year's survey. The population estimate in the Northeastern states for Mallards was 258,762 pairs +16%, the lowest estimate since the surveys began and may reflect some of the winter mortality reported in 2015. The estimate for Black Ducks was 20,756 pairs +70% with unusually wide variance. Normal variance is around 35%; Wood Ducks, 194,915 pairs +17%; and Canada Geese, 357,219 pairs +16%. In general Wood Duck and

Canada Goose populations are increasing while Mallard and Black Duck populations have declined. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its 17th year of the federal Harvest Information Program (HIP). In FY 15, 11,685 hunters registered with Massachusetts HIP.

Massachusetts issues individual egg-addling permits for resident Canada Goose control under a federal program begun in March 2007. In 2014, we issued 43 such permits, all of which were returned. The permittees reported addling 1,580 eggs in 327 nests, while USDA/APHIS Wildlife Services addled 467 eggs in 91 nests under their statewide permit.

Bird Conservation Program

Andrew Vitz, *State Ornithologist*

American Kestrel Project

The DFW and partners continued the American Kestrel project that was initiated in 2013. The focus of the project is to promote breeding productivity by deploying nest boxes and tracking movements by banding nestlings. Collaborators on this project include the Massachusetts Audubon Society, Keeping Company with Kestrels, Kestrel Land Trust, MA Department of Transportation, MA Department of Conservation and Recreation, Essex County Ornithological Club, East Quabbin Land Trust, Grafton Land Trust, The 300 Committee, and a few dedicated individuals (Ron Rancatti, Ed Neumuth).

Now three years into this project, there are signs that the conservation measures taken are being successful. In FY 15, 164 kestrel nesting boxes were monitored in Massachusetts and 47 were occupied by nesting kestrels. Not surprisingly, the areas with the highest rates of nest box occupancy were those with a long history of box maintenance and monitoring. For example, nest boxes in cranberry bogs in southeast Massachusetts had a 44% (16/36) occupancy rate (Joanne Mason – Keeping Company with Kestrels), and there was a 41% (15/37) occupancy rate at a set of boxes in northwestern Massachusetts (Ron Rancatti). Nesting boxes have been maintained in these areas for over a decade. Results from more recently deployed nest boxes were also encouraging. In the Connecticut River Valley 8/35 (23%) of the boxes were occupied in FY 15. In central Massachusetts (Worcester County), we monitored 25 boxes but only 2 were occupied by kestrels. Although the occupancy rate was low, both of these pairs successfully fledged a full set of chicks. In northeastern Massachusetts, boxes were occupied and successfully produced young at Strawberry Hill (owned by the town of Ipswich) and MassAudubon's Drumlin Farm Wildlife Sanctuary.

In addition to monitoring nesting success, we also banded chicks before fledging from the boxes. During 2015, 93 nestlings were banded. One bird that had been banded as a nestling in 2013 was reported in May 2015 using a box for nesting in Connecticut, providing important information on kestrel dispersal. In the coming year, we will continue to work with partners to maintain current boxes, install additional boxes in suitable nesting habitat, and to monitor all boxes and band young when possible.

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, many species associated with this habitat type are experiencing steep population declines. On June 1, 2011, a massive tornado touched down and tore through a 40 mile stretch of south-central Massachusetts, from Westfield to Charlton. This had a dramatic impact on the region and converted nearly 5,000 acres of mature trees into young-forest habitat.

To learn about the avian response to natural disturbance DFW partnered with collaborators at the MA Department of Conservation and Recreation (DCR), the U.S. Forest Service, and The Nature Conservancy to initiate a project. Ten automated audio-recorders were purchased and deployed to document the breeding birds at sites within three treatment groups (tornado-impacted areas, tornado-impacted areas that were salvage-logged, adjacent mature forest not directly impacted by the tornado). Seventy-four locations were randomly selected and divided into the three treatment groups. When possible, points were sampled on two days each year with five separate 10-minute periods being recorded at five intervals around sunrise and sunset.

In 2014 the third year of data collection occurred, which completed our initial objective of collecting data when the habitat was in an early successional forest stage. We also finished listening to and extracting data from recordings collected in 2012 and 2013.

Preliminary results from the study reveal that almost all of the early successional forest species showing population declines were found in both groups of the tornado impact areas but not the adjacent mature forest. After a single year of growth some of these species were only present in the tornado area without active management, but species that were absent from the salvage logged area after the first year began to occupy these areas in the second year of vegetation growth following the tornado. These species included six birds listed in our State Wildlife Action Plan (SWAP), with one being State-Listed (Eastern Whip-poor-will). In addition to the expected use of this habitat by early successional breeding birds, many forest-breeding birds were documented using the young-forest habitat, presumably for food and cover.

The process of extracting data from the audio files is time consuming, and as a result, it has taken longer than originally anticipated. In FY 16, we plan to complete data extraction and summary and analysis of the 3 year dataset (2012-2014).

Black Bear Program

Laura Conlee, *Black Bear Program Leader*

Black Bear Distribution and Harvest Investigations

A record total of 10,437 bear-hunting permits were issued for the 2014 hunting season. A total of 240 bears (147 in 2013) were taken during the 35-day season, including 203 during the 17-day September segment and 37 during the 18-day November segment. One hundred thirty-two males, 107 females and one unknown were taken in Berkshire (n=78), Franklin (n=56), Hampden (n=51), Hampshire (n=43), Middlesex (n=4) and Worcester (n=8) counties. Sixty-nine percent of bears were reported through the online system in 2013 and 74% were reported online in 2014. Data from the 2014 Annual Hunter Survey have not been analyzed and will be presented in the FY 16 Annual Report. There were 32 additional confirmed mortalities in CY 2013. These mortality records are collected by DFW staff and through Environmental Police call logs and included: 23 road-kills; 2 bear taken under M.G.L. Ch. 131, Sec. 37 (1 dog attack, 1 livestock depredation); 1 illegal kill, 3 of unknown causes; and 3 euthanized as public safety threats. The Division received 139 bear calls and the Massachusetts Environmental Police received 395 bear calls.

A proposal to open bear hunting statewide and allow bear hunting during the shotgun deer season was approved by the Fisheries and Wildlife Board in 2014 and will be effective for the 2015 bear season.

The Division completed a 4 minute video entitled "Do Not Feed Bears – Keep Them Wild". The video was posted to the Division's Facebook and YouTube pages and was viewed 11,958 times (for an average duration of 50 seconds). The Facebook post reached 36,932 people and included a brief message about bringing in bird feeders. The post was shared by a number of police stations and various sporting, environmental and civic groups. The Division also produced a video documenting winter bear den work which was posted to the Division's Facebook page and was viewed by 7,131 people and the post explaining winter den work was seen by 16,528 people. The Division also updated the bear website, created a friendly URL (mass.gov/bears) and will continue to add videos and maps for public viewing.

Black Bear Research

The Division continues to monitor collared female black bears as part of a cooperative research project with the Massachusetts Cooperative Fish and Wildlife Research Unit and the University of Massachusetts Amherst. The primary objectives of this research project are as follows: (1) to refine the population model for evaluating population trends of bears in Massachusetts; (2) to document black bear habitat use in a fragmented landscape and to determine the effects of human-associated food sources on bears, (3) to assess the public's attitudes and perceptions of the bear population and bear management options, (4) to develop a comprehensive bear management plan to guide black bear management in Massachusetts. Eleven GPS collars were deployed in the winter of 2015. To date, 27 female bears have been monitored with GPS collars, of which most have been monitored for at least 2 reproductive seasons. The Division monitored cub production/yearling survival at all successful winter dens or through encounters with sows/yearlings.

Furbearer Program

Laura Conlee, *Furbearer Program Leader*

Overview

The Furbearer Program involves the management and research of 14 species of wildlife in the Commonwealth. Furbearers include 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.

Furbearer Management 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 1,752 furbearers were tagged at Division check stations during the 2014-15 season. The harvest (a combination of hunted, trapped, and/or salvaged) of tagged species included 562 beaver, 81 bobcat, 465 coyote, 398 fisher, 56 gray fox, 30 mink, 102 river otter, and 58 red fox. Trapper survey results indicated that a minimum of 56 raccoons, 166 muskrat, 13 skunks, 37 opossum, and 1 weasel were trapped during the 2014-15 season. Data from the 2014 Annual Hunter Survey have not been analyzed and will be presented in the FY 16 Annual Report.

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

Emergency beaver trapping permits may be obtained through municipalities; certain non-emergency permits for specific traps are given by DFW. Licensed trappers tagged 562 trapped beaver during the 2014-15 trapping season, of which 218 were reported as taken under emergency permits. PAC Agents reported taking 129 beaver outside the trapping season (April 16, 2014 - October 31, 2014) under emergency permits and 42 beaver during the trapping season (during the trapping season November 1, 2014 to December 31, 2014), of which 9 were taken under emergency permit. Licensed trappers reported through the voluntary trapper survey that 459 beaver were under the local Board of Health 10-day Emergency Permit, which includes beaver taken outside the season (n=368) and only beaver taken during the season that were not sealed at a Division check station (n=91). In total, a minimum of 497 beaver were taken outside of the trapping season as nuisance animals. A minimum of 724 beaver were taken under emergency permits (either inside or outside the trapping season) for which conibear traps are legal to use and are the preferred trap type for beaver trapping.

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. (See also the "Human-Wildlife Conflict Trends Project" section, below.)

Deer Management Program

David Stainbrook, *Deer and Moose Program Leader*

Harvest and Population

The statewide 2014 harvest of 11,166 deer represents the eighth-highest harvest reported in Massachusetts since 1966 (Fig. 3). The 2014 total harvest was 2% lower than the 2013 hunting season and 2% greater than the previous 5-year average. The 2014 archery season harvest was the second-highest on record (Fig. 3, Table 6), not surprising considering archery season stamp sales are still on the rise.

Currently, the deer population statewide is estimated to be over 100,000 deer. Density estimates (from harvest data, so estimates only apply to lands that are hunted) range from 10-18 deer per square mile of forest in western and central Massachusetts to over 50 deer per square mile on the islands of Martha's Vineyard and Nantucket. Areas with little to no hunting access anywhere in the state can see deer numbers above our estimates. For example, a non-harvest based deer survey on the Blue Hills Reservation (over 7000 acres closed to hunting)

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

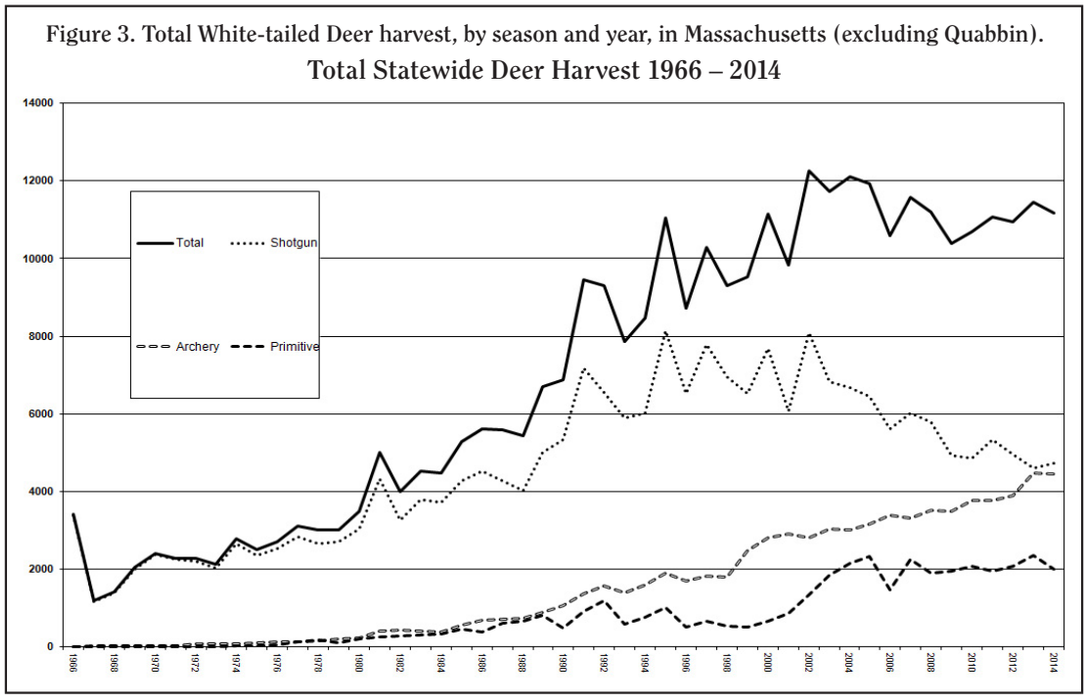


Table 6. The 2014 white-tailed deer harvest by season and sex/age class in Massachusetts.

Season	Adult Male	Female	Button Buck	Total	Percent Harvest
Paraplegic	0	6	0	6	0%
Archery	2,975	1,198	284	4,457	40%
Shotgun	2,565	1,717	432	4,714	42%
Primitive	879	919	191	1,989	18%
Sub-Total	6,419	3,840	907	11,166	99%
*Quabbin**	49	52	4	105	1%
State	**6,468**	**3,892**	**911**	**11,271**	**100%**

* Controlled Hunt with DCR-Limited Access (excluded from subsequent statewide analysis)

near Boston yielded estimates of over 85 deer per square mile of forest.

As in previous years, the Antlerless Deer Permit (ADP) system required a hunter to have an antlerless deer permit to harvest an antlerless deer in any deer season. The ADP system regulates female harvest across all Wildlife Management Zones (WMZ; Fig. 4). Overall, we've met or are very close to our deer density management ranges in the western and central parts of the state (Figs. 4 and 5). Therefore, over the past few years, fewer antlerless permits have been issued in the central and western WMZs to stabilize or increase numbers, leading to fewer deer being harvested (Fig. 3 and Table 7). Conversely, deer densities in the eastern part of the state are still above our management range, so antlerless permit allocations have remained high in an effort to increase the harvest of females. Challenges still remain in eastern WMZs because of the difficulty of hunter access in more developed areas.

The ADP allocation for 2014 was 42,375 permits, a 4% increase from 2013. However, 35,801 permits (84% of allocated) were actually issued in 2014 (Table 7). We determined that the new online system (which started in 2012) and the free convenient way of applying for an antlerless deer permit, led to more hunters applying and fewer returning to play and pay than in previous years. Prior to 2012, we were typically issuing about 95% of the allocated permits in most zones. For the 2014 and 2015 antlerless permit allocation, we adjusted the model to compensate for the significant proportion of applicants that do not come back to play and pay and the under-harvest associated with the permit under-issuance.

Table 7. The 2014 white-tailed deer harvest by deer sex/age and the number of antlerless deer permits allocated and issued, by WMZ, for Massachusetts (Quabbin excluded).

WMZ	Male	Female	Button Buck	Total	Goal	2014 Allocation	2014 Issued
1	174	54	6	234	Increase		376
2	400	40	8	448	Increase	175	180
3	311	117	16	444	Increase	1,100	1,010
4N	351	68	13	432	Increase	375	266
4S	152	23	4	179	Increase	275	156
5	407	182	29	618	Increase	1,250	1,055
6	98	39	10	147	Increase	450	354
7	364	210	45	619	Stabilize	2,250	2,076
8	511	247	49	807	Stabilize	2,800	2,468
9	568	344	71	983	Stabilize	4,100	3,841
10	1,047	1,053	231	2,331	Reduce	12,000	10,730
11	1,421	840	211	2,472	Reduce	11,000	9,019
12	186	60	11	257	Reduce	800	802
13	237	270	87	594	Reduce	2,700	1,855
14	192	293	116	601	Reduce	2,700	1,613
Statewide	**6,419**	**3,840**	**907**	**11,166**		**42,375**	**35,801**

Figure 4. Management ranges for the 15 Wildlife Management Zones in Massachusetts, which satisfy the statewide deer management goal of keeping deer densities below the level where major impacts are seen to the habitat, but in balance with social desires/tolerance.

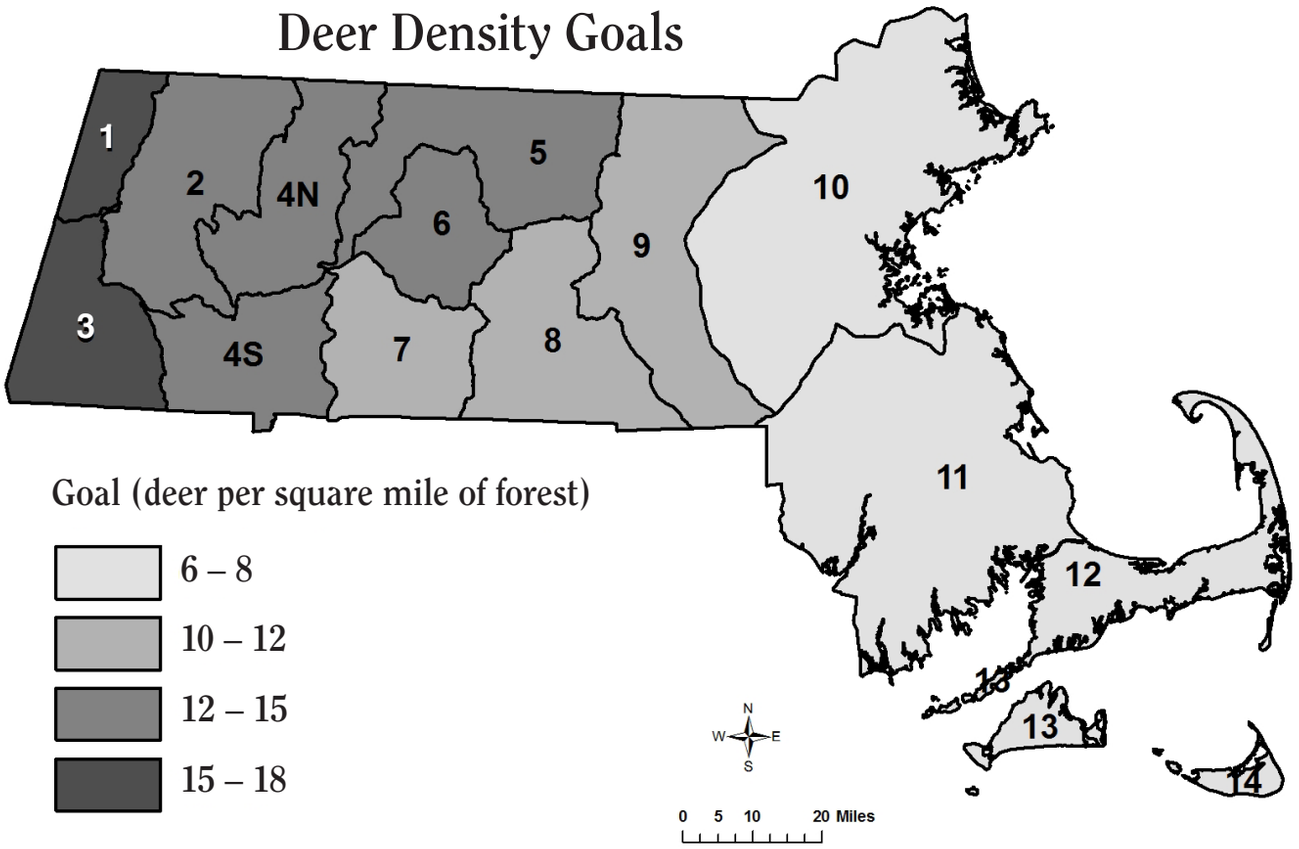


Figure 5. How current deer densities relate to the numeric deer density goals for the 15 Wildlife Management Zones in Massachusetts.

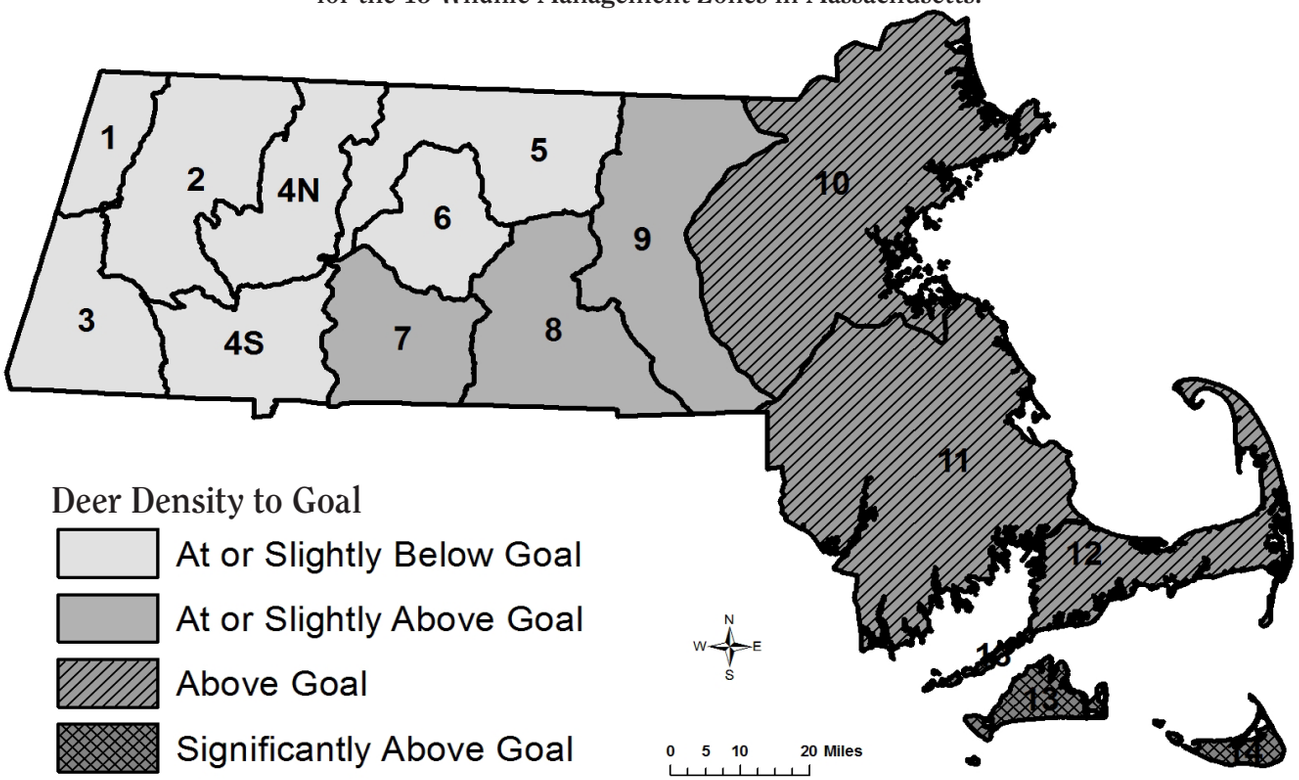


Figure 6. Total moose-vehicle accidents reported per year from 1980 to 2013 in Massachusetts.

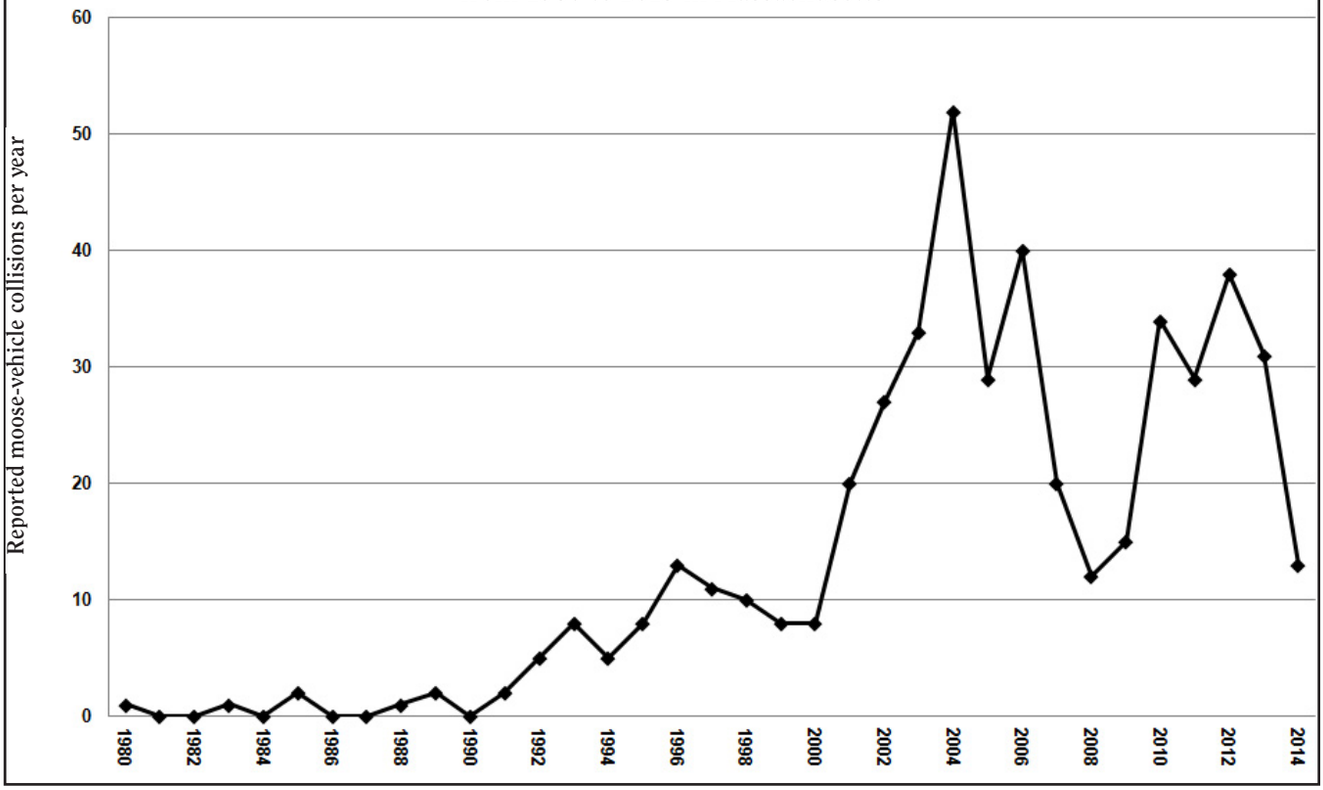


Figure 7. Total number of moose-vehicle accidents reported by town from 1980 to 2013 in Massachusetts.

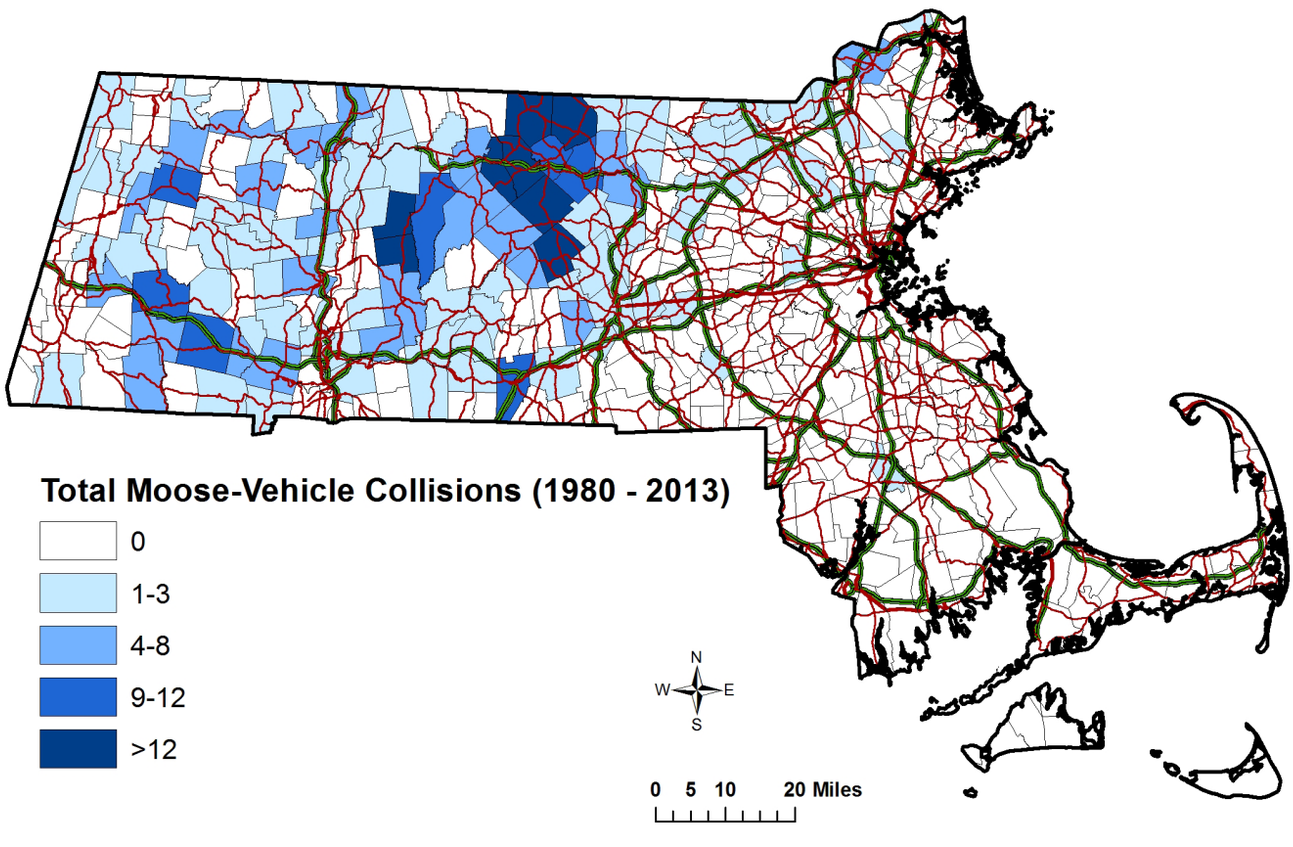
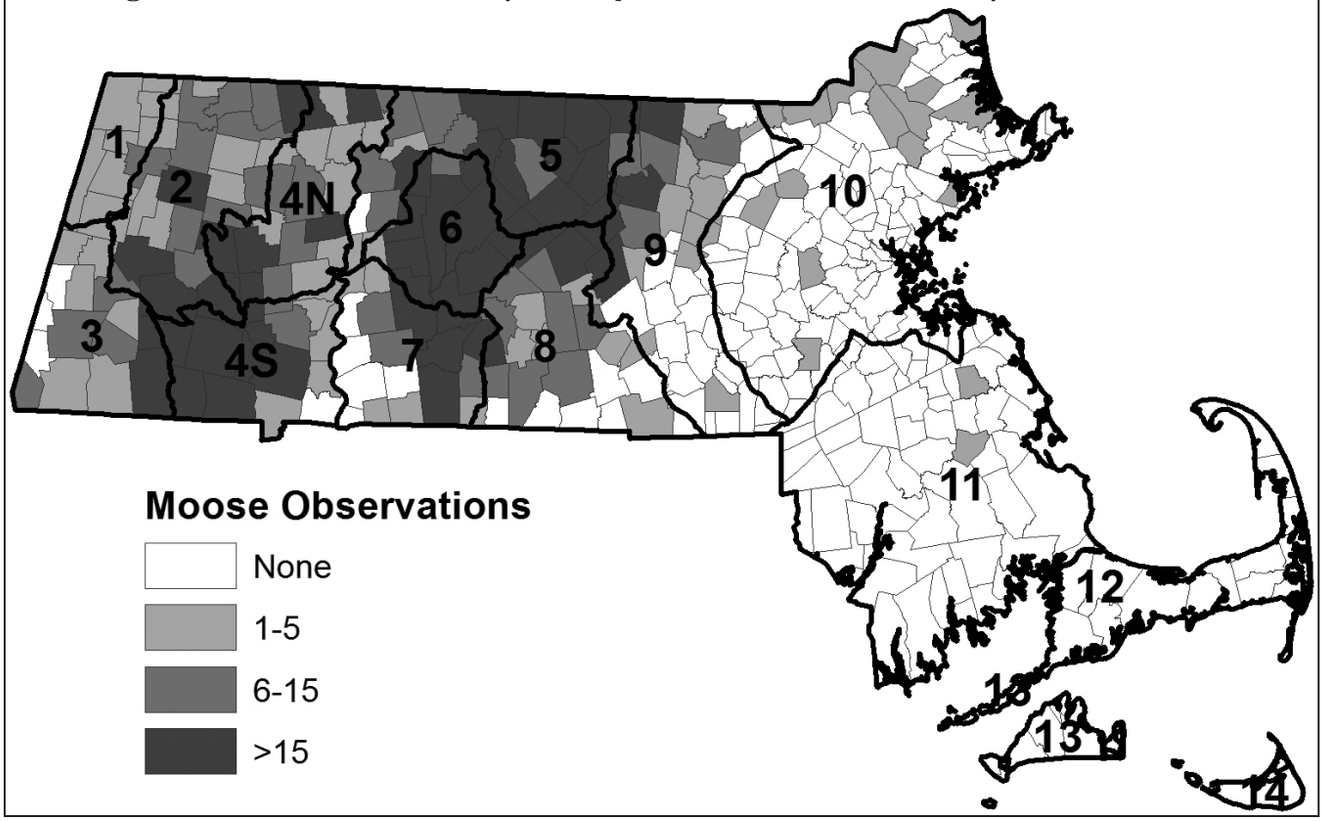


Figure 8. Observations of moose by town reported in the 2012 hunter survey in Massachusetts.



Research

No deer-related research projects occurred in FY 15.

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 2014. We did not have any reported deer exhibiting symptoms or signs of disease. 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-vehicle accidents (MVA). In 2014, there were only 13 MVAs. However, MVAs are not routinely being reported to the DFW or to the MA Environmental Police; 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 or verbally from DFW staff who drove by a dead moose along the road. 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 depending on myriad factors (Fig. 6; reporting rate likely low in 2007-2009). Nonetheless, these indices can be useful for biologists to use, along with other population trends, to monitor moose relative abundance and trends 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 1,000 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). The hunter observation data can be used to map moose distribution across the state (Fig. 8).

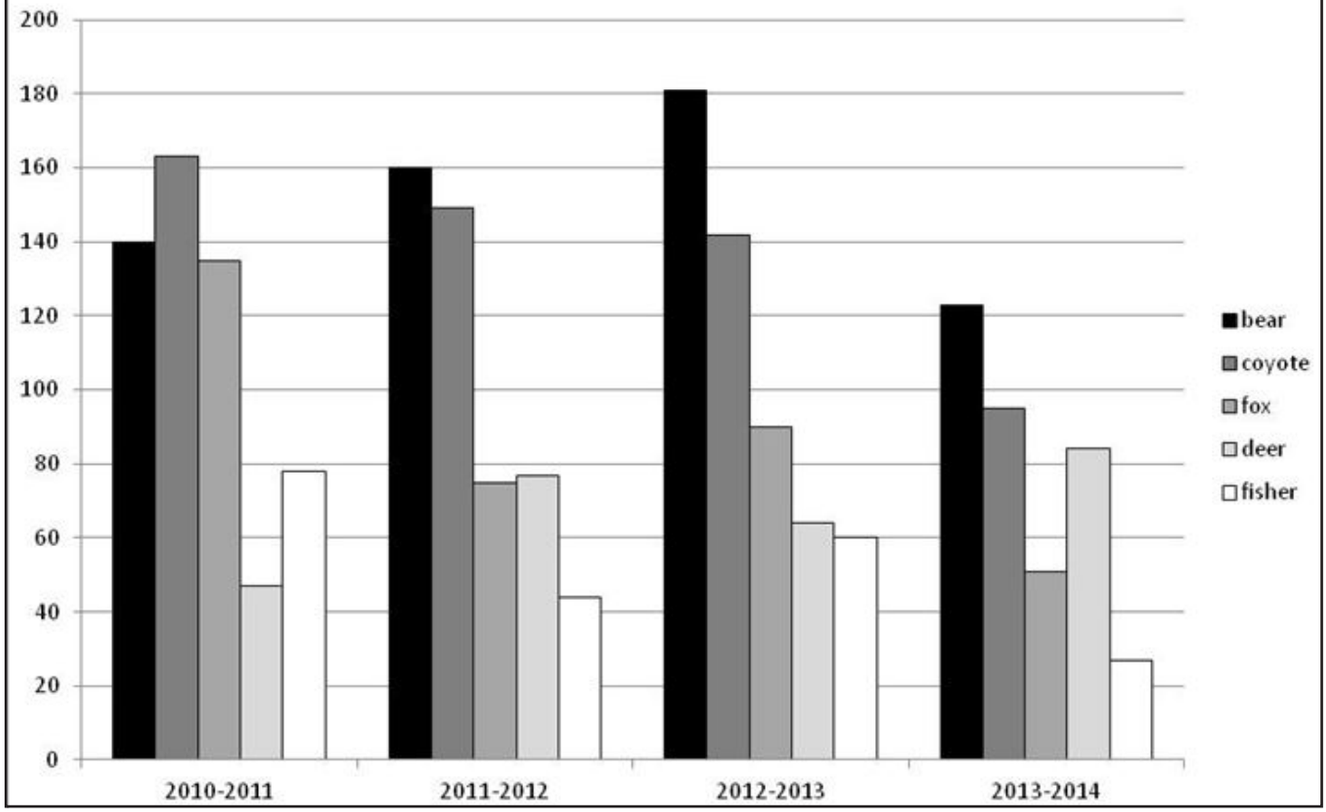
The Human-Wildlife Conflict Trends Project

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 purpose of this study is to produce information that can be used to develop 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.

Figure 9. Total Reports of Top 5 Species, 2010 through 2014



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

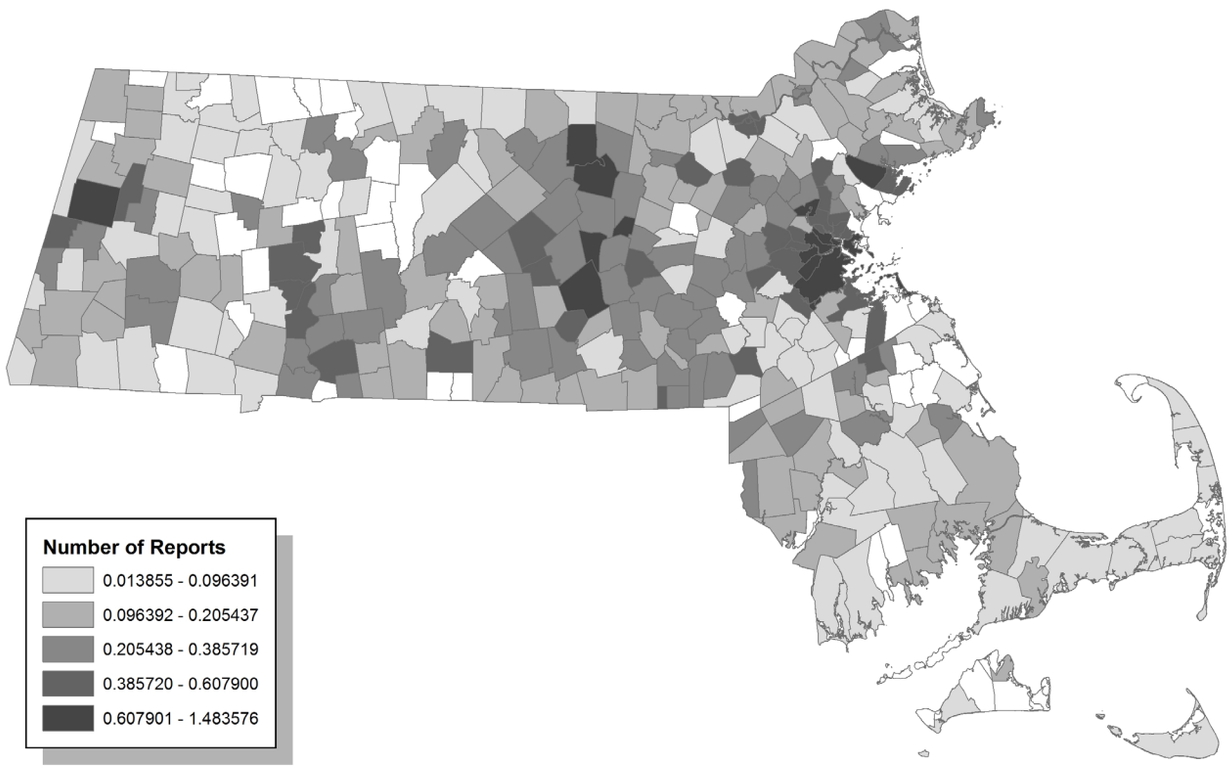
We have collected 5,845 reports since 2010. In previous years, bears, coyotes, and foxes were amongst the top three species reported. In contrast, the top three species reported in 2014 were bears, coyotes, and deer (Figure 8). We received reports from 260 of 351 towns across Massachusetts through 2014, totaling 890 (Figure 9). Two hundred and thirty eight (27%) reports came from the Northeast District, 206 (23%) reports came from the Central District, 195 (22%) from the Western District, 152 (17%) from the Connecticut Valley District, and 77 (9%) from the Southeast District. We averaged 3.4 reports per town (ranging from 1 to 62). The town of Pittsfield, for the third consecutive year, reported the highest number of interactions with 62. Boston reported the next highest with 24 reports of interactions. Reports ranged from general inquiry to threat to public safety and covered nearly 80 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 47 (5%) reports involving threats to public safety, which can include wildlife found inside a dwelling, wildlife approaching humans and/or pets on a leash, aggression toward humans, and human attack. Among these, we received no reports of human attack. We received 64 (7%) reports involving depredation/agricultural damage, which can include missing pet or livestock, aggression toward pet, attack on livestock witnessed or not witnessed, and attack on pet witnessed or not witnessed. Of the 64 reports, 27 included information regarding a pet or livestock species depredated and 3 were reports of crop damage.

Conclusions

During this time period, while using the new animal report form, DFW staff has been effective at capturing

Figure 10. Map of Massachusetts, showing the relative number of animal reports from each town.



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 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).

Wildlife Section Staff

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PRIVATE LANDS HABITAT MANAGEMENT

John O'Leary, *Supervisor*

Overview

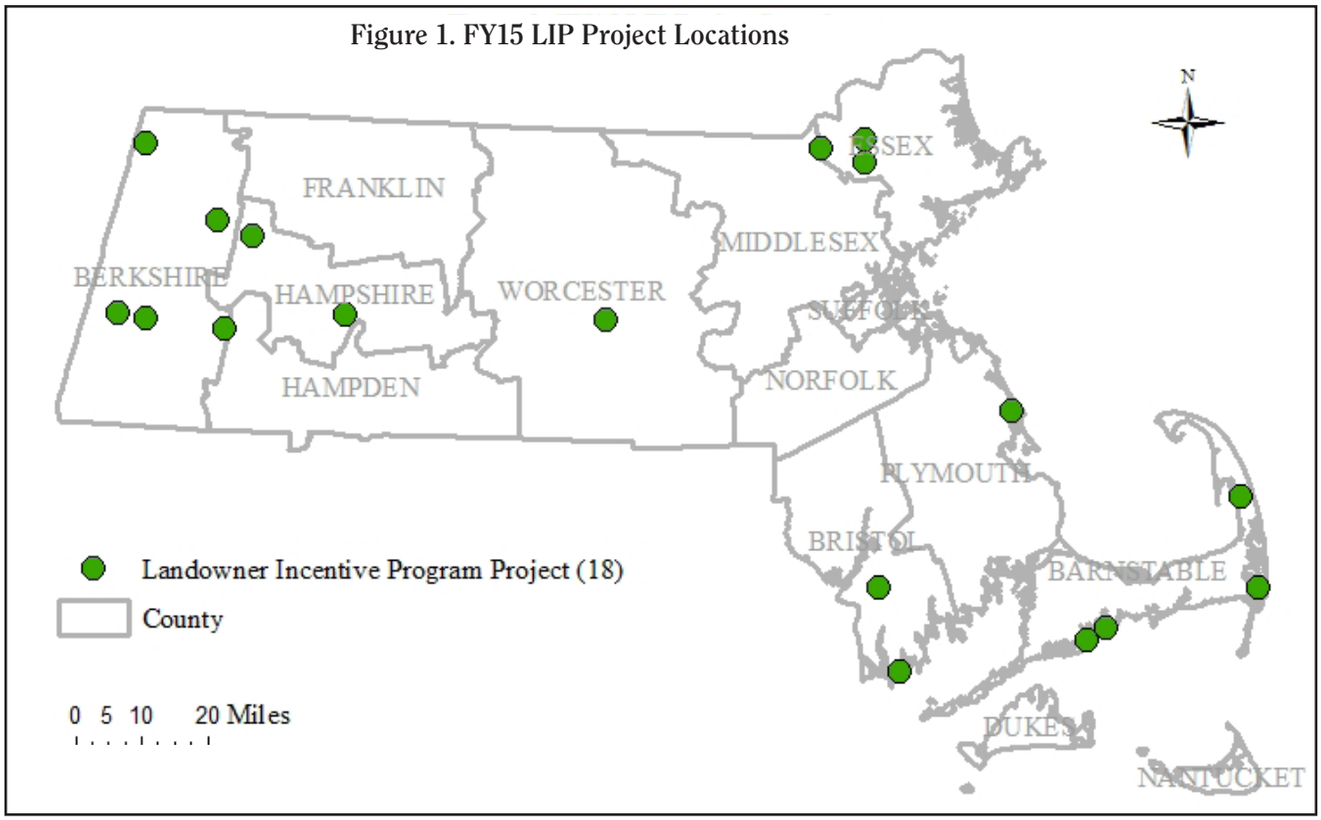
Private lands management is essential to the conservation and restoration of important fish and wildlife habitats in Massachusetts. Eighty percent of the land base in Massachusetts is privately owned, and many Special Concern, Threatened, and Endangered species occur on these lands. Two of the programs 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; Massachusetts List of Endangered, Threatened, and Special Concern species as published by the Natural Heritage & Endangered Species Program; and Massachusetts LIP At-risk Species as identified by the Landowner Incentive Program.

Landowner Incentive Program (LIP)

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 that will help landowners achieve these goals. LIP is a cost-share program designed to give landowners with limited financial resources the ability to obtain funds and guidance that will 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; with the landowner providing the remaining percentage either in funds, in-kind labor, or equipment.

In awarding grants, the LIP staff focuses on the management of private lands identified by NHESP *BioMap2* as being essential for the conservation of declining species. 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

Figure 1. FY15 LIP Project Locations



species-at-risk, (2) identify and reclaim appropriate sites for management of declining habitats (especially open habitat types: 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.

Funding for this program was allocated by Congress through the Fish and Wildlife Service (USFWS) to support the habitat management efforts of state fish and wildlife agencies. 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 LIP Coordinator position was vacant for FY15 which limited the program. However, other DFW staff collaborated to accomplish some LIP-related activities. This included administering contracts for 18 projects selected for FY15 funding (Figure 1). As a result, in FY15 the DFW contributed approximately $320,000 toward the 18 projects, which resulted in positive impacts on over 1,000 acres across the Commonwealth. To date, the DFW has funded 188 LIP projects and has provided technical assistance to private landowners from Cape Cod to the Berkshires. Through this program, the DFW contributed approximately $3.8 million for the conservation of declining species on private land over the program's 9-year history.

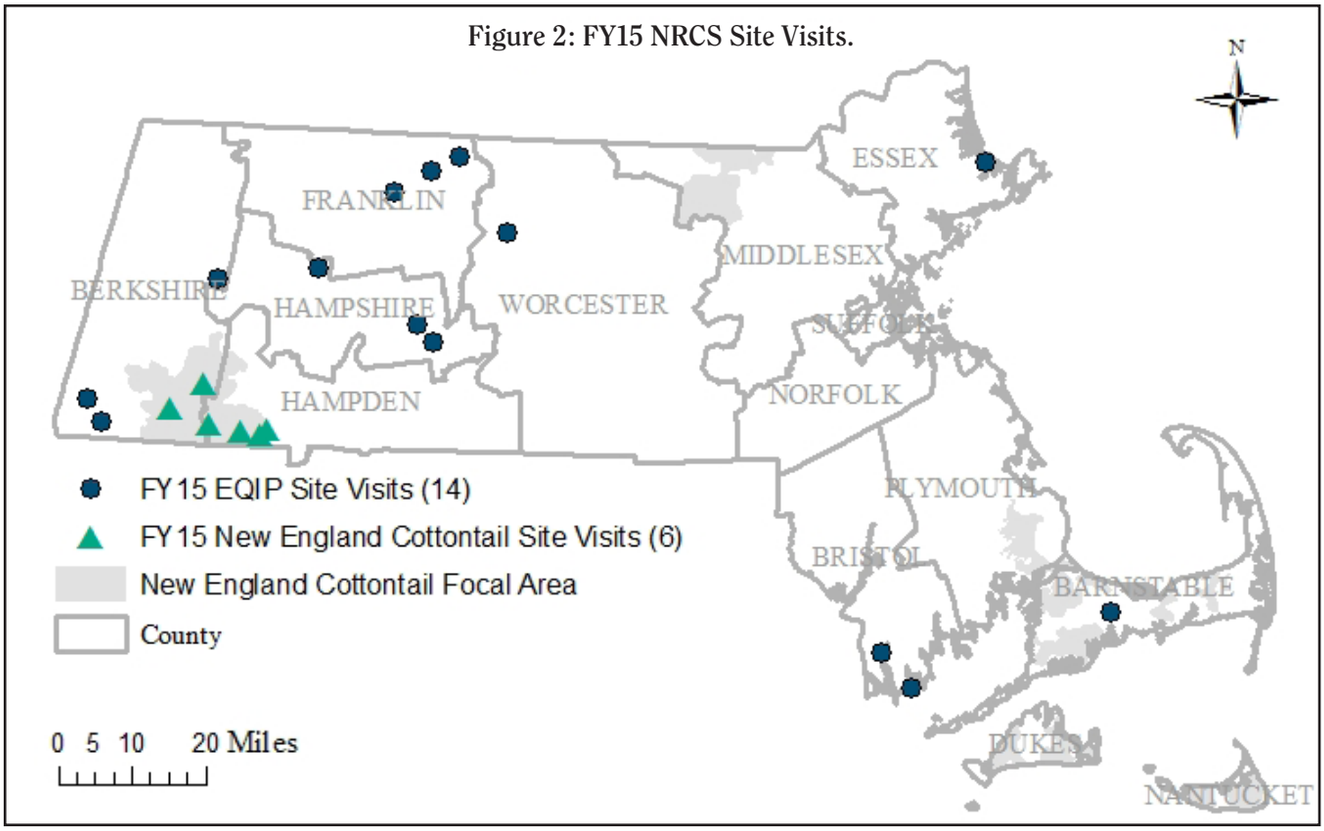
Technical Assistance Program to the Natural Resources Conservation Service

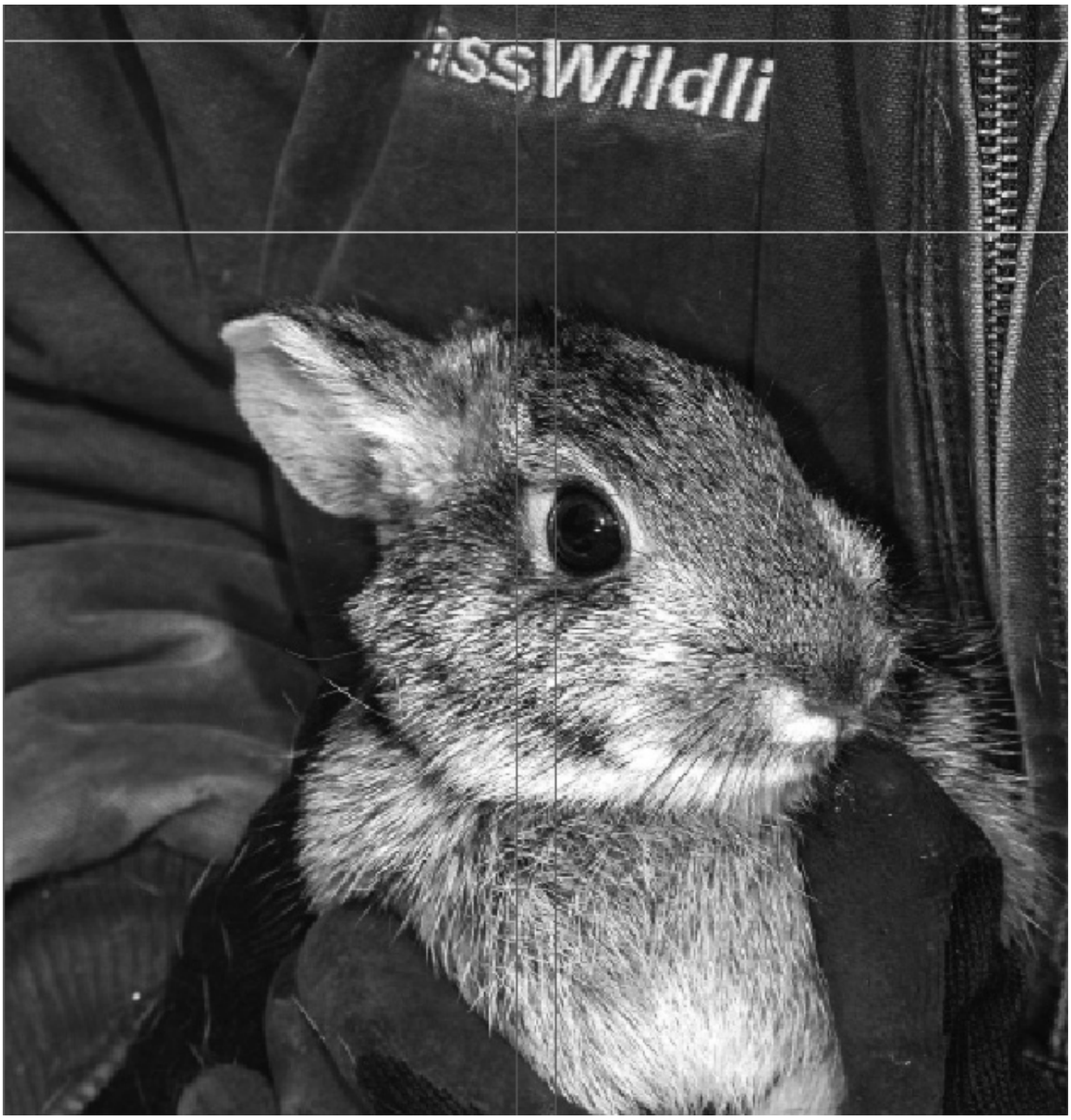
Marianne Piché, *NRCS Habitat Biologist*

In 2008, the DFW and NRCS began working under partnership to develop habitat management projects on private land funded through Farm Bill programs. The DFW Habitat Management Biologist (HMB) provides planning assistance to NRCS that is consistent with the goals and objectives of the Massachusetts State Wildlife Action Plan and the Biodiversity Initiative. The HMB also serves as the liaison between NRCS and the DFW on the Conservation Strategy for the New England Cottontail. In FY 15, the HMB provided NRCS staff with assistance in the development of funding applications and worked directly with them to plan, implement, and supervise activities associated with habitat restoration and management on private lands across Massachusetts.

During FY 15, the HMB participated in twenty site visits to plan a variety of habitat management projects with six specifically for New England Cottontail (Figure 2). The HMB prepared a total of 24 habitat management proposals with six being for New England Cottontail. One proposal was prepared for a landowner to manage marsh/wet meadow habitat within the NRCS Bog Turtle focal area. All available funds were expended and a total of ten applications were awarded assistance, two of which were for New England Cottontail habitat management. NRCS contracts entered into by these 10 landowners include plans for 187 acres of habitat management and totaled $316,963.00. One landowner in Dartmouth was awarded funding to manage 60 acres of maritime shrubland with prescribed fire. Additional management

Figure 2: FY15 NRCS Site Visits.





John Garofoli, Wildlife Technician, with marked and re-captured New England Cottontail, Sandwich.

on other properties will include the creation of 127 acres of young forest habitat, invasive plant species control on 121 acres, and construction of brush piles. The 2014 Farm Bill set 5% as an annual nationwide minimum for available funds to be allocated to wildlife habitat management. In Massachusetts, 7.53% of FY 15 Environmental Quality Incentives Program funding was allocated for wildlife habitat management practices, exceeding the minimum.

The HMB organized or participated in four events to promote the use of NRCS funding programs. In addition, 135 letters were sent to landowners informing them of opportunities to engage in New England Cottontail conservation and inviting them to attend one of two walks held at the properties of landowners who have completed projects. The HMB continued to coordinate multi-agency New England Cottontail Land Management Team meetings and participate in New England Cottontail Technical Committee meetings and work groups. The HMB also worked with Wildlife Management Institute staff to develop stories about four landowners' New England Cottontail projects that are featured on the New England Cottontail website. Data and summaries pertaining to private lands conservation efforts for New England Cottontail were also prepared to be included in the 2015 New England Cottontail Performance Report. The HMB also represented Massachusetts at the annual Northeast Habitat Technical Committee meeting.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

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Changes to the Massachusetts List of Endangered, Threatened, and Special Concern Species

Many of the duties of the Natural Heritage & Endangered Species Program (NHESP) focus on conservation efforts for species on the Massachusetts List of Endangered, Threatened, and Special Concern Species, also referred to as the Massachusetts Endangered Species Act list, or the "MESA list." Species on the list are categorized as Endangered (E), Threatened (T), or of Special Concern (SC). The MESA list change process involves many steps, and typically takes about a year to complete. The list change process, and associated information, are detailed in the document titled "Listing Endangered Species in Massachusetts: The Basis, Criteria, and Procedure for Listing Endangered, Threatened, and Special Concern Species," available at ***http://www.mass.gov/eea/docs/dfg/nhesp/species-and-conservation/listing-criteria.pdf***.

Every two years, NHESP reviews the MESA list to determine if any changes are needed. There are three main categories of change that are considered: (1) listing (addition of a species to the list); (2) delisting (removal of a species from the list); (3) change in status of a species on the list (SC ↔ T ↔ E). In addition, taxonomic name changes are made as needed. If the Program determines that changes to the list are needed, then changes are proposed on a species-by-species basis. In addition, during the two-year interval between MESA list reviews, the NHESP collects any list change proposals submitted by the Natural Heritage & Endangered Species Advisory Committee or others, including members of the public, to be evaluated during the next round of list changes.

The list changes currently in process began in October 2013, and the process from October 2013 through June 2014 is detailed in the FY 14 Annual Report. The process resumed at the Natural Heritage & Endangered Species Advisory Committee (NHESAC) meeting on July 10, 2014. The following 21 changes recommended by the NHESP were discussed:

Photo © Mario Bogaert

NHESP staff received a Certificate of Recognition from the Commissioner's office for their nomination in the Commonwealth's Pride in Performance Recognition Program.

Taxonomic Group	Scientific Name	Common Name	Proposal
Add to List			
Plant	*Linnaea borealis* ssp. *americana*	American Twinflower	Watch List → SC
Plant	*Malaxis unifolia*	Green Adder's Mouth	Watch List → T
Plant	*Moneses uniflora*	One-flowered Pyrola	Watch List → SC
Plant	*Neottia bifolia* (syn. *Listera australis*)	Southern Twayblade	Watch List → T
Delist			
Bird	*Accipiter striatus*	Sharp-shinned Hawk	SC → delist
Bird	*Ammodramus henslowii*	Henslow's Sparrow	E → delist
Snail	*Ferrissia walkeri*	Walker's Limpet	SC → delist
Dragonfly	*Anax longipes*	Comet Darner	SC → delist
Dragonfly	*Rhionaeschna mutata*	Spatterdock Darner	SC → delist
Moth	*Digrammia eremiata*	Three-lined Angle Moth	T → delist
Butterfly	*Satyrium favonius*	Oak Hairstreak	SC → delist
Plant	*Crocanthemum dumosum*	Bushy Rockrose	SC → delist
Plant	*Linum intercursum*	Sandplain Flax	SC → delist
Change in Status			
Bird	*Falco peregrinus*	Peregrine Falcon	E → T
Flatworm	*Polycelis remota*	Sunderland Spring Planarian	E → SC
Beetle	*Cicindela limbalis*	Bank Tiger Beetle	SC → T
Moth	*Zanclognatha martha*	Pine Barrens Zanclognatha	T → SC
Plant	*Alnus viridis* ssp. *crispa*	Mountain Alder	T → SC
Plant	*Cypripedium parviflorum* var. *makasin* (currently E)	Yellow Lady's-slipper	Replace with *C. parviflorum*, all varieties (*makasin*, *pubescens*, and *parviflorum*), list as E
Plant	*Mimulus moschatus*	Muskflower	E → T
Plant	*Solidago macrophylla*	Large-leaved Goldenrod	T → SC
	E = Endangered	T = Threatened	SC = Special Concern

After the discussion, the NHESAC voted to approve all 21 NHESP recommendations. The 21 potential list changes were presented at the Division of Fisheries & Wildlife Board meeting on July 22, 2014 for comment and discussion. At the October 7, 2014 meeting of the Fisheries & Wildlife Board, a Public Hearing was held to present the 21 potential MESA list changes, and open the two-week public comment period. At the January 29, 2015 meeting of the Fisheries & Wildlife Board, the Board voted to approve all 21 changes to the MESA list. As of June 30, 2015, the MESA list changes were awaiting approval by the Executive Office of Administration and Finance and the Governor's Office, prior to submission to the Secretary of State for publication in 321 CMR 10.90.

The Natural Heritage Atlas

The species-specific habitat areas described in the chart above are the foundation for the creation of the Natural Heritage Atlas used in regulation under the MESA. Publication of the *14th Edition of the Natural Heritage Atlas* had previously been delayed pending the outcome of a court case challenging the Division's authority to regulate based on existing Priority Habitat mapping and publication procedures. Last year's Supreme Judicial Court's decision upholding NHESP's ability to map and regulate based on Priority Habitat removed that barrier. The publication of *the 14th Edition of the Natural Heritage Atlas* is expected to occur early in 2016 after a public comment period.

Key Sites & the Public Land Management Initiative

The NHESP continued to work with the Wildlife Section and Wildlife Districts to increase DFW's investment in habitat restoration and public land management. NHESP's Key Sites analysis, which builds on BioMap2, was used to help prioritize management. Our agency-wide FY 15 habitat restoration effort involved 3,790 acres of management treatments on a footprint of 2,960

acres. This includes approximately 960 acres of canopy thinning, 1,350 acres of mowing/mulching, 270 acres of harrowing/seeding for grassland restoration, 680 acres of prescribed burning, 340 acres of invasive plant control, one acre of stream restoration, and 235 acres of water level management. The FY 15 effort significantly surpasses the FY 14 effort, which was formerly the largest single-year effort ever undertaken by our agency.

Vernal Pool and Rare Species Information System

During the FY 15, 140 new people signed up for VPRS, submitting a total of 1,400 observation reports—199 vernal pool certification forms, 311 rare plant observation forms, and 890 rare animal observation forms. Once submitted through VPRS, the information is reviewed by NHESP staff using standard data acceptance criteria for inclusion into our database.

Linking Landscapes for Massachusetts Wildlife

In 2008, MassWildlife and its NHESP entered into an interagency service agreement (ISA) with the Massachusetts Department of Transportation (MassDOT), Highway Division to improve the efficiency of state-level environmental project review. This nationally recognized model of cooperation between state agencies has resulted in faster reviews, cost savings, and protection of endangered species and their habitats. As part of the ISA, both agencies agreed to pursue proactive projects to reduce wildlife-vehicle collisions and improve public safety where feasible. Transportation infrastructure affects wildlife through direct mortality due to vehicle collisions and by fragmenting and degrading habitats. In addition, vehicle collisions with wildlife often result in property damage and sometimes personal injury.

In conjunction with the University of Massachusetts, Amherst, the agencies launched Linking Landscapes for Massachusetts Wildlife (LLMW), a long-term and multifaceted volunteer-based monitoring program and planning collaboration to be implemented throughout the state. Utilizing expertise from various state departments, along with collaboration with the public, LLMW's objectives are to: 1) reduce wildlife-vehicle collisions and improve public safety; 2) enhance, protect, and restore habitats impacted by roads; 3) control invasive species along road rights-of-ways; 4) incorporate conservation priorities into transportation planning; and, 5) implement wildlife and transportation related research.

In 2010, four research projects were developed to collect information through volunteer participation on wildlife mortality along roadways. Three separate databases available on the LLMW website serve as a central location for compiling observations of vernal pool amphibians during spring migration, turtles, and all other wildlife. LLMW has also coordinated a monitoring program for freshwater turtle mortality associated with the nesting season. From 2010 to the end of FY 15, over 400 volunteers participated in these projects. They documented over 3,500 mortalities (representing 49 species) at 1,161 locations throughout the state, including mortality for nine currently and formerly State-listed salamander and turtle species. In FY 15, LLMW installed 4 collapsible turtle crossing signs at one of the highest risk sites identified by the Northeast Blanding's Turtle Working Group.

In addition to community engagement through citizen science in FY 15, LLMW has installed and improved crossing structures and wildlife barriers to enhance public safety and protect endangered species; implemented invasive species control and habitat restoration of scenic uplands and calcareous wetlands that are hotspots for biodiversity; engaged with community organizations to build and install 15 nest boxes for American Kestrels, a declining species; installed and monitored five nest boxes on bridges for Peregrine Falcons, a State-endangered species; and launched a new interactive website.

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 currently listed under the MA Endangered Species Act (MESA). Revisions and updates were also made to habitat maps based on new information, including new aerial photography, parcel data, the expiration of records (observation records more than 25 years old are considered to be "historic"), and new biological data which may increase our understanding of habitat utilization. These species-specific habitats are used in much of the work conducted by NHESP staff—from land protection, to habitat management, to regulation. In addition to these standard annual uses of such spatial data, in FY 15, these species-specific habitat maps were also used to inform the State Wildlife Action Plan, finalize the spatial footprint of the Key Sites Project, and advise the regulatory mapping to be included in the *14th Edition of the Natural Heritage Atlas*.

2014 Field Season Summary

Birds

Piping Plover; Federally Threatened

MassWildlife coordinated annual monitoring and protection efforts for Piping Plovers conducted by a coastwide network of cooperators. Over 250 sites in Massachusetts were surveyed for the presence of breeding plovers during May and June 2014. Compilation of final census results is still underway. Preliminary results indicate that Massachusetts supported approximately 686 breeding pairs of Piping Plovers in 2014, similar to the 695 pairs tallied in 2013. The preliminary estimate of productivity for 2014 is only about 1.1 chicks fledged per pair, which falls below the level of 1.24 chicks fledged per pair that we believe is necessary to support a sustainable population.

American Oystercatcher

MassWildlife coordinated annual monitoring and protection efforts for American Oystercatchers conducted by a coastwide network of cooperators. Over 250 sites were surveyed during May and early June 2014. Preliminary results indicate that Massachusetts supported approximately 170 breeding pairs of oystercatchers in 2014.

Terns, Laughing Gulls, Black Skimmers

Cooperators in Massachusetts surveyed approximately 140 coastal sites in 2014 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*). Compilation of final census results is still underway. Preliminary tallies include 1,831 pairs of Roseate Terns (an increase of nearly 40% over 2013 numbers), 16,813 pairs of Common Terns (+3%), 3,259 pairs of Least Terns (-6%), 2,089 pairs of Laughing Gulls (+12%), 1.5 pairs of Arctic Terns (vs. 0.5 pairs in 2013), and 5 pairs of Black Skimmers (vs. 3 pairs in 2013).

Buzzards Bay Tern Restoration Project

Collectively in 2014, Bird, Ram, and Penikese Islands supported 1,823 "peak season" pairs of Roseate Terns (vs. 1,307 in 2013; +39.5%) and 7,096.5 "peak season" pairs of Common Terns (vs. 6,788.5 in 2013; +5.9%). This is the highest number of Common Terns and the second highest number of Roseate Terns that have been recorded nesting in Buzzards Bay since at least the 1950s.

Bird Island

The 2014 count (2,391 pairs) of Common Terns on Bird Isl. validates the rough estimate from 2013, when a complete census could not be conducted. The 2013 estimate (2,500 pairs) was much higher than usual (1,700-1,900 pairs for the previous two decades), so it was good to have solid data in 2014 to document this increase. Numbers of Roseate Terns leapt 45% to 1,121 pairs (vs. 772 in 2013). Food resources appeared to be on the low side for both tern species and productivity was only fair (0.85 fledglings/nest for both species). No major predation events were recorded this year.

Bird Island Habitat Restoration

MassWildlife maintained its partnership with the U. S. Army Corps of Engineers (USACE) – New England District to restore the eroding tern nesting habitat on Bird Isl. under the federal Section 206 Aquatic Ecosystems Restoration Program. In November 2014, USACE received word that the federal portion (65%) of the funding necessary for construction would be secured this federal fiscal year (FFY2015), allowing for construction of the project starting in September 2015, provided that the non-federal share (35%) of the project cost and all permits and easements were also in place. We continued to work to meet these requirements.

Ram Island

Common Tern numbers on Ram increased 8% to 3,790 pairs (vs. 3,525 in 2013), but productivity was poor (0.58 fledglings/pair vs. 1.17). Roseate Tern numbers increased (+28%) to 682 pairs, the highest estimate since 2006 (vs. 535 in 2013). Productivity was average (0.98 fledglings/pair vs. 1.31). As was the case at Bird Isl., food appeared to be limiting at Ram Isl., especially for Common Terns. Several Common and Roseate Terns were killed by a Snowy Owl early in the nesting season. There was a major Snowy Owl irruption on the East Coast this past winter. Snowy Owls were present on all three islands in winter and/or early spring, but they departed Bird and Penikese Islands before the terns arrived.

Penikese Island

Common Tern numbers on Penikese Isl. increased 36% to 915.5 pairs (vs. 673.5 pairs in 2013). This reflects easing predation pressure over the last two years due to management efforts. Although Common Terns were food-stressed relative to other years, productivity was still good at 1.04 fledglings/pair (vs. 1.75). After an absence in 2013, Roseate Terns (20 pairs) again nested on Penikese Isl. and productivity was good (1.08 fledglings/pair). An Arctic Tern pair fledged one chick. An Arctic Tern that paired with a Common Tern also raised one chick to fledging.

Penikese Island Habitat Restoration

Habitat restoration on Penikese Isl. involves using fire and herbicide to change vegetative composition and structure so that terns can expand from the narrow, rocky nesting beach into the uplands, where they will be more secure from predators and overwash. A combination of fire and herbicide is necessary in this effort, because burning is ineffective in controlling some invasive species, but actually exacerbates the coverage of others. DFW staff conducted a burn of the entire island in April 2014 and in September 2014, Vegetation Control Service, Inc. (Athol, MA), conducted another round of herbicide treatment across the island.

Because of the substantial progress made in controlling invasive vegetation on Penikese Isl., several thousand plugs of native grasses and wildflowers grown from native seed collected in 2013 were planted. Propagation of these plants was done by the New England Wild Flower Society (Framingham, MA) and through a volunteer effort involving students from Bristol County Agricultural High School (BCAHS; Dighton, MA). In September and October 2014, two large "gardening expeditions" to the island were organized, during which MassWildlife staff and volunteers (including 30+ BCAHS students) planted the plugs in nine plots (~ 1 ac total) across the island. The efforts of the BCAHS Natural Resource Management Department were recognized with a 2015 Secretary's Award for Excellence in Energy and Environmental Education from the Executive Office of Energy and Environmental Affairs.

Common Loon

In 2014, personnel from the Massachusetts Division of Fisheries and Wildlife and the Massachusetts Department of Conservation and Recreation (DCR) monitored Common Loon (*Gavia immer*) activity in central and western Massachusetts from May until September. In addition, personnel from the BioDiversity Research Institute conducted statewide surveys of waterbodies that possessed qualities conducive to supporting breeding loons. Forty territorial loon pairs and 27 nesting pairs were found on 15 waterbodies in Massachusetts. This is the highest number of territorial pairs recorded in modern history and the same number of nesting pairs as in 2013, which was the highest on record. Eighteen chicks were presumed to have survived to fledging, which resulted in a productivity value of 0.66 fledglings per nesting pair; this is below the 23 year average productivity of 0.81 fledglings per nesting pair. Three new loon territories were recorded at the Quabbin Reservoir and four of five nesting rafts launched at the Quabbin were utilized. Two rafts were launched at town-owned waterbodies in Berkshire county, but neither was utilized.

Bald Eagle

During the summer of 2014, there were 47 known territorial pairs of Bald Eagles in Massachusetts; this is 7 more pairs that in 2013, but includes pairs that relocated and their new nest sites were not found. Of the 47 documented pairs, at least 42 pairs incubated eggs, and at least 36 pairs successfully fledged 60 chicks. Of the 60 chicks that fledged, 35 were banded by MassWildlife staff. In 2010, 2011, 2012 and 2013, there were 32, 36, 39, and 40 territorial pairs, respectively, which produced 41, 37, 33, and 46 fledged chicks. This is the 26th year that Bald Eagles have raised young in Massachusetts since their restoration. During these 26 years, at least 546 wild-born chicks are known to have fledged, and an additional 9 chicks that were captive-born and fostered have fledged (555 chicks in total).

Nesting Bald Eagle Survey

Results of the 2015 spring nesting Bald Eagle survey will be included in the FY 16 Annual Report as part of the detailed 2015 summer nesting results.

Peregrine Falcon

During the 2014 nesting season, 27 nesting pairs of Peregrine Falcons were confirmed. Of these, one pair was territorial, but did not nest, 3 nesting pairs failed, and 5 pairs were present, but not monitored closely enough to know their outcome. At least 18 pairs laid eggs, and the 15 monitored pairs fledged 44 chicks, of which, 37 chicks from 13 nests were banded. This is the 28th year that Peregrine Falcons have raised young in Massachusetts since their restoration. During these 28 years, at least 481 wild-born chicks are known to have fledged.

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. The "Action Plan," completed in 2013, can be found online at (http://www.mass.gov/eea/docs/dfg/nhesp/species-and-conservation/grassland-bird-plan-final.pdf). The first step towards implementation of this plan was the development of a protocol for surveying sites for grassland birds, in order to update the numbers of breeding Grasshopper Sparrows and Upland Sandpipers at the top sites in the state.

Nesting season surveys for grassland birds at the two Sites were initiated in 2014 and will be completed in 2015. Surveys were conducted between May 26 – June 30 and consisted of 10 minute point counts where the distance was estimated to each bird detected. Whenever possible, surveys were conducted twice at each site. To maximize data quality, information was collected on only 10 species: Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Eastern Meadowlark, Bobolink, Savannah Sparrow, American Kestrel, Northern Harrier, Horned Lark, and Killdeer. In total, 16 sites were surveyed in 2014, and a list of species detected at each can be found in Table 1. The remaining high priority sites (e.g. Westover Air Reserve Base and Joint Base Cape Cod) will be surveyed in 2015. The updated information on Grasshopper Sparrows and Upland Sandpipers will then be used to move forward with the grassland bird conservation strategy.

Reptiles and Amphibians

Northern Red-bellied Cooter; Federally Endangered

For the 30th consecutive year, efforts were made to locate Northern Red-bellied Cooter nests at Federal Pond and place wire cages over them in order to prevent predation. The first nest was found on June 3rd, which is a little later than the typical June 1st start of the nesting season, and the last nest was discovered on June 30th, about three weeks earlier than usual. The entire nesting season lasted only 28 days, with unusually consistent weather conditions. Constant cooler than average temperatures and little rain contributed to a steady nesting sequence with very little predation. A total of 60 nests were located and caged by contractor John Crane. These 60 nests produced 837 eggs (13.95 per nest), which resulted in 585 viable hatchlings (9.75 per nest). Of these, 106 hatchlings were saved for headstarting, and 479 were directly released back into Federal Pond. This year was plagued by maggot infestations in nests, resulting in the loss of approximately 156 hatchlings

Table 1. List of sites surveyed in 2014 and the presence of each surveyed species

Site	Upland Sandpiper	Grass-hopper Sparrow	Vesper Sparrow	Am. Kestrel	Eastern Meadow lark	Kill-deer	Bobo-link	Savannah Sparrow	Horned Lark
Amherst Landfill						x	x		
Barre Airport						x			
Bull Hill Rd., Hadley						x			
Clinton Landfill								x	
Gardner Airport						x			
Honey Pot Rd., Hadley			x			x		x	
Plymouth Airport	x	x	x	x	x			x	x
S. Weymouth Naval Station		x			x	x		x	
Turners Falls Airport		x				x		x	
Westfield Barnes Airport	x	x			x	x	x	x	x
Worcester Landfill								x	
Frances Crane WMA	x	x			x	x		x	
Southwick WMA					x	x			
Bolton Flats WMA		x	x	x				x	
Spencer Transfer Station							x	x	
Worcester Airport					x	x	x	x	

and 96 eggs. Additionally, two nests were picked up at Crooked Pond, which is part of the Massasoit National Wildlife Refuge, and 22 hatchlings (11 from each nest) were incorporated into the Headstart Program.

A total of 128 hatchlings from 2013, plus an additional 10 hatchlings collected from cranberry processing plants, were headstarted by 22 cooperating organizations and individuals. Since 1984, a total of 3,743 headstarted Northern Red-bellied Cooters have been released after 9 months of headstarting.

A second season of intensive field work was conducted to assess our long-term, intensive, Headstart Program. Mark-recapture work continued at Easthead, Long Pond, Little Long Pond, and Halfway Pond, and was initiated at Island Pond. Preliminary estimates indicate that annual headstart survivorship to adulthood may exceed 95%. Captures of significant numbers of juveniles at Easthead (a population initially comprised exclusively of headstarted animals), indicates that headstarted cooters are reproducing successfully in the wild. Field work in 2015 will be expanded to additional sites, in collaboration with researchers from University of Massachusetts, Amherst and Antioch New England.

Bog Turtle

During the 2014 field season, formal population monitoring was conducted at two sites, yielding observations of 11 Bog Turtles. Two additional Bog Turtle hatchlings were observed at one site during a separate site visit.

Intensive habitat management activities occurred at one of the known Bog Turtle sites. Prescribed grazing continued, three beaver deceiver/flow devices were maintained, beaver were trapped, and herbicide was used to reduce invasive plant species at the site. Significant progress has been made managing water levels and controlling invasive plants.

Blanding's Turtle

DFW participated in a regional conservation project supported by a State Wildlife Grant. This work entailed participation in meetings and conference calls, site prioritization, development of a population monitoring program, and implementation of the monitoring program. As this project shifts into the conservation planning and implementation phase, DFW worked with MassDOT to install seasonal turtle crossing signs at select sites with a history of Blanding's Turtle road mortality. DFW also provided funding for pilot Blanding's Turtle conservation projects to benefit Great Meadows and Georgetown/Groveland Blanding's Turtle populations.

The Great Meadows work, undertaken in partnership with Grass Roots Wildlife Conservation and the USFWS, involved a pilot effort to create shrub wetland habitat within the great meadows impoundments. This habitat will create refugia for adults and potentially important habitat for juveniles.

The Georgetown/Groveland work included funding a nesting habitat creation project and a pilot hatchling headstarting program. This work was undertaken in partnership with the Parker River Clean Water Association and the local Conservation Commission.

Wood Turtle

DFW participated in the Regional Conservation Needs Grant project funded through the Northeast Association of Fish and Wildlife Agencies. No field work was conducted in 2013. DFW also worked with University of Massachusetts, Amherst to develop and submit a regional Competitive State Wildlife Grant application which received funding, enabling DFW to continue to work with other northeastern states to advance Wood Turtle monitoring and conservation planning implementation.

Marbled Salamander

During September – December 2014, we conducted 123 surveys (1 visual-encounter survey for adults, 84 dry-pool substrate searches for adults, 38 visual surveys for larvae) at potential breeding wetlands to discover new breeding sites and/or update relatively old records. Surveys yielded observations of Marbled Salamander at 21 wetlands (18 via substrate searches, 3 via larval surveys), resulting in discovery of 2 new populations, discovery of 14 new breeding sites, and "renewal" of 7 existing records. Several vernal pools were monitored periodically to determine hatching success at wetlands that did not fill with water until late November and early December (continuing an informal investigation into nest viability in late fall / early winter). Successful hatching was observed for three of four nests monitored, where hatching occurred between 19 November and 11 December. Larvae were observed at three additional basins where hatching must have occurred between 19 November and 5 December. These observations add to a growing dataset on reproductive success of Marbled Salamanders when nest hatching occurs well after the onset of nightly freezing temperatures.

Jefferson Salamander/ Blue-spotted Salamander

During March–April 2014, 129 surveys (4 visual-encounter surveys for adults, 125 egg-mass surveys) were conducted at potential breeding wetlands of the Jefferson/Blue-spotted Salamander complex to confirm previous reports, update relatively old records, and/or discover new breeding sites. Surveys yielded 18 detections of the species complex, resulting in a discovery of one new population, a discovery of 13 new breeding sites, "renewal" of three existing records, and a taxonomic re-assignment of two existing populations (from Blue-spotted Salamander to Jefferson Salamander, and vice versa). The newly discovered population, based on its geographic location (Attleboro) and the morphology of individual salamanders observed, was suspected to consist entirely of diploid individuals (extremely rare in Massachusetts). One of the taxonomic re-assignments resulted in recognition of the occurrence of Blue-spotted Salamander in Sheffield, the first confirmation of the species west of the Connecticut River in Massachusetts. Those results prompted initiation of a new genetic and morphological investigation into the distribution of the species complex in Massachusetts. During March–May 2015, we collected 5–80 tissue samples of Blue-spotted/Jefferson Salamanders were collected from each of eight sites distributed among southwestern, central, and southeastern regions of the state. Preliminary morphological data suggest that the Attleboro population is, indeed, a diploid population, and that multiple populations of Blue-spotted Salamander occur in Sheffield. Genetic testing of collected tissue samples is anticipated within the next two years. In addition to that work, 63 egg-mass surveys were conducted during April–May 2015, discovering 11 new breeding sites and updating seven existing records of the species complex.

Atlantic Coast Leopard Frog

MassWildlife participated in a nine-state Regional Conservation Needs (RCN) grant study of Atlantic Coast Leopard Frog (*Lithobates kauffeldi*), a new species first recognized in 1936 in the New York/New Jersey region, but not described in the scientific literature until 2014. The RCN grant study aims to determine the geographic range of the species in the Northeast and further identify the genetic, morphological, and acoustical differences between it and other leopard frog species of the region.

A targeted inventory effort was coordinated in several regions of Massachusetts. During March–April 2014, with 1–3 calling surveys conducted at each of 78 stations distributed among 36 sites along the Housatonic River drainage, along the Connecticut River drainage, and in the South Coast region. Northern Leopard Frog (*Lithobates pipiens*) was detected at two sites (one in Sheffield, one in Hatfield) during planned surveys and at two other sites (one in Sudbury, one in Groton) incidentally during other survey work. Two dead leopard frogs (likely Northern Leopard Frog) were collected off a road in South Hadley. No Atlantic Coast Leopard Frogs were detected in any part of Massachusetts, and no leopard frog species were detected in the South Coast Region. During August–September 2014, tissue samples were collected from five leopard frogs in Sudbury and six leopard frogs in West Brookfield. Preliminary genetic results from those samples (and from six samples collected from West Bridgewater in 2013) indicate that the frogs are Northern Leopard Frogs; however, several samples suggest there was hybridization with Southern Leopard Frog (*Lithobates sphenocephalus*) and/or Pickerel Frog (*Lithobates palustris*) at some point in the past. During April 2015, the search was refined to survey the lower Housatonic River drainage more carefully, conducting 1–2 calling surveys at each of 31 stations distributed among five sites in Sheffield and one site in Stockbridge. Northern Leopard Frog was detected at 17 stations distributed among all six sites; Atlantic Coast Leopard Frog was not detected. An additional survey was conducted of three stations at a site in Longmeadow that had been surveyed three times in 2014; once again, no leopard frogs were detected at that site. As a result of this work, Northern Leopard Frog appears to be the only established species of leopard frog in Massachusetts, although some individuals exhibit genetic evidence of past hybridization events. We expect to continue monitoring for the presence of Atlantic Coast Leopard Frog on an opportunistic basis.

Eastern Spadefoot

In November 2014, MassWildlife worked with the Kestrel Land Trust to construct a prospective breeding-pool basin for Eastern Spadefoot in Sunderland. The pool basin was constructed to enhance breeding opportunities in a >300-acre area where adult individuals have been observed in the past, but for which no breeding habitat is confirmed. Monitoring of the pool basin and spadefoot activity in the region is ongoing.

Tiger Beetles

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

Population surveys were conducted on 10 July and 18 July 2014. A peak count of 1565 was recorded on 18 July at the primary site. On 6 August, 57 larvae were collected per USFWS instructions for detailed genetic work.

Puritan Tiger Beetle (Cicindela puritan); Federally Threatened

No work was conducted on Puritan Tiger Beetle during the reporting period, and only two individuals were reported to NHESP by a USFWS contractor.

Plants

Rare Plant Inventory

During the 2014 field season, 217 rare plant records were updated, searched for, or discovered. One hundred fifty-three plant populations were accepted and mapping was added or reviewed. Twenty new plant element occurrences were created.

Special Projects

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

Sandplain Gerardia *(Agalinis acuta)*; Federally Endangered: Population censuses or sampling procedures were conducted at eight sites, four locations on Martha's Vineyard and four on Cape Cod. The summer of 2014 was particularly dry on the Vineyard and numbers at all populations, both indigenous and restoration populations were lower than normal. In addition, two of the indigenous populations were mown accidentally in 2014 (one on Martha's Vineyard and one in Falmouth). The good news is that the restoration population at Frances Crane WMA was over 50,000 plants, indicating that MassWildlife management of the sandplain there is appropriate for this rare plant. Population sizes of this annual plant at the four sites on Martha's Vineyard were 0, 15, 69, and 2,452, and at the four sites on Cape Cod the numbers were 1, 350, 4,223, and 50,220.

Small Whorled Pogonia (*Isotria medeoloides*); Federally Threatened: Population censuses were conducted at four of the six known populations in 2014, which included a newly discovered population in Franklin County, which is also the first record of the species in the county. The numbers at the previously known sites were similar to past years. A total of 107 plants were counted at the four surveyed sites, which included 21 plants bearing 28 fruit.

Northeastern Bulrush (*Scirpus ancistrochaetus*); Federally Endangered: A survey of the population in Warwick, Franklin County, discovered in 2011, was conducted and the plants were observed to be doing well. Two days of de novo surveys were also completed but no new populations were found.

General Habitat Management Projects

The Program continued to work in cooperation with the DCR to control pale swallowwort within the habitats of 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. The success has led to an expansion of this

project to treat swallowwort in other hickory-hop hornbeam woodlands at Mount Tom. In addition, NHESP has worked with MassDOT to control swallowwort along Route 91 to slow its spread to additional areas, which may include other rare plant populations.

The Program has also worked in cooperation with National Grid to assist in the control of invasive species occurring near a rare plant, *Carex polymorpha*, on a power line in Burlington, Middlesex County. The program plans to re-establish a New England indigenous plant, New England Boneset (*Eupatorium novae-angliae*), at Cooks Pond, and have seed grown out into plants during the 2014 growing season. This plant was previously found at this coastal plain pond which is now owned by MassWildlife, but has not been seen there for several years. The program plans to manage this pond as habitat for coastal plain pond species, which includes many globally rare plants.

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 The Trustees of Reservations, the DCR, the Department of Agricultural Resources (MDAR), and the USFWS's Silvio O. Conte National Wildlife Refuge, controlled populations of the plant for a fifth year in Erving, Bridgewater, Foxborough, and Greenfield.

Kudzu (*Pueraria lobata*), a well known invasive in the southern U.S., has populations established in Massachusetts. Program staff assisted DCR and MDAR in continued control of a Kudzu population in Needham for a third year

Hardy Kiwi (*Actinidia arguta*) has been an aggressive invasive species in Lenox, causing significant damage to forest canopy and carpeting the forest floor, preventing the growth of other plant species. NHESP botanists worked with staff from MassAudubon to control this species in areas of rare plant populations on the MassAudubon Pleasant Valley Sanctuary.

The Program's botanists worked with the several other botanists on a Flora of Franklin County. These survey efforts have turned up several new finds, including an expansion of several listed rare species (for example, Small Whorled Pogonia).

Aquatic Species/Special Projects

"Management of Natural Resource Damage Assessment" awarded funds to survey freshwater mussels in the Connecticut River. Two contractors conducted surveys in the CT River and its tributaries for MESA listed freshwater mussels. Surveys resulted in updating current records of MESA listed species, the expansion of the known range of Yellow Lampmussel and Tidewater Mucket, and finding the non-listed Virginia Riversnail, a species that was thought to be extirpated from Massachusetts. NHESP coordinated the timely reporting of these projects and disseminated summaries to NRDA Trustees and MA DEP.

NHESP Aquatic Ecologist has been collaborating with the USFWS and UMass Amherst on assessing the feasibility of FW mussel propagation at the former Cronin Salmon Station. During FY 15, early planning and establishment of early research questions were the focus of the collaboration. Research questions identified included whether mussel culture was feasible using methods previously proven at other facilities, and what culture conditions may increase growth of early juveniles (i.e. temperature and growth substrate). The first production trial of non-listed Eastern Lampmussel was conducted at the end of FY 15, and the growout of juveniles will be reported in FY 16. NHESP's role has been a collaborative researcher, technical advisor, and conservation stakeholder on this project.

NHESP Aquatic Ecologist has advised USFWS and The Nature Conservancy on other mussel surveys and projects in Massachusetts and other New England states. These projects are associated with dam removals and relicensing of FERC regulated dams along the CT River. When requested, NHESP continues to advise MA DEP and the Lakes and Ponds Advisory Committee (LAPAC – coordinated through MA DCR Lakes and Ponds Program) on the use of herbicides on rare or sensitive aquatic fauna.

Regulatory Review

The following table summarized the environmental reviews conducted during FY 15:

Review Type	Count
Conservation & Management Permits	21
Data Releases	53
MESA Information Requests	211
Forest Cutting Plans	128
MESA Project Reviews	712
MEPA Reviews	62
Notices of Intent	648
Scientific Collection Permits	84
Other	94
Total	2013

Data Management and Data Products

In FY 15, NHESP processed a total of 417 new rare species, natural community, and certified vernal pool records, and updated 1,123 existing records. The data processed were in the following categories:

FY 13 Totals	New Records	Updates to Existing Records
Vertebrates	61	714
Invertebrates	26	81
Plants	20	217
Communities	17	19
Cert. Vernal Pools	293	92
Total	**417**	**1123**

Land Protection

In FY 15, DFW spent about $6.7 million to protect 2,660 acres of land across the state. 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

In Dunstable, the Division acquired 83 acres of land with more than 3,000 feet of frontage on the Nashua River, with habitat for Blanding's Turtles (Threatened), Wood Turtles (Special Concern), and Spine-crowned Clubtail dragonflies (Special Concern).

Southeast District

In Plymouth and Wareham, DFW acquired almost 750 acres adjacent to Myles Standish State Forest, extending the permanent protection of the globally rare Pitch Pine/Scrub Oak natural community, which supports numerous MESA-listed species. On this site alone, there is habitat for 17 MESA-listed species, including the Barrens Dagger Moth (Threatened) and Eastern Whip-poor-will (Special Concern).

Central District

Twenty-three acres added to the Wolf Swamp WMA in Sturbridge helped protect a population of the Marbled Salamander (Threatened).

Connecticut Valley District

Seventy acres were added to the Montague Plains WMA in Montague, protecting habitat for one Endangered, one Threatened, and nine Special Concern species.

Western District

In Goshen and Cummington, the Division purchased 290 acres along the Swift River, protecting habitat for Harpoon Clubtail (Endangered) and Riffle Snaketail (Threatened) dragonflies.

Natural Heritage and Endangered Species Program Advisory Committee

Full members are: Kathleen Anderson (*Chair*), Gwilym Jones, Joseph Larson, Mark Mello (*Vice Chair*), Wayne Petersen, Thomas Rawinski (*Secretary-part year*), and Jennifer Ryan.

Associate members are: William Brumback, Andy Finton, Timothy Flanagan, Mark Pokras, Kevin Powers, Karen Searcy, Dave Small, and Bryan Windmiller.

Presentations from Agency Staff

Final MESA List Changes Discussion and Vote on Recommendations – Mike Nelson, Invertebrate Zoologist (July 2014)

Update on Key Sites – Jonathan Regosin, Chief of Conservation Science (October 2014)

Treaties Worldwide: CITES – Jack Buckley, Deputy Director (November 2014)

Paddlefish Case Study – Jack Buckley, Deputy Director (November 2014)

An Introduction to the Wildlands Viewer – Emily Stolarski, Communications Specialist (December 2014)

Red Knot MESA Listing Proposal – Andrew Vitz, State Ornithologist (January 2015)

MassWildlife on Facebook – Nicole DeAngelis, Outreach/Marketing Specialist (January 2015)

Trends in Human-Wildlife Interaction in Massachusetts – Michael Huguenin, Wildlife Biologist (February 2015)

Revising the Classification of Natural Communities of Massachusetts – Pat Swain, Natural Community Ecologist (March 2015)

Black Bear Research in Massachusetts – Laura Conlee, Furbearer Biologist (April 2015)

Rare Species and Forestry – Eve Schluter, Chief of Environmental Review, and Brent Powers, NRCS Review Biologist (April 2015)

Discussion on the Regulation Changes Regarding the Possession and Sale of Animal Parts – Tom French, Assistant Director (May 2015)

Other Presentations to the Committee

Discussion of Winter-Related Animals brought to Tufts Wildlife Clinic – Mark Pokras, Associate Professor, Tufts Wildlife Clinic (June 2015)

State of the Plants – Elizabeth Farnsworth, Senior Research Ecologist, New England Wild Flower Society (June 2015)

Natural Heritage and Endangered Species Program Staff

Thomas W. French, Ph.D., *Assistant Director*
Tara Boswell, *GIS Manager*
Chris Buelow, *Assistant Restoration Ecologist*
Bryan Connolly, *State Botanist (part-year)*
Karen Dolan, *Finance and Projects Administrator*
Karro Frost, *Conservation Planning Botanist*
Lauren Glorioso, *Endangered Species Review Assistant (part year),*
Endangered Species Review Biologist (part-year)
Sarah Haggerty, *Chief of Information and Program Development*
Lynn Harper, *Habitat Protection Specialist*
Peter Hazelton, Ph.D., *Aquatic Ecologist*
Amy Hoenig, *Endangered Species Review Biologist*
Emily Holt, *Endangered Species Review Assistant (part-year)*
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*
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*
Robert Wernerehl, Ph.D., *State Botanist (part-year)*

INFORMATION & EDUCATION

Marion Larson
Chief, Information and Education

Overview

The Information and Education (I&E) Section has the responsibility and challenge of keeping sportsmen, conservation groups, municipal officials, environmental consultants, naturalists 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 fish and wildlife and related recreation in the general public.

New I & E Personnel

The Fisheries and Wildlife Board approved Nicole DeAngelis for the Outreach and Marketing Specialist position in June 2014 and she started working for the Division in July. A new Information & Education Specialist position was approved and interviews were held in late winter. Emily Callahan was hired and started in May 2015. She will be assisting the Recruitment and Retention Specialist, the Aquatic Resource Education Coordinator, and the Education Specialist.

Information and Outreach

Engagement with The Public

From January 2015 to June 30 of 2015 a total of 1228 agency email messages (2,660 FY 14) were handled by Biologist Bridgett McAlice, who is assigned to the Wildlife Section. Unfortunately, the first 6 months of the fiscal year emails were deleted before those monthly totals were documented. New ways for the public to make inquiries of the agency included the new agency Facebook page. Through this venue, the public shared pictures (230), asked questions, commented on the agency page (320 posts), and sent 84 private Facebook messages to which the agency responded.

Media Inquiries

As per current protocol, media inquiries are routed through the Executive Office of Energy and Environmental Affairs (EEA) press office. Media inquiries are then passed on to DFW staff for a response. In some cases, EEA provided the information directly (or with assistance from DFW) to the media, or the inquiry is handled through the Department of Fish and Game (DFG). For FY 15, EEA End of day summaries of media inquiries to the agency's attention were sporadically generated particularly during the administration transition period, therefore the information below is incomplete. The Assistant Press Secretary also took it upon herself to answer media inquiries directly without consultation with agency staff, sometimes resulting in incorrect or confusing information.

With the new administration in January press inquiries are passed directly on to DFW by EEA Press which has resulted in a more timely response to media. EEA Press is also open to pro-active media outreach efforts. For instance, a DFW fisheries survey of Wekepeke Brook in Lancaster with the new EEA Secretary Matt Beaton and DFG Commissioner George Peterson was arranged with a writer from the Worcester Telegram and Gazette in late spring.

In FY 15, the agency received 118 media inquiries from 61 different media outlets; summary end of day media inquiry reports from EEA press were not consistently issued as in past years. The vast majority of inquiries still come from newspapers (73); 26 inquiries came from television (includes public access); 6 from radio; five from magazines; and two unidentified outlets.

Communications

Emily Stolarski, *Communications Specialist*

Website

Because the MassWildlife website is housed under the Energy and Environmental Affairs (EEA) website, web-use statistics are analyzed in the context of the EEA site as a whole. In FY 15, the MassFishHunt licensing page was again the 2nd most viewed page on the EEA (2.2% of all EEA page views); the MassWildlife homepage was the 5th most popular page (1.2% of all EEA pageviews), the 7th most viewed page was the trout stocking schedule (1% of all EEA page views). Fifty-three percent (59% in FY 14) of internet users accessed the MassWildlife web page using a desktop computer, 37% used a mobile phone (31% in FY 14), and 10% used a tablet (no change from FY 14).

A Google Search Appliance, which allows users to search for content within all Mass.gov web pages, is located on all MassWildlife web pages (and all Mass.gov pages). Search terms related to DFW operations accounted for 41% of the top 250 searches on the EEA web site.

Listing of the top 15 DFW-related search terms:

1. Fishing licenses 2015
2. Doe permits awarded
3. License
4. Trout stocking
5. Pond maps
6. Stocking
7. Fishing license
8. Doe permits
9. Antlerless deer permit lottery
10. Hunting license
11. Hunting seasons 2014
12. Licenses
13. Fishing licenses for 2014
14. Trout schedule
15. Hunting license purchase

Listing of the 20 most popular MassWildlife webpages:

1. Division of Fisheries & Wildlife (Home page) – 274,991 (8.81%)
2. Trout Stocking Schedule – 235,408 (7.54%)
3. Laws & Regulations – 100,360 (3.22%)
4. Basic Hunter Education Courses – 100,231 (3.21%)
5. Antlerless Deer Permit Information – 91,613 (2.94%)
6. Hunting, Fishing & Wildlife Watching – 91,375 (2.93%)
7. Trout Stocking Schedule - Northeast District – 84,362 (2.70%)
8. Trout Stocking Schedule - Central District – 72,669 (2.33%)
9. Pond Maps - Southeast District – 70,808 (2.27%)
10. Massachusetts List of Endangered, Threatened, and Special Concern Species 60,822 (27.04%)
11. Hunting – 53,149 (1.70%)
12. Trout Stocking Schedule - Southeast District – 49,203 (1.58%)
13. Trout Stocking Schedule - Connecticut Valley District – 48,672 (1.56%)
14. Trout Stocking Schedule - Western District – 48,236 (1.55%)
15. Massachusetts Trout Stocked Waters – 47,567 (1.52%)
16. Hunting License Purchase Requirements 45,624 (1.46%)
17. Pond Maps - Central District – 45,426 (1.46%)
18. Gun Licensing Requirements – 45,281 (1.45%)
19. Freshwater Fishing in Massachusetts – 44,871 (1.44%)
20. Gun Ownership in Massachusetts – 41,742 (1.34%)

MassWildlife E-newsletter and Advisories

Communications Director Emily Stolarski and Outreach/Marketing Specialist Nicole DeAngelis collaborate to publish the monthly e-newsletter, now named "MassWildlife Monthly." Twelve monthly issues of the electronic newsletter were published this fiscal year and emailed to over 15,000 subscribers. In January 2015, we began using an email marketing service called Constant Contact to manage our subscriber list and send emails. This marketing service allows the Information and Education Section to not only produce an email with pictures and other attractive features, but also allows I&E staff to gather important data like how many subscribers open the email and which articles are of most interest to the subscriber. On average, 39% of subscribers open the MassWildlife Monthly email, which is considered an "above industry average" open rate, compared to other businesses and organizations using Constant Contact (18%). Advisories alerting subscribers and license holders of new regulations, special events, public meetings and hearings, etc., were also sent out through Constant Contact. All newsletters are posted on the agency website; analytics show that newsletters from FY 15 were viewed on the agency website 25,864 times.

Media Utilization

In addition to the MassWildlife e-newsletter, the agency was able to disseminate important information with the help of 13 Massachusetts groups and organizations (e.g., Worcester County League of Sportsmens Clubs and the Massachusetts Land Trust Coalition). These groups distributed information provided by MassWildlife's I&E Section through electronic and paper newsletters and other member updates. Individuals receiving these publications totaled 76,351. Many groups utilized our information several times during the fiscal year. Plymouth County League of Sportsmens Clubs hosts all of our e-newsletters on their website.

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 1,442 in FY 15 (1,428 FY 14), with an average of 120 articles per month. These articles reached 23,753,951 individuals and are valued at $5,862,357.

Outreach and Marketing

Nicole DeAngelis, Outreach and Marketing Specialist

Social Media

In October 2014, MassWildlife launched a Facebook page (facebook.com/masswildlife) to better communicate with its constituents and increase the agency's visibility. As the most used social media platform in the world, Facebook has been a useful tool in helping MassWildlife share information about fish and wildlife issues in the Commonwealth; communicate about research projects; promote agency events, programs, job openings, and donation opportunities; listen to what constituents are saying; and engage with the public by

Table 1. Print Media Coverage FY 15

Newspaper Circulation	Under 1K	1-5K	5-10K	10-20K	20-50K	50-75K	75-100K	100-150K	200-500K
Percentage of articles mentioning DFW	3.2	40.7	19.4	11.8	15.4	6.6	0.8	0.7	1.3

responding to their comments and questions. By the end of FY 15, the MassWildlife Facebook page gained over 5,700 followers and the number of followers continues to grow. MassWildlife posted at least once a day each day during FY 15, and answered questions, messages, and comments submitted by followers of the page. The followers of the page posted to the MassWildlife Facebook page over 320 times, shared over 230 photos, and sent 84 private messages.

MassWildlife's most popular Facebook post of FY 15 was a short video of a Black Bear scratching its back against a tree; this post reached over 543,200 people and demonstrates how powerful social media can be at reaching a broad audience. The Facebook page has not only allowed us to communicate with the public, but also the media. A number of Facebook posts led to media inquiries and news stories in FY 15.

The agency purchased GoPro cameras during FY 15 to help gather photo and video content for Facebook and the agency website. Many staff members have supported the agency's efforts on social media by taking photos and videos while in the field and providing information to be shared on the Facebook page. The Outreach/Marketing Specialist edited and published the footage on appropriate channels.

Field Headquarters TV Display

In FY 15, the agency purchased a TV display for the lobby area of its new Field Headquarters building. The Outreach/Marketing Specialist has managed and published content for this TV monitor with seasonal updates and seasonally relevant photos and videos. Visitors to the building have enjoyed seeing wildlife photos and videos, as well as field work photos and videos when they enter the building.

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 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 staff a display to provide visitors with opportunities to ask questions and make connections to the agency. The Field Headquarters I&E staff provided support to the Wildlife Districts by coordinating the displays, filling in schedule gaps, restocking literature, answering or referring questions, and generally giving event visitors more opportunities to be exposed to the mission and work of the agency.

In FY 15, the DFW exhibited at three fairs: the Marshfield, Franklin County (Greenfield), and Topsfield fairs; and four trade shows: the New England Fishing and Outdoor Expo (Acton), the Boston RV and Camping Expo, the Springfield Sportsmen's Show (West Springfield), and the Boston Flower Show. Field Headquarters I&E staff and other Division staff, including Wildlife District staff, 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 at the center of the state's most popular flower show. The FY 15 Boston Flower Show display was enhanced by an extensive collection of the agency's pelts 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 managing 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

Staff from across the agency lead and otherwise participate in public events as workloads and time permit. In FY 15, DFW staff participated in 98 public events including informational talks to towns, conservation

groups, sportsmen's clubs, and schools; habitat site walks; conferences and public meetings. DFW staff also took part in 56 non-public events such as committee meetings, university guest lectures, and inter-agency planning groups. The Communications Specialist consulted with Division staff involved in outreach events, provided display equipment and literature for specific audiences, developed targeted display materials such as posters and handouts, and/or helped to staff the agency's display at these events.

Examples of FY 15 outreach events include: Logger Training Workshops in Athol; Wildlife Habitat Site Walks in Otis, Becket, and Falmouth; Suburban Deer Management presentation in Andover; DCR Interpreter Training in West Boylston; Pine Fest in Carver; Mass Land Conservation Conference in Worcester; along with numerous programs related to fish and wildlife conservation and management and DFW programs.

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.

During FY 15, the 18th Annual Big MOE was held on September 28th, on the grounds of the Hamilton Rod and Gun Club in Sturbridge. Approximately 6,000 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, Capen Hill Nature Sanctuary, and the Massachusetts 4-H Program.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 shooting sports, with one-on-one and mentored instruction available and without the necessity for purchasing any equipment. Demonstrations and exhibits on forestry, wildlife management, 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 an 18-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 12 years. Wildlife Biologist Peter Mirick serves on the event committee as a volunteer, and a number of DFW staff volunteer at the event. As the event organizer, Zima coordinates and chairs monthly planning meetings, maintains a database of approximately 320 Big MOE volunteers, and writes the necessary grants that offset the operational expenses associated with the event.

Publications

Peter Mirick, *Editor*
Bill Byrne, *Senior Photographer*
David Gabriel, *Art Director*
Massachusetts Wildlife Magazine

The DFW's most visible publication is *Massachusetts Wildlife*, a 40-page, full-color, quarterly magazine with a currently growing base of approximately 20,000 subscribers and a standard publication printing of 25,000 copies that provides surplus for handouts and promotions at programs, shows, and fairs. 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, 2014 – Number 2, 2015) 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 articles that will be useful as references on particular subjects for many years to come, this year's offerings included a definitive article on the subject of Mountain Lions and why there are so many false sightings. There were also feature articles on the Bobcat (covering its annual behaviors and range expansion); warbler migration; deer keds (external parasite); dangers of rodenticides; the Ipswich Sparrow; and the new DFW Headquarters building. How to articles included one on fishing for the Bowfin; exploring the Parker River NWR in winter; and where to observe piscivorous birds in winter. We also promoted agency programs with features on goose management; linking landscapes (with DOT) for the benefit of wildlife; opportunities with the Becoming an Outdoors Woman program; Catch & Release fishing (new awards program); and New England Cottontail management. We also featured obituaries for Scott Melvin (late NHESP senior biologist) and Jeff Capute (a master angler in the Sportfishing Awards Program).

Magazine Subscription Efforts: Surplus magazine issues are made available for free at sporting shows, fairs, meetings and other public events in which the agency participates.

During FY 2015, Massachusetts Wildlife magazine was promoted through direct mailing efforts managed by Infonet Systems. During FY 2015, five mailings were sent out for renewals and new subscriptions. Total cost of these mailings were $36,826 resulting in revenue of $59,829. Utilizing the MassFishHunt system and coordinating with the Office of Law Enforcement, targeted mailings included a segment of hunting and fishing license holders and a sample of people with registered boats, snowmobiles and off-highway vehicles.

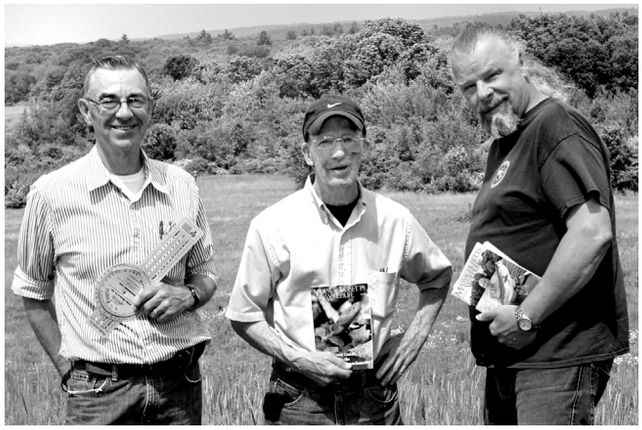


Photo © by Pam Landry

The Massachusetts Wildlife Magazine Team (L-R) Dave Gabriel, Bill Byrne and Peter Mirick, received a Citation for Outstanding Performance in the Commonwealth's Pride in Performance program and nominated for the PRP's highest honor, the Manuel Carballo award.

In the fall of 2014, there was a mailing effort to target those who had given the magazine as a gift in the past, inviting them to renew the gift subscriptions they had given in the past. This effort is timed to coordinate with the holiday, gift giving season. This group was sent up to four mailings, depending on if they had decided to give a gift. For example, if someone decided to renew a gift subscription after one mailing, they did not receive the other three mailings. The first mailing was sent to 2,492 donors giving 4,058 gifts (donors can be on file for giving the magazine as a gift to multiple people). After all four efforts, 4,735 gift orders were placed (117% response). Additionally, in the fall of 2014, mailings were sent to people who had never given the magazine as a gift in the past, encouraging them to do so. This mailing was sent to 6,030 people and brought in 379 new gift orders (6%). Both of these promotions do an excellent job at maintaining and increasing our subscriber base.

The beginning of the fiscal year showed 18,784 subscribers for the magazine. By the end of FY 15 there were 20,646 subscribers receiving the magazine.

The Guide to Hunting, Freshwater Fishing, and Trapping

The 2015 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. This year, the number of printed Guides was reduced due to the availability of the information online and fewer license vendors to provide hard copies. 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 15, these included articles on habitat management, angler ethics, and wildlife lands acquisition, and a sportsmen's guide to Massachusetts salamanders. Communications Specialist Emily Stolarski and Senior Photographer Bill Byrne contributed much of their respective time to the production of the 2015 Guide, providing articles, photos, and editorial support to the publisher and other staff involved with this critical project.

Other Publications

Standard annual publications, including the trout-stocking lists and the waterfowl abstracts, were updated and reprinted.

A new, third edition of "Trapping and Furbearer Management in North America" was edited and produced, in conjunction with the US Fish and Wildlife Service and The Wildlife Society. This 60-page, soft cover publication is used nationwide in trapper education courses and for public education.

Photography

Bill Byrne, *Senior Photographer*

Two primary photographic goals were achieved in FY 15, that of providing suitable images for the 2015 Guide summary of fishing , hunting and trapping regulations, and on a much larger scale, providing processed images for the publication of four issues of *Massachusetts Wildlife* magazine .

For each issue there is a variety of image sources, some by contributing authors, some by MassWildlife staff with special projects, and many by photographer Byrne. All images must be digitally processed to conform to high standards of color contrast, sharpness and dimensions to help insure the best reproduction. Then there are multiple rounds of color proofs and a final press check at the printing vendor to insure the best quality issue goes to our readers.

In issue No.3 2014 we gave a farewell tribute to our fine career biologist, the late Scott Melvin, whose outstanding work on the Piping Plover recovery will long be hailed as a huge success. Scott will be missed. In that issue Waterfowl Biologist H Heusmann brought us all up to date and the past and current management aspects of our resident and migrant Canada Goose populations. Other feature articles focused on Keds living in deer fur, harmful effects of rodenticides on raptors, successful Becoming an Outdoorswoman deer hunters, and cooperative efforts with Mass DOT in Linking Landscapes and Roadways to Wildlife enhancements.

In Issue No. 4 2014 there was a winter feel to the volume, with an interesting photo essay on the Ipswich Sparrow and its history/relation to the more common coastal Savannah Sparrow. A related winter visit to Plum Island was presented. The cover story on Massachusetts Bobcats was an in depth look at a year in the life of an adult female bobcat.. Editor Pete Mirick presented it in the fascinating perspective of the cat, taking the reader through her efforts to survive the seasons, avoid human threats, and successfully raise a litter of kittens into late winter. This was an extended photography mission, taking 3 years to accumulate sufficient quality images of wild bobcats to illustrate the article. Of course this was just one of many, many projects that was worked into the schedule over the period.

In issue No.1 2015 we covered the exciting New England Cottontail and ongoing efforts to restore it to healthy numbers in MA and surrounding states. Also included was a discussion of new Catch and Release options and rules for every angler and species from Fisheries Biologist Richard Hartley. Also included was an exciting photo essay on winter fish eating ducks on the lower Merrimack River, and the perils of Songbird migration from South America to MA and beyond.

In Issue No. 2 2015 we introduced our newly appointed Director Jack Buckley and his challenge to lead MassWildlife to continued levels of excellence in Conservation and Management. And our newly completed zero-net-energy Field Headquarters was introduced as well, with an overview of the spacious facility that provides a professional work space for staff and visiting groups. There was an exciting exploration of a new fish in the Sportfishing Awards program, the Bowfin, with some impressive looks at the species and how to go about catching it. The other major feature was an in depth discussion by Dr. Tom French on the facts and fiction relating to Mountain Lions in Massachusetts. Cougars are incredibly impressive animals only rarely detected in the Northeast and Dr. French covers many aspects to consider.

Beyond the major duties of our magazine, photographer Byrne documented research projects such as native plant restorations on Penikese Island and Sandhill Crane populations, as well as covering several annual MassWildlife sponsored events: The MA Junior Conservation Camp Awards, the well attended Big Moe Outdoor Exposition, the Francis Sargent Conservation Award, and the Junior Duck Stamp statewide art competition, judging and awards.

Many requests for images by staff were provided to support their work publications, Powerpoint presentations, species accounts, press releases and media inquiries.

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, wildlife in the schoolyard, 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 and administrators, 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 focus on groups of educators, students, and youth gatherings, but were also highlighted at other public events.

Project WILD and Aquatic WILD

Project WILD is one of the most widely-used wildlife-focused conservation and environmental education programs 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.

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. There was a continued strong focus on connecting Growing Up WILD to Science, Technology, Engineering, & Math (STEM).

Twenty-six Project WILD & Growing Up WILD facilitators, contributing 1403 volunteer hours, offered 26 workshops that reached a total of 767 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.

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, UMASS Donahue Institute, Montessori schools, YMCAs, state and community colleges, Self-Help/Community Partnership for Children, the Student Conservation Alliance, state

Winners of the 2014 Junior Duck Stamp contest at Westborough Field Headquarters.

park interpreters, children and science museums, and child care resource and referral agencies.

Flying WILD Workshop

Flying WILD 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. A Flying WILD workshop was not offered during this fiscal year

The North American Conservation Education Strategy (CE Strategy)

An array of tools developed by state fish and wildlife agencies support conservation educators who offer fish and wildlife based programs that guide students in grades K-12 on their way to becoming involved, responsible, conservation minded citizens. The CE Strategy delivers unified research-based Core Concepts and messages about fish and wildlife conservation, translated into K-12 academic standards to shape students' environmental literacy, stewardship, and outdoor skills. Resources included in the toolkit include: landscape investigation, schoolyard biodiversity, field investigation, fostering outdoor observation skills, applying systems thinking, and much more. Material was distributed to educators when applicable or they could download resources at www.fishwildlife.org (focus area, conservation education).

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, libraries, 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 516 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. The judging, by a panel of five wildlife artists, took place at the Division of Fisheries & Wildlife Field Headquarters, Westborough. The acrylic painting of a drake mallard by Claire Schaffer, Tahanto Regional High School was selected as Best of Show and represented Massachusetts at the National Competition. Nearly 200 people (student artists, families, judges, supporters and teachers) attended the awards ceremony held at Worcester Technical High School. Combinations of the top 100 pieces of art were part of a statewide traveling exhibit appearing at nine venues. Curriculum for students, educators, home school, and non-formal groups designed to spark youth interest in habitat conservation through science, art, math and technology was made available to student artists & educators upon request. A comprehensive article on the program appeared in the bostonese.com English-Chinese Online Journal.

Members of the Massachusetts Chapter of Ducks Unlimited provided several waterfowl mounts on loan to enhance an exhibit highlighting the past twenty years of the Massachusetts Junior Duck Stamp Best of Show artwork. A donation of three waterfowl mounts was made to the JDS Program.

In Massachusetts, the Junior Duck Stamp Program is sponsored by DFW and U.S. Fish and Wildlife Service, with support from the Massachusetts Chapter of Ducks Unlimited and Massachusetts Wildlife Federation.

Massachusetts Envirothon

The 2015 Envirothon was held at Quabbin Reservoir, Belchertown.

The DFW's continued involvement in this natural resource program, which reaches over 500 urban and rural high school students representing over 50 communities annually, continues through the efforts of Education Coordinator Pam 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 (Climate Crisis: Taking Action in Massachusetts Communities), and attends the competition. Several other Division staff played roles in this important program by volunteering in various capacities on the competition day in May. I & E Chief Marion Larson serves on the newly formed Envirothon Council (2014) with a charge of finding support for the Envirothon.

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 which was approved in FY 14.

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 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 is designed for students in grades 4-12, and includes social studies, mathematics, and physical education. 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, at a cost of about $3,000 and includes 11 Matthew Genesis bows, 122 arrows, 5 targets, 1 arrow curtain, and 1 tool/repair kit. During FY 15, thirty two schools received teacher training in NASP with a total of 70 schools participating in the program;. Some schools provided their own funding; others used the new loaner kits that were created this fiscal year.

Young Adult Pheasant Program

The Massachusetts Young Adult Pheasant Hunt Program was developed by 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. This program is a comprehensive, three-part 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 2. 2015 Youth Pheasant Hunt Participating Clubs

Club	Number of Participating Youth
Carver	18
Essex	10
Falmouth	15
Lee	10
Norco	12
Walpole	13
Worthington	4
TOTAL	**82**

Youth Turkey Hunt Program

This program was developed by 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.

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 two or three 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 15, a 1-day mentored Youth Turkey Hunt was held on April 25, 2015, the Saturday preceding the opening of the spring season. A total of 88 new students (sponsored by 13 clubs) completed the pre-hunt training and participated in the field exercise and the hunt. One hundred and sixty-eight previous-year Youth Turkey Hunt Program participants returned to obtain a youth turkey permit in the 2015 event and did not need to repeat the pre-hunt training and field exercise. Of the 256* participants that obtained the required permits for the youth turkey hunt, 242 participants went hunting on the youth day. Of the participating hunters, 84 were successful in harvesting a turkey on the youth day.

The following sportsmen's clubs participated in the program, in cooperation with the NWTF state chapter (Table 3).

Table 3. 2014 Youth Turkey Hunt Participating Clubs

Club	Number of Participating Youth
Barre	5
Carver	9
Cheshire	5
Conway	13
East Mountain, Williamstown	2
Essex Sportsmens Association, Salisbury	2
Falmouth	3
Fitchburg	3
Lee	4
Norco,Princeton	22
North Brookfield	16
Stockbridge	3
Worthington	1
Total # New Youth Hunters	88
Returning Youth Hunters	168
TOTAL	**242**

Learn to Hunt Program

A new pilot program was introduced designed for new hunter education graduates who want more information/ experience before feeling comfortable enough to hunt for specific kinds of game. To pilot this program, the Division partnered with the Massachusetts Chapter of the National Wild Turkey Federation, to offer 3 one-day turkey Hunting Clinics around the state, as well a full 3-day workshop and mentored hunt during the regular spring turkey season. Announcements were sent through the hunter education database and filled instantly for all 4 courses. 30 participants were allowed in each of the one-day courses, and 20 were accepted into the 3-day course. Many of the participants were from more suburban and urban areas in eastern Massachusetts and were new to hunting.

Skills Programs

Angler Education Program

Jim Lagacy, *Angler Education Program Coordinator*

The Angler Education Program is an outreach/education program and is the main component of the Aquatic Resource Education Program. The other component is Aquatic Project WILD, which the DFW Education Coordinator oversees. The Angler Education Program has several elements designed to introduce people to fishing and the outdoors, including family fishing festivals, fishing clinics, fishing classes, and our own Fishing Tackle Loaner Program.

The Angler Education Program is in large part a volunteer-run operation. 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 Information (CORI) system. They are given pertinent information about MassWildlife and the Angler Education Program, and then begin apprenticing at program events. Instructors are recruited by press releases, our many fishing programs, fairs, sportsmen's shows, positive publicity, and word of mouth. Currently there are 114 volunteer instructors on the roster. Sixty-eight instructors or 60% were active during FY 15.

This spring, the Angler Education Program got immediate benefits with hiring of the new I & E Specialist Emily Callahan. She was immediately assigned to assist with festivals and clinics and fishing equipment repair and was soon offering clinics on her own. Senior Gary Zima was also active with the program at this time, working at clinics and other festivals.

Family Fishing Events

There were a total of 27 mostly weekend, family fishing events for FY 15, including our family fishing festivals as well as a few derbies.. In FY 15, these events ranged in size from approximately 30 people to as many as 1,500. 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 Events for FY 15 was 4,725 people.

Fishing Clinics

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, fishing, safety, and ethics, followed by casting instruction and a healthy dose of fishing. Fishing educational handouts are generally provided and clinic participation is kept small enough to allow the instructors to work with participants one-on-one. There were a total of 56 fishing clinics during FY 15, in various parts of the state presented by the Coordinator and numerous volunteer instructors. Approximately 1,267 people (mostly children) participated.

Fishing Classes

We run a few fishing classes each year, typically specialty fishing classes like fly tying. For FY 15, we held 5 classes: two fly tying classes, totaling 24 participants; two in-school (Auburn HS) Physical Education Fishing Program classes totaling 100 students, and one after

school fishing class at the Beebe School in Malden totaling 9 students. Total number of participants for FY 15 was 133.

Fishing Tackle Loaner Program

The Angler Education Program keeps and maintains fishing equipment onsite for loan to various groups throughout the state. We loaned equipment on 26 separate occasions during FY 15, with 817 pieces of equipment loaned. Our loaner equipment includes basic spincasting rods, spinning rods, salt water rods, as well as fly rods and fly tying equipment and even ice fishing gear. Our equipment was loaned to various groups and agencies, including the Massachusetts Department of Conservation and Recreation (DCR), the U.S. Army Corp of Engineers, the U.S. Fish and Wildlife Service, various sportsmen's clubs, scout troops, church groups, and private citizens. Along with the fishing gear, we also make available the necessary terminal tackle and various fishing education program handouts.

Cooperative Programs

Trout Stocking Programs - These programs are performed in the spring (April and May) with various school groups around the state; and they are more promotional than educational. We have occasionally linked them to fishing clinics and in-class presentations, but for the most part the schools show up, are given a short lecture about the agency and our fish stocking programs, after which they help DFW staff stock a given pond, lake, or river). For FY 15, we did 10 trout stocking programs, totaling 556 students..

Becoming an Outdoors Woman (BOW) - Since its inception, the Angler Education Program has been involved with the BOW program, and has done all types of fishing programs, including basic spin fishing, salt water fishing, ice fishing, fly fishing and fly tying, as well as supported the program with equipment and manpower. For FY 15, we contributed to four BOW programs totaling 60 people. These four programs were a joint project between the BOW program and the Department of Conservation and Recreation (DCR), and were called BOW Family Camping Weekends. The fishing clinics were a part of those weekends and were conducted at two different DCR properties – Myles Standish State Forest and the Harold Parker State Forest.

Massachusetts Junior Conservation Camp – The Angler Education Program has always lent a hand to this camp, teaching both the fishing and the fisheries sections, as well as contributing fishing equipment, education materials, and extra manpower. For FY 15, we taught 12 sessions: 6 sessions of basic fishing and 6 sessions of fisheries management. One hundred and fifteen campers attended these two sessions.

Massachusetts Envirothon – The Massachusetts Envirothon is a statewide environmental education program for high school age young people and their advisors. The Angler Education Program has been involved in various capacities over the years. We currently assist the event at the water learning station, and help to format the tests for the various other stations (there are four in total – Forestry, Soils, Water, Wildlife) prior to the event. For FY 15, the Envirothon was held at the Quabbin Reservoir, where 35 teams competed. Annually the program reaches over 50 communities with approximately 500 students participating.

Becoming an Outdoors Woman Program

Marion Larson & Astrid Huseby, *Coordinators*

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. BOW partnered with the Massachusetts state chapter of the NWTF with the Women in the Outdoors Event in July 2014. Dates for 3 family camping weekends (Myles Standish in Plymouth; Harold Parker State Forest, Andover and Camp Nihan in Saugus for the summer of 2015 have been set with DCR.

Massachusetts Junior Conservation Camp

In August 2014, the Conservation Camp held its 2-week session for the 12th year at the Chesterfield Scout Reservation in Chesterfield. Approximately 120 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.

The I & E Chief attended meetings of the Massachusetts Junior Conservation Camp Board serving as member of the Board of Directors. She worked on an Education subcommittee to begin putting together a camp curriculum for the various classes offered at camp. A core curriculum of offerings was approved by the Camp Board in June. In August of 2015, the MJCC will be moved to Boy Scout Camp Moses in Russell.

Other Activities

Bear Video—The Information and Education Chief worked with the Bear Project Leader on a "Don't Feed Bears" video which was made available to community access TV, posted on the agency website and promoted on the Facebook page.

State Commission Meeting Representation – The I & E Chief continued to attend quarterly meetings of the Massachusetts State Commission for Conservation of Soil, Water & Related Resources (State Commission) representing the Division.

Hunter Education Program*

Susan Langlois, *Administrator*

It is the mission of the Massachusetts Hunter Education Program to protect the lives and safety of the public, promote the wise management and ethical use of our wildlife resource, and encourage a greater appreciation of the environment through education.

The Hunter Education Program is a public education effort providing instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. The Massachusetts Hunter Education Program evolved from a survey conducted in 1954 indicating that 75% of Massachusetts hunting accidents officially involved minors. In that same year, the State Legislature enacted a law establishing a Hunter Education Program providing instruction in basic hunter education. The program is administered by the MDFW, and courses are taught by agency staff and certified volunteer instructors. Courses are open to everyone and no one shall be denied access to the course because of age, sex, race, color, religion, or country origin. All courses are offered free of charge to the participants.

Courses

Courses were offered in six disciplines across the state in FY 15. A total of 4,653 students participated in the Hunter Education Program in FY 15. The participation level is consistent with the 5-year average of 4,611 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 15.

Basic Hunter Education

Starting January 1, 2007, anyone who wishes to hunt for any bird or mammal in the commonwealth must successfully complete a basic hunter education course unless such person has held a license to hunt, before January 1, 2007. The basic hunter education course is a standardized curriculum which 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-two courses were offered. Courses were 12-18 hours in length. A total of 3737 students participated, 3480 successfully completed the course; 22 failed and 235 did not complete the course. Students are asked to volunteer information on age, gender, and ethnic background on their registration forms: 527 students were minors (under 14 years old), 524 were 15-17-year-old minors, and 197 were minorities. Seven hundred and twenty of the participants were female.

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 245 participants. Courses were 11-12 hours in length. Two hundred and twelve participants successfully completed the course; 33 did not complete the course. Twenty three minors (under 17 years of age), 12 minorities and 27 women participated.

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.

Thirteen courses were conducted. Course length ranged from 8-12 hours. A total of 459 students participated; 458 successfully completed the course; and one did not complete the course. Eighty-eight minors (under 17 years of age), 17 minorities and 84 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 10 participants. Courses were 10 hours in length. Nine students successfully completed the course; one did not complete the course.

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 Pittsfield and seven in Westminster). Courses range from 8-10 hours in length. A total of 181 students participated; 4 did not complete the course. Six minorities, 16 minors (under 17 years of age) and 61 women participated.

Shooting Range Development and Enhancement

It is DFW's objective to provide access for the public to range facilities for hunter education and shooting sports purposes by assisting shooting club range development and improvement activities. A total of $50,000 was made available to clubs for Shooting Range Maintenance and Enhancement projects in FY 15. The Request for Proposals (RFP) and all associated documents were mailed

* 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.

to 86 interested prospective organizations. A total of two clubs responded with 2 project proposals. Neither proposal met minimum requirements. The Division will seek to amend participation in this funding opportunity in FY 16 to increase shooting opportunities and offer advanced (skill-based) hunter education courses for the public across Massachusetts.

Information and Education Staff

Marion Larson, *Chief*
Bill Byrne, *Senior Photographer*
Nicole DeAngelis, *Outreach and Marketing Specialist*
Jill Durand, *Clerk*
Suzanne Fritze, *Clerk*
Emily Callahan, *Information and Education Specialist*
Astrid Huseby, *Hunting and Angling Recruitment and Retention Specialist*
Jim Lagacy, *Coordinator, Aquatic Education Program*
Pam Landry, *Education Coordinator*
Peter Mirick, *Wildlife Biologist and Publications Editor*
Emily Stolarski, *Communications Specialist*
Gary Zima, *Senior Planner*

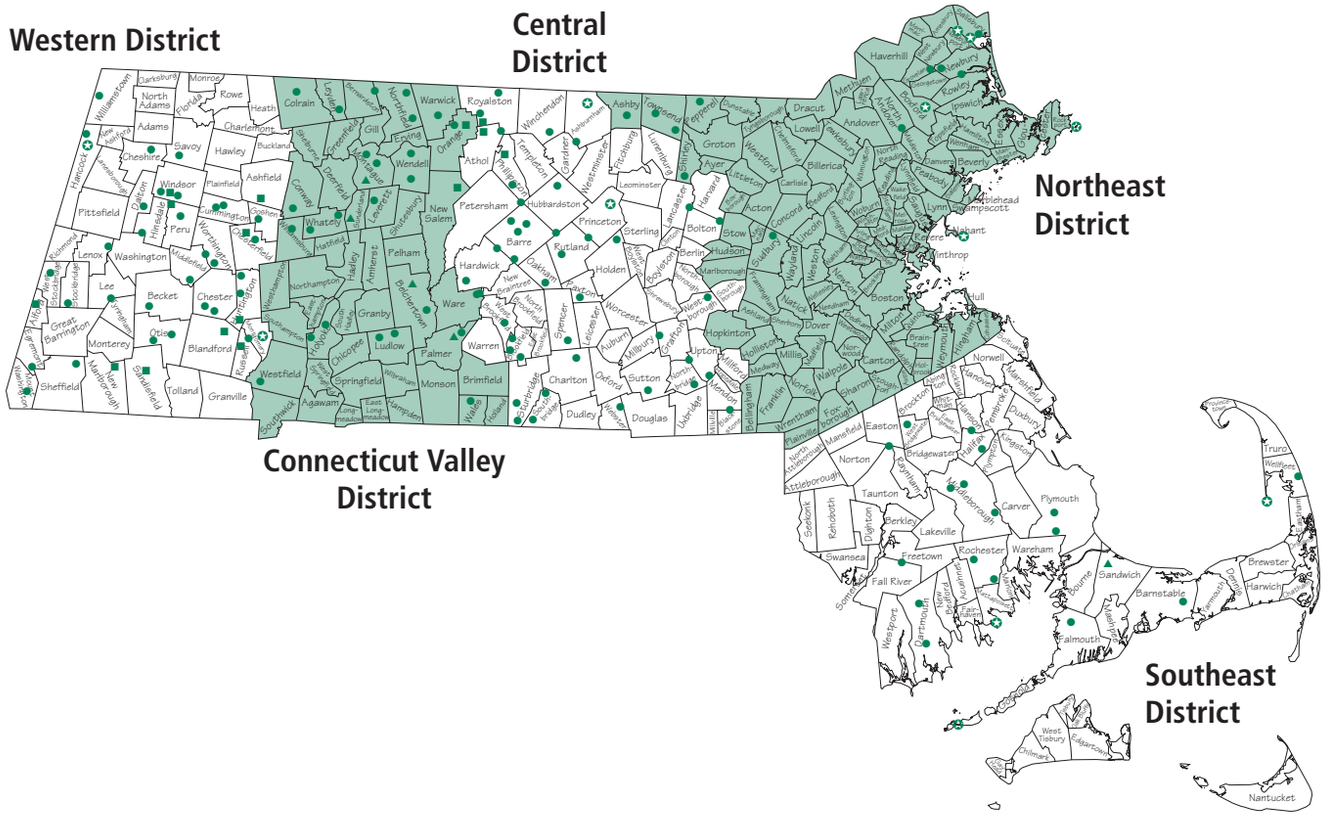
Hunter Education Program Staff

Susan Langlois, *Program Administrator*
Kim Basso, *Administrative Assistant*
Jennifer Ford, *Receptionist*
Steve Foster, *Program Logistics*
Todd Olanyk, *Volunteer Coordinator*
Matthew Stover, *Hunter Education 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 by locating titles, landowners, and boundaries, and 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, and Tiger Trout 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, 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, Eastern Bluebirds, and bats, and establish cooperative agreements with farmers who raise crops on DFW land. District staff members also operate checkstations, 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 Wildlife District

Administration

The Northeast District added Jennifer Jones to the staff as our new Stewardship Biologist. Despite back injuries and Lyme disease, field and stocking work was completed on schedule.

Scores of back-breaking hours were spent by staff shoveling, plowing, roof racking, and removing ice dams as they tried to manage over 8 feet of snow this winter. Staff removed ice and snow that encased outdoor oil tanks and lines, and built a roof to protect the area.

The district garage received a new coat of paint and the district office and garage received new roofs. Technical assistance was capably handled by Office of Fishing & Boating Access. Staff assisted with the installation of a large insulated door to the shop. An energy audit was conducted at the Northeast District facility and the Ayer Game Farm.

The Northeast District was awarded a $720,000 North American Wetlands Conservation Act grant for the Great Marsh project consisting of 20 separate projects to permanently protect, restore, and enhance over 1,000 acres. The pepperweed project contract was issued. An Event was held by the Fisheries & Wildlife Board in Newburyport/Newbury where all nine Board members joined in celebration. In preparation, staff spruced-up the Nancy Begin parking lot at Kent's Ialand..

Staff coordinated the work of boundary contractors who completed projects at Crane Pond WMA, William Forward WMA, Ashby WMA, Charles River WMA, Martin Burns WMA, Hunting Hills WCE, Concord River WCE, and Cow Pond Brook WCE. Survey contracts were written for the Kittery Avenue boundary at William Forward WMA and the public boat ramp at Knop's Pond in Groton. Through the addition of the new Stewardship Biologist, significant progress was made on encroachment on the federal taking lands in Essex County (Crane Pond WMA and William Forward WMA), with no less than a dozen encroachments so far. Staff is tracking legislation filed to transfer DFW land on Moody Street at Crane Pond WMA over to the Boudreau family, who built their home on DFW land. After 6 years of effort, the Sheridan trespass was completed which restored DFW lands at Mulpus Brook WMA in Shirley, with the added benefit of a new 25 foot access onto Groton Road. The orange snow fencing was checked at the Willet's horse trespass where nearly 2 acres of riverfront area were restored, with a small bit of encroachment remaining, including half of a barn.

The District Supervisor attended meetings and/or site visits concerning Mt. Watatic Reservation management, Essex County and Norfolk County League business, DFW Senior Staff and District Supervisors' matters, stewardship and trails policy, Squannacook Greenways proposed bike trail, plus Black Bear, HR, GIS, VPRS and Wildlands Viewer training, and environmental review. Deer damage training was initiated with Deer and Moose Biologist David Stainbrook, beginning with the Carlisle Town Forest. Staff investigated a heron kill report in Townsend, informing the USFWS authorities. A site visit to Dunstable Brook WMA was conducted to view shrubland restoration work funded through Charles George Natural Resource Damages. DFW's draft Trails Policy was reviewed. Staff attended the Devils' Den WCE dedication in Rowley held by Essex County Greenbelt Association.

The District Supervisor's land acquisition activities included reviewing parcels for their ecological and recreational significance on properties throughout the district and attending Lands Committee meetings. The District provided additional input on the Hardy-Bailey land case.

Research and Conservation

Wildlife

District staff banded waterfowl from the airboat in August and September and 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). District staff conducted Mourning Dove, Ruffed Grouse, and Woodcock census routes for the Annual Breeding Bird Surveys. Staff conducted field surveys for field birds at Surrenden Farms West WCE and a marshbird survey at Martin Burns WMA. Staff assisted David Stainbrook on a deer mortality investigation in Essex County where at least six deer were found dead near a deer feeding station.

The sixth year of Black Duck banding was highly successful with 106 Black Ducks banded (192 in FY 14) and 96 Mallards banded, exceeding the 100 bird quota. Productive sites in Rockport and Gloucester produced the majority of birds. There was one enforcement issue regarding waterfowl hunting over a DFW research trap.

Twelve deer check stations operated within the District. Five hunters (8 in FY 14) took part in the paraplegic hunt held at Fort Devens, at which two deer were taken (1 in FY 14). Large Animal Response Team training was held at the Connecticut River District Office and was attended by District Supervisor Huckery.

Fisheries

During the summer, staff conducted stream surveys on 42 brooks and rivers (50 in FY 14) in nine major watersheds. There were 25 fish kills reported due to extreme winter conditions, which were all deemed of natural causes.

DFW stopped stocking trout at Lake Massapoag in Sharon due to exorbitant ramps fees. In response, staff responded to calls from fishermen and legislators. A statewide review of ramp usage concluded that these charges are an anomaly.

Permitting for the Turner Dam removal project on the Nissitissit River in Pepperell is near completion. Freshwater mussel and fish pre- and post-monitoring will be overseen by Dr. Peter Hazelton and Leanda Fontaine Gagnon, respectively.

Natural Heritage and Endangered Species

Bald Eagles nested in Tyngsborough, Amesbury, Methuen, Haverhill, Framingham, Lynnfield (NEW), and Waltham (NEW). One of two chicks was banded from the Amesbury nest, and both successfully fledged. The Tyngsborough and Waltham nests failed. Climbs to the nests were adeptly handled by DFW's Rick Pecorelli. The nest trees in Methuen, Haverhill, and Framingham have all been deemed unsafe for climbing. Bald Eagle surveys were conducted in the springtime along the Merrimack River in Essex County and around lakes in the Framingham area in Middlesex County, Suntaug Reservoir in Lynnfield, and in Waltham and Concord. The District Supervisor's annual participation in the Eagle Festival in Newburyport was curtailed owing to much snow.

Northeast District staff assisted with chick banding at the Lowell and Lawrence Peregrine Falcon nests with Dr. Tom French, who handled all subsequent bandings in the Northeast District. Wildlife Technician Pecorelli assisted NHESP with Peregrine Falcon nests located in rock quarries, including a Mt. Tom climb.

Five Piping Plover nests (3 in 2014) were located through regular monitoring and roped off at Gloucester beaches until hatched. Up to 15 chicks fledged. Wildlife Biologist Amati coordinated site visits with Dave Rimmer of Essex County Greenbelt Association and Northeast District staff. Many good neighbor relations have been established over the years. Neighbors are key to the success of Piping Plovers at the Gloucester beaches since the nests are located on private property where DFW places fencing and signs. Dogs remain a problem for breeding Piping Plovers. Good Harbor Beach in Gloucester was not surveyed.

Enhancement of Outdoor Recreation

Combined spring and fall trout numbered 115,710 (113,937 in FY 14). In the fall, anglers saw 14,000 14-inch Rainbow and Brook Trout released into 2 rivers and 18 lakes and ponds, followed in the spring by 101,710 Rainbow, Brown, and Brook Trout in 42 ponds, 7 major rivers, and 66 brooks and minor rivers.

Five thousand pheasants were released into five WMAs and 11 open covers. There was no loss in the number of pheasant 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 8 youngsters participating (10 in FY 14). Walpole Rod and Gun Club held their hunt at Charles River WMA. DFW conducted a 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.

Special permits were issued for the controlled waterfowl hunt at the Delaney WMA, field trials, horse-and-hound hunts, use of the target range at Martin Burns WMA. 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.

Outreach and Education

The Middlesex County Beekeepers Association brought an enthusiastic crowd to District Manager Huckery's bear talk. Over 50 people learned how to protect their bees and hives from hungry Black Bears. Staff followed the meanderings of a Black Bear in Westford that took a liking to chickens, educating neighbors about how to keep their chickens safe, as well as themselves. That bear was eventually destroyed. Following the loss of the bear, DFW conducted a bear information session at Westford Town Hall with the MA Environmental Police.

Staff set-up and worked the Topsfield Fair and the New England Fishing and Outdoor Expo with Field Headquarters staff. Four talks were given by the District Supervisor: "Living with Wildlife" at 4-H Winter Forum, Carlisle Deer Forum and Carlisle Conservation Breakfast, and Middlesex County Beekeepers Association.

Technical Assistance

District staff dedicates many hours patiently listening to and helping the public with questions about wildlife they see around their homes and in their yards, with a particular interest in ground hogs this year. Help was extended to local, state, federal and enforcement authorities on the plethora of issues pertaining to

wildlife in the Northeast District. Staff answers calls about Black Bears that are dispersing into towns on the Rt. 495 belt, hearing the anticipated public trepidation and fascination as a sow and cubs appear, and disappear, at Delaney WMA in Harvard, Bolton and Stow.

Southeast Wildlife District

Administration

There were three personnel changes in the Southeast District in FY 15. Nathan Buckhout was hired as the new Wildlife Manager in November, Aaron Best, Wildlife Technician II, was promoted into the new District Stewardship Specialist position in April, and John Garofoli transferred from the Sandwich Fish Hatchery into the Wildlife Technician II position vacated by Aaron Best in May. Another personnel matter worthy of mentioning, if not highlighting in this report, was that Richard "Dick" Turner (recently retired, long time Southeast District Wildlife Biologist) was honored with the Manuel Carballo Governor's Award for Excellence in Public Service in July.

District staff attended and/or completed a variety of different training programs in FY 15, including the Safe-capture Chemical Immobilization of Animals course at the Franklin Park Zoo, a Northeast Stream Temperatures web conference, the Southeastern Massachusetts Pine Barrens annual conference, a hoisting license training course, several advanced online and classroom wildland firefighter training courses, the North Atlantic Fire Science Consortium Conference, the Northeast Wildlife Disease Cooperative Workshop, Large Animal Response Team training, Wildland Fire Fuel Model training, the University of Massachusetts Cooperative Fish & Wildlife Research Unit Symposium, and personnel training required by our Human Resources Division.

The District Supervisor attended multiple meetings with the Bay Circuit Trail Alliance and other interested parties to evaluate the potential to formally mark and maintain a section of the Bay Circuit Trail across the Hockomock Swamp Wildlife Management Area (WMA). This was a section of trail that was used for many years informally, but had suffered from illegal OHV activity and a lack of general maintenance. The end result of the meetings was a license agreement with the Town of West Bridgewater Conservation Commission/Bay Circuit Alliance that allowed for minor trail maintenance and marking, but also included requirements to prevent illegal OHV access, which should greatly benefit the WMA.

Negotiations continued in FY 15 with the Town of Barnstable relative to the location of a paved bicycle path across the Hyannis Ponds WMA. The issue reached a conclusion with an agreement in place that DFW believes adequately addressed our concerns and mitigates any potential negative impacts to the WMA or its users. The final documents and agreements have not been signed, but that is expected in FY 16, with construction of the path set to begin sometime in 2017.

District Staff completed its biannual inventory of equipment and supplies required to keep track of items and beneficial to staff in that it allows a time for reorganization, evaluation of the condition of various pieces of equipment and the ability to plan for disposal of old/broken items and replacement of them in the coming FY.

The District Supervisor and Land Agent attended meetings with the owners of a large parcel abutting our Burrage Pond WMA regarding contamination on the site that had crossed the boundary onto the WMA. The meetings focused on permitting and planning the evaluation of the extent of the contamination and the steps necessary to clean up the materials in the most environmental sensitive method. Discussions are ongoing and will ultimately result in the contamination being fully remediated and a large portion of the property being permanently protected as open space.

Most people living in Massachusetts during the winter of 2014-2015 will recall the severity of some of the winter snowstorms and record snowfall totals. These storms, occurring primarily in January and February, put a significant strain on District staff, facilities, and operations. While the snow cover hampered many District projects, such as winter field mowing, road maintenance, and building/facility maintenance, it was beneficial to several projects, including American Black Duck banding and New England cottontail trapping and pellet surveys.

Research and Conservation

Wildlife

District staff completed breeding surveys for Ruffed Grouse and various waterfowl species as assigned by Wildlife Section biologists. District staff also conducted annual winter American Black Duck trapping and banding, successfully banding a total of 1465 ducks (758 FY 14) throughout Plymouth, Bristol, and Barnstable counties. The District also assisted Westborough staff in completing duck banding at the New Bedford Reservoir using DFW's airboat. Nesting boxes for Wood Ducks were monitored, maintained, and replaced on DFW lands and other public and private lands. District staff participated and assisted with Westboro staff in trapping and banding Canada geese in Barnstable county, Plymouth county, and Bristol county, meeting the desired quota.

The District assisted with ongoing New England Cottontail research and survey efforts, conducting pellet collection surveys throughout parts of southern Plymouth and Bristol Counties and on Cape Cod. NEC trapping efforts were successful in catching 14 rabbits, with 3 adult rabbits delivered to Roger Williams Zoo and 4 adult rabbits sent to the Queens Zoo to participate in a captive breeding program.

The District completed a number of habitat management and improvement projects in FY 15, mowing over 110 acres on our WMAs and planting more than 65 acres. The District also assisted with the planning, permitting,

and completion of over 120 acres of prescribed fire on wildlife management areas, as well as assisted in the burning of 545 acres on the WMA at JBCC, the largest successfully completed prescribed fire in Massachusetts history.

The District was heavily involved in the planning, monitoring, and public educational aspects of our ongoing, major habitat restoration project at our Frances A. Crane WMA in Falmouth, including the creation of over 90 acres of new sandplain grassland habitat as well as the thinning of over 300 acres of forest providing a great benefit to grassland nesting birds and multiple other wildlife species. District staff participated in multiple sweeps and relocation of Eastern Box Turtles prior to habitat work. The District also assisted with tedious stem density counts at Crane as part of our ongoing monitoring and evaluation of the habitat projects completed on the WMA. The District continues to work very closely with local stakeholders, including the Crane Sporting Dog Association, Otis Model Aero Club, and other interested citizens. The main parking area was relocated and the old parking area was reclaimed.

District staff also investigated numerous reports of wildlife that were sick, injured, or dead as a result of the extremely harsh winter. Staff collected samples or, in some cases, entire carcasses of a variety of wildlife species and conducted both field and laboratory necropsies to assist in determining cause of death. The vast majority of cases included waterfowl, other water birds and White-tailed Deer, and all were indicative of starvation, likely caused by deep snow and ice conditions limiting mobility and access to food sources.

Other important wildlife projects completed in the District this FY include the preparation and/or updating of prescribed burn plans for multiple WMAs, assisting a MIT graduate student research project by working closely with local waterfowl hunters to provide fresh killed dabbling duck carcasses to the student for use in laboratory analysis, the ongoing effort to develop restoration projects for two cooperative land acquisition sites working with the NRCS, and assisting local wildlife rehabilitation facilities and the Wildlife Clinic at the Tufts School of Veterinary Medicine in Grafton in transporting and releasing a wide variety of wildlife species into suitable habitats.

Fisheries

Pond and stream surveys, using electrofishing, gill netting, rod/reel survey and other techniques, were completed in a number of southeastern Massachusetts waterbodies in FY 15 in consultation with the Fisheries Section in Westborough. Passive integrated transponder tagging research on Brook Trout continued in Red Brook, Quashnet River, Childs River and Coonamesset River.

The District continued our excellent relationship with the Sandwich Fish Hatchery, assisting with a variety of day to day projects, helping to unload feed truck deliveries, inventories of trout, relocation of trout to other raceways, and assisting with fall trout spawning.

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. New water temperature and level loggers were deployed at Red Brook and the stream temperature monitoring network was expanded with assistance from the Sea Run Brook Trout Coalition.

The District continued to work closely with the Division of Ecological Restoration in designing a restoration project for the former cranberry bog complex at the "Century Bog" portion of our Red Brook WMA. Several key aspects of the project center upon fisheries management issues, primarily the protection and improvement of salter Eastern Brook Trout habitat in Red Brook and the migratory pathway of herring and American Eels into White Island Pond. The project's main goal will be to eliminate and/or reduce the negative impacts associated with active cranberry farming and the flow of warm water from White Island Pond, on the habitats in and surrounding Red Brook. This will be accomplished by creating a naturalized stream channel, restoring natural wetland habitats and vegetation in the place of the cranberry bogs, reducing direct flows from the former bogs and White Island Pond into Red Brook, and by making structural and functional improvements to the fishway and main dam at White Island Pond. The project reached a 90% design stage in FY 15 and many of the necessary permits, including Orders of Condition from the Towns of Plymouth and Wareham, were received. Project planning, fundraising, and completion are expected to progress even further in FY 16.

The Fisheries Manager conducted a site visit to evaluate the impacts of a potential dam removal project in Rehoboth on fisheries resources and discovered a wood turtle. The observation was properly documented and observation forms were submitted to NHESP.

The Fisheries Manager was a coauthor on a Red Brook Brook Trout acoustic tagging paper published in the Ecology of Freshwater Fish journal and on a region wide and Salter Brook Trout study published in the Proceedings of the Wild Trout X1 Symposium.

The restoration of Brook Trout to the Coonamesset River by transplants of wild Brook Trout broodstock from the Mashpee River in the spring of 2014 was evaluated by surveys in the fall of 2014 and spring of 2015. A very successful spawn from the transplanted fish was documented which further validated the technique for Brook Trout restoration first used on Cape Cod in the Childs River.

The Fisheries Manager supervised an intern from the University of Wyoming and several interns from the Patagonia company in June of 2015. Sampling assis-

tance and guidance was provided to University professors studying the potential effects on fish of estrogen mimic chemicals (organic wastewater compounds) in groundwater fed ponds on Cape Cod.

Fish kills were investigated in a number of waterbodies including the Winnetuxet River, Mulberry Brook, Weir River, and Sampsons Pond.

The second alum treatment at Hamblin Pond in Barnstable was monitored and no adverse effects were noted.

The fisheries manger attended meetings of the Sea Run Brook Trout Coalition and the Southern New England chapter of the American Fisheries Society.

Technical assistance was provided to the Falmouth Rod and Gun Club on a Child River restoration project.

Natural Heritage and Endangered Species

The District cooperated with the Natural Heritage & Endangered Species Program (NHESP) staff on a variety of projects this fiscal year. District staff became much more heavily involved in the Piping Plover monitoring and fencing program. Four different sites were fenced and monitored, with at least 12 chicks fledging. District staff was involved in providing technical support and advice to several towns dealing with beach closures associated with nesting shorebirds and assisting MassAudubon, Nantucket Department of Natural Resources (DNR), and various other town DNRs. District staff also participated in annual Piping Plover, American Oystercatcher, and tern census projects.

District staff assisted quite heavily with ongoing management activities on our Penikese Island Sanctuary to benefit rare birds and other species. The District assisted with prescribed burning, preparation of seeding plots, transport of native plant seeds and plugs to the island, spreading of seeds, and monitoring activities on the Sanctuary. District staff stayed on the island multiple times for several days at a time in support of these various projects, as well as to provide oversight to private contractors conducting permitted herbicide applications to combat non-native plants.

District staff participated in the annual spring Bald Eagle census, covering portions of Plymouth and Bristol County. District staff monitored known eagle nesting locations and investigated reports of potential new nesting sites. We had a total of five active eagle nests in FY 15, including four nest sites we have known about for quite a few years and one new nesting location. Three of the nests were successful in fledging young and two nest sites failed. The District climbed and banded a total of seven healthy chicks in FY 15 from the Halfway Pond (2), North Watuppa (3), and Pocksha Pond (2) nests. A nest that was newly built this year at Quitticus Pond, but likely by the same pair that has used this tree in the past, failed when blown from the tree during a storm in April and the pair did not attempt to re-nest. A new nest, which was reported to us by the Trustees of Reservations, was monitored along the bank of the East Branch of the Westport River. The pair made use of an osprey nest in a small tree, and were suspected to be incubating eggs, but apparently were evicted from the site by ospreys and never hatched young. We also continued to receive many reports of adult Bald Eagles in the Mashpee-Wakeby Pond area on Cape Cod and suspected that there may be a nest in the area, but were unable to locate one. This area will continue to be a focus of future survey efforts. Lastly, the District continued to receive reports of adult eagles at or near Sampsons Pond in Carver, and we surveyed the area intensively. We located a large nest on the edge of a cranberry bog near the pond that showed some evidence of use by eagles (feeding, perching), but was not active. This will be another location that will be closely monitored in FY 16. District staff also monitored our five known peregrine nesting sites in Fall River, New Bedford, Brockton, Taunton, and Sandwich, and assisted NHESP staff with banding efforts.

The District responded in full force over the winter following reports of two Bald Eagles being poisoned near Assawompsett Pond in Lakeville. It was soon determined that the eagles had been accidentally poisoned by someone who regularly fed the eagles on the ice and had unknowingly put out a deceased goat that they did not know had been chemically euthanized. District staff began an exhaustive search of the area to try and locate any other eagles that may have been poisoned and successfully found one additional eagle. All of the eagles were successfully treated at Tufts Wildlife Clinic and were released at Assawompsett Pond by District staff.

The District continued working extremely closely with Carolyn Mostello and the tern project, assisting with a wide variety of projects over the course of the year including storing and transporting boats and equipment, field surveys, and habitat improvement projects. The District is very excited to be able to further support the tern project in FY 16 and beyond by providing a dedicated storage, field office, and seasonal field staff housing building at our Red Brook WMA. This will provide the tern project with better overall resources and free up much needed space at the District HQ for equipment storage and staff work spaces.

District staff coordinated closely with NHESP to design, plan, and begin to execute a significant habitat restoration project at our Cooks Pond WMA in Plymouth. The project is designed to restore rare and important coastal plain pond habitat along the shoreline of Cooks and Harlow Ponds. Cooks Pond, in particular, has suffered greatly over the years from unnatural water level manipulations associated with downstream cranberry growing operations. DFW was able to acquire the downstream land and water rights from the abutting cranberry grower (who had installed a tailwater recovery reservoir system), which paved the way for the agency to begin to restore a natural water regime. The District has taken over control of the outlet structure, repaired

and maintained it, and installed a locking mechanism to eliminate tampering. We have taken over much of the responsibility associated with manipulating flume boards to maintain desired water levels and have been cooperating with NHESP on further project planning and design.

Enhancement of Outdoor Recreation

District staff stocked its fall 2014 allocation of 12,400 trout into 25 ponds and stocked its spring 2015 allocation of 83,250 trout into 53 ponds and 31 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 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 operated and managed controlled-access hunting opportunities for White-tailed Deer, Wild Turkey, and Eastern Coyotes on the Massachusetts Military Reservation (MMR). These efforts provided hundreds of sportsmen with the opportunity to hunt on roughly 9,500 acres of open territory on the MMR. A total of 63 deer were taken during the regular 2014 deer season on the MMR. 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, with two of the three participants successfully harvesting a deer. The District worked with MMR staff to again provide a very successful youth turkey hunting program at the MMR.

The District Supervisor issued permits for a total of 39 special winter game bird hunts, 7 at the Erwin Wilder WMA and 32 at the Frances A. Crane WMA. A total of 27 pheasant and 871 Bobwhite Quail were stocked during these hunts. A variety of field dog trials were reviewed and permitted by the District Supervisor, including six upland bird dog trials at Frances A. Crane WMA.

The District continued to maintain and improve roads, trails and parking areas on our Wildlife Management Areas to provide for safe and effective access to our properties for all forms of passive outdoor recreation. Gates were also installed and maintained at many WMAs this fiscal year.

Boundary marking is ongoing on many WMAs throughout the District, including some additional boundary work completed with an additional allocation of funding directed towards hiring contractors to complete boundary surveys and marking. Portions of the boundaries of several properties were surveyed and marked in the field this fiscal year. District staff conducted routine monitoring visits and prepared monitoring reports for many of our Wildlife Conservation Easement properties to ensure public access is available, identify any management issues, and ensure that the underlying landowner is complying with the terms of the recorded Conservation Easement document.

Wildlife viewing and waterfowl hunting opportunities were enhanced at the Burrage Pond WMA by District staff seasonally flooding various portions of the habitat restoration area/former cranberry bog complex and mowing/maintenance of the many dike roadways that provide public access on the WMA.

District staff also met multiple times with Cape Cod National Seashore personnel to assist in wildlife management activities and to continue to monitor and execute pheasant stocking at three locations in the CCNS.

District staff continued to work with the Plymouth County League of Sportsmen, the Office of Fishing and Boating Access, the Town of Halifax and concerned citizens relative to the re-establishment of a parking area on Elm Street to provide access to the south end of our Burrage Pond WMA. The issue is ongoing, and the OFBA is working towards developing formal plans for a roadside parking area. However, DFW will have to continue to work closely with the Town of Halifax in FY 16, as any construction of a new parking area will almost certainly involve DFW acquiring some interest in the abutting Town land.

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.

District staff attended, presented at, and answered questions from the public at site walks highlighting various habitat management projects on our lands, including Frances A. Crane WMA and Quashnet River WMA. The District also installed interpretive signage at all DFW lands where active habitat management was occurring.

The Fisheries Manager gave a talk on Red Brook Trout Restoration at the New Bedford Whaling Museum and a talk on Brewster Ponds to the Brewster Pond Coalition and updates to the Sea Run Brook Trout Coalition. An electrofishing and tagging demonstration at the Quashnet River was given to a Falmouth AP Environmental

Science class. The Fisheries Manager also brought a group of Massachusetts Maritime Academy students on a tour of Red Brook WMA and explained salter Brook Trout management and our management and restoration projects on the WMA.

Online game checking training was given by District personnel to staff at several of our game checking stations. The District Supervisor gave a presentation on animal adaptations and classification to 3rd grade students at the Governor Winslow Elementary School in Marshfield as part of their STEAM Lab curriculum.

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 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 MEP 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 District responded to a variety of problem animal calls this fiscal year, predominantly dealing with coyotes and aggressive Wild Turkeys. Numerous site visits were made to meet with concerned citizens and information was provided to either quell their concerns or empower them to take steps to reduce the probability of conflicts such as proper yard maintenance, harassment, and pet husbandry. Other animal calls handled by the District in FY 15 included deer, hawks, osprey, fisher, raccoon, Peregrine Falcon, fox, geese, eagles, turtles, and many species of small mammals. 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.

District staff served as the DFW representative on a variety of management teams and efforts including the Santuit Pond Preserve Management Team, the Assawompset Pond Complex Management Team, the Lyman Reserve/Red Brook Management Team, 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 Fisheries Biologist was actively involved in monitoring the Massachusetts Military Reserve (MMR) cleanup activities as a member of the Plume Containment Team.

District staff attended meetings and site visits to the MassAudubon Daniel Webster Wildlife Sanctuary to assist them in the development of a prescribed burn plan for the property.

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.

Central Wildlife District

Administration

The District Wildlife Biologist position was recreated and filled during the fiscal year via the internal promotion of Technician III Mike Morelly to Game Biologist III.

A new Stewardship Biologist (Game Biologist I) position was created and filled during the fiscal year via the internal promotion of Technician III Scott Kemp.

As of the end of the fiscal year, the two Technician III vacancies created by the internal promotions had not been posted.

Research and Conservation

Wildlife

District personnel oversaw the operation of 14 deer check stations, 15 turkey check stations, 12 Eastern Coyote check stations, and one Black Bear check station. Electronic game checking was used at the District office for turkey, deer, and furbearers.

Ruffed Grouse, American Woodcock, and Mourning Dove censuses were completed.

Canada Goose leg banding was conducted in Central District with Waterfowl Project Leader H Heusmann. 130 geese were banded at 14 sites.

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

Wood Duck nesting boxes were checked and new boxes were erected at various wetland sites. Donations of metal poles and Wood Duck boxes were accepted from sportsmen and the general public. Rough cut lumber for Wood Duck box construction was milled at a DCR sawmill at the Otter River State Forest using white pine logs acquired during forestry work at the Muddy Brook WMA in Hardwick.

Turkey brood reports were submitted during the three-month study period.

Scheduling and stocking of 12,890 Ring-necked Pheasant were completed and 4,000 seven-week old pheasants were distributed to 13 sportsmen's clubs and two correctional institutions for rearing. Pheasants were released on 17 Wildlife Management Areas (WMAs), four town coverts, and participating club properties.

Bolton Flats and Winimusset WMAs were available for the winter pheasant hunting opportunity in Central District. One application was received for Winimusset.

Radio telemetry studies were continued focusing on tracking collared Black Bear. GPS collars have been deployed on one additional yearling sow which was captured at a den site in Worcester.

Nuisance animal reports were addressed and recorded. Animal Report Data Forms were completed and forwarded to Field Headquarters or submitted electronically. Technical assistance was provided and site visits conducted where necessary. The majority of reports related to coyote, bear, fisher, bobcat and fox. Reports of suspected illegal activity were forwarded to the Environmental Police.

A 10-day old deer fawn was seized from a party in Dudley and transported to the single licensed rehabilitation facility in Wendell.

Several moose/vehicle collisions were documented and data collected from specimens which could be salvaged. Large animal responses were undertaken by District staff for moose or bear in cooperation with the Environmental Police.

Sixteen WMAs were maintained with efforts directed at fields, roads, parking lots, gates, dumping, and ATV deterrents.

Permitting and preliminary work to repair the Burnshirt River Dam (Wine Brook) at the Phillipston WMA commenced in cooperation with the town and consulting engineers from the Office of Fishing and Boating Access and Tighe and Bond (T&B). The berm of the dam was cleared of vegetation and test borings conducted to determine the structural integrity of the dam.

Dam repairs were done on the Adams Pond Dam at the Merrill Ponds WMA by T. Ford Company with engineering oversight provided by Tighe and Bond. Engineering and permitting for similar work on the Town Farm Pond Dam were initiated by T&B with assistance from the Office of Fishing and Boating Access. Spillways were cleared at the Thompson, Arnold, and Schoolhouse Pond Dams.

The former Slein barn was demolished at the Winimusset WMA under contract with Jay-Mor Enterprises.

License Agreements were maintained with 18 central Massachusetts farmers, primarily for hay and corn. Agricultural fields were put out to bid at the Bolton Flats, Moose Brook, and North Brookfield WMAs and awarded.

Six boat ramps were visited and trash removed. Assistance was provided to the Office of Fishing and Boating Access as requested.

Monitoring of tornado damage was continued by Forestry project leader John Scanlon at the McKinstry Brook WMA.

A timber harvest and habitat management plan was undertaken at the Muddy Brook WMA in Hardwick.

A habitat management project at the Pine Hill section of the Bolton Flats WMA was continued.

MA DOT hosted planning meetings for bridge reconstruction over the Quaboag River at the Quaboag WMA. Improvements for canoe and car top river access were initiated.

A timber trespass committed by the North Quabbin Trails Association at the Millers River WMA was investigated and resolved.

Repairs were made to the Lackey Pond WMA boat access.

Three District Technicians participated in prescribed fire training at the Mass Military Reservation on Cape Cod.

An encroachment issue at the Thayer Pond WMA was investigated and the abutter notified of the situation.

Vandals cut down utility poles and a platform holding three inactive electrical transformers at the High Ridge WMA. One transformer was stolen. Hazardous materials crews were contacted to properly remove the remaining two transformers and contaminated soils. The perpetrator was caught by the Westminster PD with assistance from the Environmental Police.

A central Massachusetts farmer had his License Agreements revoked for non-payment at the Bolton Flats, Millers River, and Phillipston WMAs.

District staff met with representatives of National Grid to discuss improvements to a power line right of way at the Winchendon Springs WMA.

The District accompanied Natural Heritage staff on a natural community investigation at the Susan B. Minns Wildlife Sanctuary.

Fisheries

Central District staff surveyed 38 sites on streams to assess fish populations and water conditions focusing on the Millers, Blackstone, Nashua, Quinebaug, Chicopee, and Assabet river drainages. Baseline water quality data on acidity/alkalinity, conductivity, and temperature were recorded.

Pond surveys, using the District electrofishing boat, were conducted at Congamond Lake in Southwick and Quaboag Pond in Brookfield.

Hatchery raised trout were stocked in 36 ponds and lakes, as well as 23 rivers and 27 streams in Central District. Stocking participants included Cub Scouts, New England Fly-tyers, Trout Unlimited, school groups, youth groups, and local sporting clubs.

Broodstock salmon stocking was discontinued with the announcement that Atlantic Salmon restoration

efforts were being abandoned by the U.S. Fish and Wildlife Service.

Landlocked Salmon were stocked to supplement the existing population in the Wachusett Reservoir.

Reported fish kills were investigated in Lancaster and Ashburnham.

Lake Trout sampling was conducted at Quabbin and Wachusett Reservoirs.

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 monitored for temperature, oxygen level, and conductivity with flow devices installed and maintained by a contractor for the MBTA and Westminster Business Park.

Following removal of the Bartlett Pond Dam in Lancaster, the newly connected reaches of stream were surveyed and found to have been colonized by native Eastern Brook Trout.

Public access sites were investigated with representatives from the Office of Fishing and Boating Access.

Natural Heritage and Endangered Species

District personnel assisted in the Bald Eagle Breeding Survey that was held in April. The Breeding Survey replaces the Midwinter Bald Eagle Survey. Resident nesting eagles were documented at Wachusett Reservoir, Pine Hill Reservoir, Quaboag Pond, Lake Shirley, Riverdale Pond, and a beaver impoundment in Royalston.

The Bald Eagle nesting territory at Wachusett Reservoir in Boylston was active and produced two chicks. The Quaboag Pond eagle pair produced two chicks. The Lake Shirley territory produced two chicks. The pair at Pine Hill Reservoir in Paxton failed. The successful eagle nesting at Webster Lake produced two chicks. There was one successful eagle nest on the east side of Quabbin Reservoir in Petersham that produced one chick. Eagles were present on two other Quabbin territories but did not produce. A nest in Royalston blew out of the tree and eggshell fragments were recovered on the ground. The Northbridge nest at Riverdale Pond produced one chick. Kurt Palmateer of the McLaughlin Trout Hatchery climbed all nests.

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. A new site in Hubbardston was reported. The Westborough pair continued to use a nest pole installed by District staff. A new nest was confirmed on a cell tower in Templeton and produced two chicks. A new nest pole was installed by the Worcester Water Department at Quinapoxet Reservoir with technical assistance provided by the District.

Peregrine Falcons were present in downtown Worcester and produced two chicks on a ledge nest tray at the Bancroft Apartment building. These chicks were relocated and replaced by four chicks brought from the Custom House in Boston. All four new Worcester chicks survived to fledge, with one subsequently recovered dead on the roof of the People's United Bank building.

Bluebird, American 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. Kestrel boxes were monitored at Wachusett Reservoir, Bolton Flats WMA, MacCallum WMA, and Moose Hill WMA as part of a program coordinated by State Ornithologist Drew Vitz. The kestrel box at Bolton Flats was utilized by kestrels while the box at MacCallum was used by Wood Ducks.

Enhancement of Outdoor Recreation

The District participated in Lands Committee and Parcel Ranking meetings. A summary of lands protected by fee acquisition or Conservation Easement is found in the Realty section of the Annual Report.

Outreach and Education

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

Hunting, fishing, and trapping licenses, and antlerless deer, bear, and turkey permits were sold at the District headquarters.

Technical Assistance

The District Manager and staff interacted with other state and federal agencies, NGOs, and other groups including DCR, DCR/DWSP, DEP, USFWS, USFWS Law Enforcement, and the Worcester County League of Sportsmen's Clubs.

The 300 seedling chestnut orchard was maintained at the District in cooperation with the American Chestnut Foundation and DCR. Additional chestnut sprouts were maintained at the Moose Brook and Winimusset WMAs. Plans were implemented for the construction of a seed orchard at the MacCallum WMA with a perimeter fence installed and 300 seeds planted.

Surveillance cameras were used on multiple WMAs and images showing illegal activity were forwarded to the Environmental Police for investigation.

Connecticut Valley Wildlife District

Administration

After 25 years of service to DFW, Wildlife Technician III, James Wright retired on June 30th of this year. Jim was a particularly skilled employee and will be greatly missed by our staff and the agency.

The Valley District had a promotion and two new hires in this fiscal year. Wildlife Technician II, Kevin Pelosky was promoted into the Wildlife Technician III position vacated last year by Gary Galas.

Christopher Connors was hired, after a national search, into the Wildlife Technician II position vacated by Kevin on March 23, 2015. Chris comes to DFW from Idaho Fish and Game but is originally from Connecticut.

Tom Wansleben started on April 20th in the new position of Connecticut Valley District Stewardship Biologist. Tom comes to the Valley District from Mount Grace Land Trust where he was a Land Stewardship Specialist.

All electronic issued licenses, permits, and tags are sold and tracked through the MassFishHunt System as of this year.

2,954 Quabbin One-Day Fishing licenses were issued at the three boat launch area totaling $14,770.

4 Field Trial Permits were issued.

No Special Pheasant Hunt Permits were issued.

15 Swift River Wilderness Camping Permits were issued.

The District Manger 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 (CCP). The Draft CCP is now being circulated to the public for comment and should be approved by the end of the calendar year. The District Supervisor also serves as 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.

The District Manager gave public speaking engagements: "The Bears of Massachusetts" for the Mahar H.S. Fish and Game Club, a presentation at The Berkshire Museum in Pittsfield on "Bears in Massachusetts," and a presentation on "Living with Black Bears in Massachusetts" for the Athol Bird and Nature Club.

The Stewardship Biologist developed standardized maps for all district WMA/WCE properties and a priority list for marking boundaries on our WMA's. Four encroachment/trespass issues on the Montague Plains WMA were investigated and agreements for compliance are in place. Staff participated on a 6 acre controlled burn at Montague Plains WMA as part of the properties habitat restoration efforts.

Research and Conservation

Wildlife

Valley District staff completed Ruffed Grouse drumming routes and the Wild Turkey brood survey. Staff banded Canada Geese at nines sites. Ninety Wood Duck nesting boxes were checked and maintained at 20 sites. Bird and kestrel nesting boxes were maintained at several WMAs as well. Staff monitored the survival and reproduction of 14 radio-collared female Black Bears during the reporting period. Two 2-year-old collared females were hit and killed by vehicles. One collared female was harvested during the hunting season. Females were checked in their dens during February and March to determine reproductive success and first-year cub survival. GPS collars were affixed to bears to monitor locations every 45 minutes. This is a cooperative study with the University of Massachusetts at Amherst (UMass/Amherst). The District assisted trapping 14 bears (10 males, 4 females) during the spring and summer of 2015 to increase the sample of GPS radio-collared females.

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

The District Wildlife Biologist installed as many as five remote cameras at Southwick WMA to monitor illegal off-road vehicle use. These cameras uploaded pictures to a website maintained by the District Supervisor. This website was made available to the OLE, which was able to use the photos to pattern illegal use and issue several citations. Also, seven large 18"x24" signs warning "Cameras in Use, OHVs Prohibited" were erected to help deter illegal OHVs.

Seven gates were installed at power line easements at Montague Plains WMA by the power company at the request of the District to help deter illegal trash dumping and OHVs. The gates and the open vistas created by the wildlife habitat improvement cuts have successively reduced illegal trash dumping. The upland habitat program improved over 250 acres of habitat at Montague Plains WMA by thinning a pitch pine dominated forest and maintaining an open grassland/shrubland understory.

All WMAs were posted with rules and regulations. These signs are posted at public access entrance points at 35 WMAs throughout the District. Newly acquired land parcels at Bushy Mt. WMA and Montague WMA were boundary marked.

Approximately 40 acres of fields were mowed at six WMAs (Southwick, Southampton, Herm Covey, Poland Brook, and Leyden). A controlled burn was conducted at Southwick WMA and Montague Plains. One and one quarter miles of access trails to four duck blinds were cleared for the annual Ludlow WMA controlled duck hunt.

The Stewardship Biologist completed seven WCE monitoring visits and completed a training to obtain the Prescribed Fire RT-130 Fire Safety Refresher certificate. Wildlife Technician II Christopher Connors also completed the training for Prescribed Fire RT-130 Fire Refresher certificate.

Fisheries

Stream surveys were conducted throughout the District. Surveys of a variety of stream types were planned and completed.

There were no fish kills investigated during the 2014 Fiscal Year. The Valley District continues to be a weigh station for the Freshwater Sportfishing Award Program and several nice pin fish were recorded.

The Fisheries Biologist and crew continue to work closely with Professor David Christensen of Westfield State University, bringing his class out on boat electroshocking at Hampton Pond, stream electroshocking at Munn Brook, and a class lecture; comments are always given that this is the most valuable and enjoyable field trip of the semester.

Natural Heritage and Endangered Species

The Valley District is monitoring 22 breeding Bald Eagle territories and banded eaglets in trees that could be safely climbed in the Valley District. District staff assisted in the spring eagle nesting survey, throughout the District.

Staff banded Peregrine Falcon chicks at the UMass/Amherst Library. Staff also constructed peregrine nesting boxes for NHESP staff to place at bridges throughout the District.

Land Stewardship

The Stewardship Biologist developed standardized maps for all district WMA/WCE properties and a priority list for marking boundaries on our WMAs. Four encroachment/trespass issues on the Montague Plains WMA were investigated and agreements for compliance are in place. Staff participated on a 6 acre controlled burn at Montague Plains WMA as part of the property's habitat restoration efforts.

Enhancement of Outdoor Recreation

Staff stocked 10,000 pheasants on 33 town covers and 10 WMA covers prior to and 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 seven week-old pheasants to these clubs in July.

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

In the fall of 2014, 13,750 trout were stocked into Valley District; over 100,175 Rainbow, Brook, Brown, and Tiger Trout were stocked for Valley District anglers over the course of spring 2015 stocking. Snowfall delayed stocking for one week 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.

Surplus Broodstock Salmon were stocked out of the Nashua National Fish Hatchery (Nashua, NH) into Lake Mattawa, Lake Metacomet, and Five Mile Pond in January 2014.

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).

Outreach and Education

District Staff set up the DFW display at the Franklin County Fair, manned it over the fair's four 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.

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.

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.

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

Long-time district Game Biologist Tony Gola retired in May of 2015 after more than 40 years with agency. Tony started as a Game Biologist in the Western District in 1981 and was witness to many changes to programs and personnel. Tony was an expert naturalist with a broad range of knowledge that will not be easily replaced.

Western District Wildlife Technician III Dale Beals retired on June 30, 2015 after more than 25 years with the agency, all in the Western District. Dale particularly

enjoyed stocking trout and was a great advocate for sportsmen in the region.

The District welcomed new Clerk Deb Lipa in August of 2014. Deb brings substantial professional experience to the position and has been a great help through her first year with the Agency.

Jacob Morris-Siegel was promoted from Wildlife Technician II to District Stewardship Biologist. In this newly created position, Jacob will lead efforts to mark boundaries, monitor Conservation Easements, address encroachments, and assist with management of WMAs.

The District hosted two trout stocking interns to assist with distribution of hatchery trout. The interns received valuable experience and earned academic credits from Berkshire Community College and UMass Amherst.

The Fisheries Manager hosted an internship through the American Fisheries Society Hutton Student program. The program placed a high school senior in the District for the summer to learn about conservation and fisheries science.

A new high efficiency heating system was installed in the District Headquarters, replacing an older, less efficient model. The upgrade should result in substantial energy savings.

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. The District Stewardship Biologist and Wildlife Technicians monitored Conservation Easements throughout the District.

License agreements were issued by the District for agricultural leases on WMAs. These agreements benefit wildlife by maintaining open habitats, often in places that would otherwise not be actively managed due to staff, equipment, and time constraints.

Research and Conservation

Wildlife

Annual surveys for Woodcock, Ruffed Grouse, Mourning Doves, and waterfowl were conducted in cooperation with Wildlife Section biologists at FHQ. Staff also cleaned, constructed, and installed nest boxes for Wood Duck, Bluebird, and American Kestrel.

Western District personnel provided support for Wildlife Project Leaders through game check stations, kill-card data entry, radio-telemetry 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 historic New England Cottontail sites. Songbird surveys on WMAs were conducted by District personnel, in cooperation with the habitat management program. The District Biologist and District Stewardship Biologist assisted the State Ornithologist by identifying birds from songs recorded in the area impacted by tornados in 2011.

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.

The District receives numerous calls about animals in distress warranting all levels of response. Among the animals handled by the District in FY 15 were fawns, hawks, owls, loons, herons, geese, eagles, turtles, and many species of small mammals. Outcomes of these cases included release, rehabilitation, or euthanization.

District staff provided support for project leaders on Common Loon assessments and nesting. A loon raft was set on Cleveland Reservoir in Hinsdale and nesting surveys were conducted on a number of waters in the District.

Western District Staff assisted project leaders on prescribed burns and continued to develop a team to conduct habitat burns on Western District properties.

Fisheries

Fish community assessments were conducted on 52 stream sites in FY 15. Surveys were conducted at dam removal sites as part of continual monitoring of fish populations at those locations. The Fisheries Manager worked closely with the Massachusetts Department of Transportation (MassDOT) to assess fish populations in areas where roads and streams intersect. Surveys were also conducted in areas where Karst topography results in subsurface stream flow.

The District Fisheries Manager attended multiple meetings related to aquatic habitat. She worked closely with the Department of Environmental Protection and MassDOT on impacts to streams from road projects. She participated in the Fluvial Geomorphic Task force and advised on MassDOT projects throughout the State. She continued to act as agency representative to the Eastern Brook Trout Joint Venture, attending meetings and reviewing grant proposals.

District personnel provided support for the Fisheries Section by providing technical information, consulting on environmental review, responding to fish kills, and participating in meetings.

Laurel Lake sampling continued in FY 15. Annual fisheries surveys have been conducted in each of the years since Zebra Mussels were discovered in 2009.

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. An eagle chick that was injured in a fall from the nest was successfully rehabilitated and released at the nest site. Four eagle chicks from three nest sites were successfully banded.

District staff also conducted winter surveys for hibernating bats in three mines and five caves. These surveys are a continuation of a long running effort to track use in Massachusetts hibernacula, particularly important given the presence of white-nose syndrome in the Commonwealth.

District Biologists and Wildlife Technicians partnered with the NHESP to manage and enhance habitat for endangered Bog Turtles by conducting surveys, clearing habitat, maintaining water levels, and assisting in the management of beneficial grazing.

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. Where possible, we partnered with school groups or other interested organizations such as Trout Unlimited on stocking sites. 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.

In FY 15, we continued to install rustic wooden signs and informational signage on District WMAs. Considerable time was spent marking boundaries of new acquisitions and replacing signage on older properties.

Western District hosted two sites for paraplegic sportsmen to participate during the designated three-day hunt. District staff attended all hours of the hunt and, with the help of volunteers, ensured safe and successful hunting.

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 Springfield Sportsmen's Show. 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 volunteer 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.

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.

Black Bear management continued to be a major activity for District staff during the spring and summer months. Calls requesting assistance, information, or simply reporting activities were an almost daily occurrence. District personnel responded with a tiered approach ranging from over the phone advice to site visits and active response. Electric fences were loaned to some facilities to protect resources and alter bear behavior. District personnel captured and relocated a young problem bear from the Town of Stockbridge where it had been a persistent problem for residents. The District Supervisor conducted two public informational meeting in Stockbridge at the request of local residents and police. In all instances, property owners were advised how to avoid bear conflicts and prevent encounters.

Large Animal Response cases included moose responses in Otis and Tyringham, deer in North Adams and Cheshire, and bear cases throughout the District. The District Supervisor and District Wildlife Manager assisted OLE in many response cases in FY 15.

The District Supervisor represented the agency at meetings involving resource conservation in the region. He continued as the alternate state representative to the Westfield Wild and Scenic River Committee. One of the most important issues for the district is the review of the proposed Northeast Direct Gas pipeline. The District Supervisor and District Land Agent spent time reviewing documents and attending meetings related to potential impacts from the proposed line.

District Personnel

Northeast Wildlife District

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

Southeast Wildlife District

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

Connecticut Valley Wildlife District

Ralph Taylor, *District Supervisor*
David Basler, *Fisheries Manager*
Barbara Bourque, *Clerk*
Christopher Connors, *Wildlife Technician*
David Fuller, *Wildlife Manager*
Sam Lovejoy, *Land Agent*
Kevin Pelosky, *Wildlife Technician*
Walter Tynan, *Wildlife Technician*
Tom Wansleben, *Stewardship Biologist*

Central Wildlife District

Bill Davis, *District Supervisor*
Mark Brideau, *Fisheries Biologist*
Bob Chapin, *Wildlife Technician*
Scott Kemp, *Stewardship Biologist*
Debra Manty, *Clerk*
Jessi Manty, *Wildlife Technician*
James McCarthy, *Land Agent*
Michael Morelly, *Wildlife Biologist*
Bruce Walker, *Wildlife Technician*

Western Wildlife District

Andrew Madden, *District Supervisor*
Tammy Ciesla, *Wildlife Technician*
Nancy Dewkett, *Wildlife Technician*
Debra Lipa, *Clerk*
Peter Milanesi, *Land Agent*
Jacob Morris-Siegel, *Wildlife Technician*
Dana Ohman, *Fisheries Manager*
Vacant, *Wildlife Technician*
Vacant, *Wildlife Technician*
Vacant, *Wildlife Manager*

WILDLIFE LANDS: ACQUISITION and REALTY STEWARDSHIP

Craig A. MacDonnell
Chief of Wildlife Lands

Overview

The Realty Section had an impressive fiscal year 2015 (FY15) in terms of both acquisition and stewardship. As summarized below, FY15 saw the protection of 2,659 acres of land, important staffing additions, many miles of boundary maintenance, twenty important survey projects, invigorated easement monitoring, and the introduction of a new land information management system.

Land Acquisition

FY15 was another strong year for land protection. Our land agents continued to experience an evolving real estate market showing modest signs of price recovery and increasing landowner expectations. Despite these changing market conditions, staff completed a remarkable 44 projects conserving 2,659 acres of valuable habitat at a cost of $6.7 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 $5,269,690. The other source of funding is the Wildlands Fund, which contributed $1,458,700 in FY15. Our objectives in pursuing land conservation include expanding existing Wildlife Management Areas (WMAs) and Wildlife Conservation Easements (WCEs), protecting key habitats across the state, and enhancing public access to lands and waters for sporting activity. All lands are typically open to fishing, hunting, trapping, wildlife observation, boating, hiking, and other passive wildlife related recreation.

MassWildlife's land acquisition program's primary mission is to protect the ecological integrity of the Commonwealth. The agency seeks to assure biological diversity by acquiring the most important fish and wildlife habitat and natural communities and to provide public access to the lands and waters of the state. WMAs and WCEs include various typed of forested uplands, river corridors, wetlands, habitat for state listed endangered and threatened species and species of special concern, and high quality examples of other important habitat types. These holdings extend from the Berkshires to the Cape and Islands.

Land acquisitions were well distributed around the state in FY15. This year the Southeast District amassed the greatest acreage total, with 748 acres conserved. The Northeast also had a very good year, with 631acres protected. All of the districts had successful years, however, with the Central District adding 200 acres, the Valley District conserving 527 acres, and the Western District protecting 550 acres. Fifteen acquisitions were recorded in the Northeast District, ten in the Valley District, nine in the Central District, six in the Valley District, and four in the Southeast District. Most transactions involved additions to existing areas.

Acquisitions were configured and financed in a variety of ways. They were primarily in fee (2,193 acres), but also included important acreage in the form of easements (466). Staff also secured an impressive collection of donations (317 acres, of which 130 were easements). There were five projects over 100 acres, including the 345-acre addition to the Maple Springs WMA, the 291-acre addition to the Swift River WMA, and the 251-acre addition to the SE Pine Barrens WMA.

As is the case every year, our non-profit partners made enormous contributions to our success this year. Land trusts and other environmental organizations ably assisted on numerous acquisitions and provided valuable input on others. Direct assistance was provided by Berkshire Natural Resources Council, The Trust for Public Land, Valley Land Fund, Kestrel Trust, New England Forestry Foundation, Essex County Greenbelt Association, and Franklin Land Trust.

The 2,659 acres conserved in FY15 bring the total acreage to 208,572 acres, or approximately 325 square miles of permanently protected wildlife habitat across the Commonwealth.

FY15 Total and Average Cost by District

	Acreage	Total Cost	Per Acre Cost
Western	551.8	$1,072,000	$1,942.73
Valley	527.2	$770,030	$1,460.60
Central	200	$320,800	$1,604
Northeast	631.8	$1,417,800	$2,246.90
Southeast	748.6	$3,147,760	$4,204.86
TOTAL	2,659.65	$6,728,390	$2,529.80

Western Wildlife District

Land staff in the Western District completed six acquisitions in FY15 and protected a total of 551 acres for $1,072,000 at an average cost per acre of $1,942.73. Two key projects stand out, one based on its large acreage, the second due to the formation of an important partnership. The first involved a 291-acre addition to the Swift River WMA in Goshen and Cummington that added over 3,600 feet of cold-water stream frontage. The second involved working closely in partnership with Franklin Land Trust and Trout Unlimited resulting in an 82-acre conservation restriction in Heath, now designated North River West Branch WCE, which guarantees public fishing access to an important stretch of frontage along the West Branch of the North River.

Connecticut Valley Wildlife District

Ten projects were concluded by land staff in the Connecticut Valley District protecting 527 acres for $770,030 or $1,460.60 on average per acre. Three important projects deserve mention here: a 70-acre addition to the northern flank of the Montague Plains WMA; the purchase of a 50-acre inholding within the Paul Jones Working Forest WCE in Shutesbury; and the conservation of a long-sought 110-acre inholding within Satan's Kingdom WMA in Bernardston.

Central Wildlife District

Central District staff secured nine acquisitions protecting over 200 acres at a cost of $320,800, averaging $1,604 per acre, two of which are notable. In Templeton land staff assembled three significant and adjacent properties (52, 24, and 19 acres) as an addition to the Stone Bridge WMA. In Barre staff worked closely with a landowner in conducting a timber harvest designed to create young forest habitat as a part of a 16-acre addition to Moose Brook WMA.

Northeast Wildlife District

In the Northeast District, land staff completed 15 projects conserving 631 acres of land at a cost of $1,417,800. The average cost per acre was $2,246.90. Of particular note in the Northeast District were two impressive property collections, both of which resulted in substantial additions to existing management areas. In Dunstable, Groton and Pepperell, three parcels were acquired comprising 188 acres for addition to the Unkety Brook WMA. In Ashburnham, three abutting acquisitions (67, 27, and 2 acres) added important protection to the Ashby WMA along the South Branch of the Souhegan River.

Southeast Wildlife District

Four large land conservation projects were executed by land staff in the Southeast District involving a total of 748 acres at a cost of $3,147,760, where the per acre average cost was $4,204.86. Of particular significance was the addition of almost 400 acres to the resource-rich Maple Springs WMA in Wareham. Substantial acreage was also added to the Southeast Pine Barrens WMA in Plymouth, which protects an incredible array of rare and endangered animals and plants.

Stewardship Activities

Staffing

In FY15, DFW added six new staff positions to address monitoring of CRs and other stewardship activities. These positions include a Stewardship Biologist in each Wildlife District and a Stewardship Associate at Field Headquarters. They were filled near the end of the fiscal year, and will substantially increase capacity for stewardship in the coming years.

Boundaries

DFW engaged the services of four experienced contractors in FY15 for the purpose of confirming property boundaries at various WMAs and WCEs in each of the five Wildlife Districts. All of the Districts reported excellent progress on this much-needed project, with some variation in accomplishment depending on location and parcel configuration. Boundaries on larger parcels with less intricate boundaries typically were easier to confirm. Staff provided our contractors with maps and deeds together with basic orientation. Our contractors performed a diverse set of tasks depending on district preference, including researching deeds, locating boundaries in the field, creating GPS track-logs, blazing and painting trees, and hanging DFW signage.

Surveys

DFW also hired six private survey contractors to help resolve a large number of challenging boundary questions that have arisen in the Districts. Land Agents and District Managers worked closely with these contractors, who prepared survey plans and set boundary markers at twenty different properties, including several in each of the Districts.

Conservation Restriction Baseline Documentation and Monitoring Efforts

Contractors completed an additional four Baseline Documentation Reports on Conservation Restrictions. Approximately 50 CR monitoring visits were conducted by District and Field Headquarters staff, and reports were submitted to USFW and Forest Legacy Program as required. A Monitoring Intern worked through September to visit and gather GPS boundary data on some of our older CR's in Royalston and Orange. Altogether the Realty Section logged nearly 1,500 hours on these types of stewardship activities.

Forest products harvesting continues to be the most common activity that requires review and approval on CR properties by agency staff. This review is provided by Forestry Project staff in the Wildlife Section, but will be shared by the new Stewardship staff in the coming years. The reviews offer opportunities to track and positively influence forestry activities with respect to agency goals. The Realty Section provides oversight and coordination of all monitoring efforts.

Land Information System

Work progressed substantially on our new Land Information System, which is a shared project with The Executive Office of Energy and Environmental Affairs, the Department of Conservation, and the Department of Agricultural Resources. When fully developed, the Land Information System will provide staff access to information about all of our properties quickly and easily, greatly enhancing capacity for management decisions. The system will also inform our MassWildlife Lands Viewer to help give the public information about where our WMAs and WCEs are located, and what resources and recreational opportunities might be found on these properties.

Realty Staff

Craig A. MacDonnell, *Chief*
Aaron Best, *Southeast District Stewardship Biologist*
Jennifer Jones, *Northeast District Stewardship Biologist*
Scott Kemp, *Central District Stewardship Biologist*
Jacob Morris-Siegel, *Western District Stewardship Biologist*
Elizabeth Newlands, *Stewardship Associate*
Phil Truesdell, *Statewide Realty Stewardship Coordinator*
Tom Wansleben, *Connecticut Valley District Stewardship Biologist*

Land Agents — *Department of Fish & Game*
Anne Gagnon, *Northeast District Land Agent*
James McCarthy, *Central District Land Agent*
Sam Lovejoy, *Connecticut Valley District Land Agent*
Peter Milanesi, *Western District Land Agent*
Joan Pierce, *Southeast District Land Agent*

Land Inventory

Western Wildlife District	Acres
Housatonic River Access	17.00
Konkapot River Access	8.80
Westfield River Access - Chester	3.50
Installation (1)	2.35
Western District - Old HQ	2.35
Sanctuary (2)	435.00
E. Howe Forbush Sanctuary	365.50
Grace A. Robson Sanctuary	69.50
Wildlife Conservation Easements (31)	15,978.00
Abbott Brook WCE	1,782.00
Alford Spring WCE	889.82
Allen Mountain WCE	208.00
Boulders WCE	634.40
Cold Brook WCE	405.00
Cole Meadow WCE	101.00
Flag Rock WCE	41.38
Hawks Brook WCE	23.19
Housatonic River East Branch WCE	100.00
Jug End Fen WCE	81.57
Jug End WCE	262.48
Knightville WCE	676.00
Lilly Pond WCE	162.00
Mt. Darby WCE	319.29
Mt. Plantain WCE	1,337.44
North Egremont WCE	21.50
North River West Branch WCE	82.00
Ram Hill WCE	190.35
Rockhouse Mountain WCE	78.00
Scout Pond WCE	175.90
Shales Brook WCE	5.60
Silver Brook WCE	162.00
Stage Brook WCE	581.00
Steadman Pond WCE	1,170.95
Thorpe Brook WCE	266.20
Tower Brook WCE	300.00
Umpachene River WCE	239.00
Upper Westfield River WCE	12.50
Westfield Watershed WCE	2,300.00
Widow White's Peak WCE	85.00
Windsor Brook WCE	3,284.43
Wildliife Conservation Restrictions (1)	69.40
Windsor Brook WCR	69.40
Wildlife Management Areas (51)	45,017.00
Abbott Brook WMA	18.00
Agawam Lake WMA	779.50
Ashfield Hawley WMA	284.00
Barton's Ledge WMA	88.60
Bullock Ledge WMA	15.50
Chalet WMA	7,433.94
Cummington WMA	288.97
Day Mountain WMA	382.45
Dolomite Ledges WMA	319.85
Eugene D. Moran WMA	1,669.92
Fairfield Brook WMA	164.90
Farmington River WMA	1,848.60
Fisk Meadows WMA	640.17
Flat Brook WMA	273.15
Fox Den WMA	5,013.53
George L. Darey Housatonic Valley WMA	812.93
Green River WMA (Western District)	489.12
Hawks Brook WMA	509.83
Hinsdale Flats WMA	1,792.27
Hiram H. Fox WMA	3,744.69
Hop Brook WMA	424.80
Housatonic River East Branch WMA	27.50
Hubbard Brook WMA	195.93
John J. Kelly WMA	267.00
Jug End Fen WMA	53.54
Jug End State Reservation and WMA	1,169.80
Jug End WMA	20.00
Kampoosa Fen WMA	72.00
Lilly Pond WMA	192.70
Long Mountain WMA	906.00
Maple Hill WMA	578.05

Maxwell Brook WMA	36.40
Misery Mountain WMA	648.84
North Egremont WMA	2.56
Oak Hill WMA	712.30
Peru WMA	4,820.62
Powell Brook WMA	404.58
Ram Hill WMA	230.25
Richmond Fen WMA	22.90
Savoy WMA	1,883.34
Shales Brook WMA	234.00
Shaw Brook WMA	153.33
Stafford Hill WMA	871.60
Stage Brook WMA	148.30
Swift River WMA	291.73
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	983.50
Williams River WMA	35.00
Total Western Wildlife District	**61,536.95**

Connecticut Valley District	**Acres**
Access (12)	511.82
Connecticut River Access	94.80
Deerfield River Access	21.00
Lake Lorraine Access	0.26
Lake Rohunta Access	2.49
Little Alum Pond Access	0.50
Mill River Access	14.15
Millers River Access	52.80
Packard Pond Access	0.54
Sawmill River Access	52.00
Tully Brook Access	154.88
Ware River Access	39.00
Westfield River Access	79.40
Installation (3)	436.13
Bitzer Fish Hatchery	74.54
Reed Fish Hatchery	316.00
Sunderland Fish Hatchery	45.59
Other (1)	143.09
Wilbraham Nature and Cultural Center	143.09
Wildlife Conservation Easements (14)	8,482.40
Amythyst Brook WCE	36.90
Bachelor Brook WCE	93.70
Brushy Mountain WCE	78.00
Chestnut Hill WCE	175.40
Facing Rock WCE	190.00
Great Swamp WCE	0.94
Honey Pot WCE	52.74
Lake Rohunta WCE	59.00
Little Tully Mountain WCE	461.38
Ludlow Reservoir WCE	1,750.00
Orange WCE	877.97
Paul C. Jones Working Forest WCE	3,486.00
Satan's Kingdom WCE	527.50
Tully Mountain WCE	692.87
Wildlife Management Areas (36)	18,384.27
Bennet Meadows WMA (by agreement)	-
Brewer Brook WMA	213.99
Brushy Mountain WMA	85.44
Catamount WMA	413.00
Darwin Scott WMA	27.30
East Mountain WMA	454.86
Facing Rock WMA	1,366.10
Flagg Mountain WMA	160.48
Great Swamp WMA	689.33
Green River WMA (Valley District)	381.95
Herman Covey WMA	1,492.98
Honey Pot WMA	178.42
Lake Warner WMA	98.00
Leyden WMA	759.00
Montague Plains WMA	1,650.60
Montague WMA	1,811.44
Mt. Esther WMA	328.95
Mt. Toby WMA	682.10
Mt. Tom WMA	79.90
Orange WMA	374.10
Palmer WMA	1,260.48
Pauchaug Brook WMA	161.30
Poland Brook WMA	702.45
Satan's Kingdom WMA	1,774.79
Shattuck Brook WMA	178.80
Shepherd's Island WMA	45.90
Southampton WMA	170.60
Southwick WMA	265.24
Sunderland Islands WMA	15.00
Tully Mountain WMA	704.00
Wales WMA	207.15
Warwick WMA	379.00
Wendell WMA	593.58
Westfield WMA	232.67
Whately WMA	357.37
Williamsburg WMA	88.00
Total Connecticut Valley Wildlife District	**27,957.71**

Central District	**Acres**
Access (19)	683.37
Bare Hill Pond Access	1.45
Blackstone / West River Access	28.00
Cusky Pond Access	23.00
Five Mile River Access	178.52
Glen Echo Lake Access	1.00
Leadmine Pond Access	0.05
Moose Brook Access	20.13
Mossy Pond Access	17.00
Natty Brook Access	95.17
Quag Pond Bog Access	31.00
Quinapoxet River Access	32.00
Quinsigamond Marsh Access	59.00
Quinsigamond River Access	18.60
Sevenmile River Access	77.00
South Meadow Pond Access	0.25
Sputtermill Pond Access	58.50
Tully River Access	1.00
Ware River Access - Barre	40.00
Webster Lake Access	1.70
Installation (1)	
District Office (by agreement)	
Sanctuary (2)	367.91

Mount Watatic Sanctuary	228.00
Susan B. Minns Sanctuary	139.91
Wildlife Conservation Easements (26)	9,135.50
Benjamin Hill WCE	87.50
Breakneck Brook WCE	526.00
Burnshirt River WCE	100.00
Carter Pond WCE	300.50
Fish Brook WCE	75.00
Fitchburg Watershed WCE	1,875.00
Hitchcock Mountain WCE	610.00
Lawrence Brook WCE	462.60
Leadmine Mountain WCE	826.37
Long Pond WCE	8.85
McKinstry Brook WCE	31.00
Millers River WCE	204.72
Moose Brook WCE	125.00
Mt. Pisgah WCE	19.12
Muddy Brook WCE	575.69
Newton Reservoir WCE	622.00
Nineteenth Hill WCE	623.75
Potter Hill WCE	90.80
Quisset WCE	247.00
Savage Hill WCE	234.00
Secret Lake WCE	311.30
Slater Woods WCE	73.90
Stuart Pond WCE	28.70
Taft Hill WCE	394.60
Wekepeke WCE	564.00
Whitmanville WCE	118.10
Wildlife Conservation Restrictions (5)	246.91
Breakneck Brook WCR	176.00
Five Mile River WCR	17.27
McKinstry Brook WCR	26.00
Raccoon Hill WCR	22.00
Williamsville Pond WCR	5.64
Wildlife Management Areas (48)	36,888.24
Barre Falls WMA (by agreement)	
Bennett WMA	281.20
Birch Hill WMA	4,433.75
Bolton Flats WMA	1,319.88
Breakneck Brook WMA	707.00
Chockalog Swamp WMA	52.50
Clinton Bluff WMA	42.00
Coy Hill WMA	865.80
E. Kent Swift WMA	157.00
Fish Brook WMA	142.50
Four Chimneys WMA	200.00
High Ridge WMA	2,230.87
Hitchcock Mountain WMA	268.41
Hubbardston WMA (by agreement)	-
Lackey Pond WMA	174.54
Lawrence Brook WMA	295.50
Leadmine WMA	826.00
Long Pond WMA	5.60
Martha Deering WMA	180.60
McKinstry Brook WMA	291.30
Merrill Pond WMA	984.47
Millers River WMA	3,853.92
Mine Brook WMA	1,062.15
Moose Brook WMA	849.20
Moose Hill WMA	640.10
Mt. Pisgah WMA	88.80
Muddy Brook WMA	1,666.92
Oakham WMA	742.20
Phillipston WMA	3,222.03
Popple Camp WMA	1,459.91
Poutwater Pond WMA	391.74
Prince River WMA	748.95
Quaboag WMA	1,239.22
Quacumquasit WMA	179.82
Quisset WMA	424.69
Raccoon Hill WMA	645.50
Richardson WMA	467.22
Savage Hill WMA	930.96
Scripture Hill WMA	121.00
Stone Bridge WMA	505.17
Sucker Brook WMA	102.60
Thayer Pond WMA	131.00
Ware River WMA	185.36
Wayne F. MacCallum WMA	894.58
West Hill WMA (by agreement)	-
Whortleberry Hill WMA	324.40
Winchendon Springs WMA	674.80
Winimusset WMA	670.17
Wolf Swamp WMA	1,206.91
Total Central Wildlife District	**47,321.92**

Northeast District	**Acres**
Access (13)	234.19
Baddacook Pond Access	0.16
Flint Pond Access	89.00
Ipswich River Access	1.79
Knops Pond Access	0.60
Lake Attitash Access	6.03
Long Sought For Pond Access	1.00
Mascuppic Lake Access	0.25
Nashua River Access - Dunstable	15.00
Nashua River Access - Groton	10.10
Nashua River Access - Pepperell	11.20
Nashua River Access - Shirley	30.70
Sudbury River Access	51.86
Weymouth Back River Access	16.50
Installation (3)	107.82
Acton Installation	1.40
Ayer Game Farm	90.72
Northeast District HQ	15.70
Other (3)	371.95
Gov. Thos. Dudley Park	4.75
King Phillip Woods	87.20
Mount Watatic Reservation	280.00
Sanctuary (5)	552.48
Carr Island Sanctuary	110.50
Henry Cabot Lodge Bird Sanctuary (Egg Rock)	2.00
J. C. Phillips Sanctuary	390.98
Milk Island Sanctuary	29.00
Ram Island Sanctuary (North)	20.00
Wildlife Conservation Easements (15)	2,084.96
Concord River WCE	18.90
Cow Pond Brook WCE	127.00
Devil's Den WCE	28.00

Great Meadows WCE	16.00
Great Swamp Brook WCE	106.00
Groton Town Forest WCE	513.00
Hunting Hills WCE	84.59
Martin H. Burns WCE	113.44
Meadow Pond WCE	58.00
Pepperell Springs WCE	255.00
Squannacook River WCE	257.83
Sucker Brook WCE	12.00
Surrenden Farm West WCE	169.70
Throne Hill WCE	177.50
Wright Pond WCE	148.00
Wildliife Conservation Restrictions (2)	127.00
Mill Creek WCR	59.00
Squannacook River WCR	68.00
Wildlife Management Areas (26)	13,260.13
Ashby WMA	946.76
Boxborough Station WMA	124.10
Crane Pond WMA	2,600.21
Delaney WMA	-
Dunstable Brook WMA	131.60
Eagle Island WMA	5.00
Elbow Meadow WMA	210.33
Fessenden Hill WMA	21.00
Flagg Swamp WMA	54.00
Great Marsh North WMA	147.17
Harold Parker WMA	-
Hauk Swamp WMA	61.00
Hunting Hills WMA	430.02
Martin H. Burns WMA	1,576.70
Mulpus Brook WMA	469.05
Nissitissit River WMA	383.22
North Shore Salt Marsh WMA	221.75
Pantry Brook WMA	449.95
Salisbury Salt Marsh WMA	770.07
Squannacook River WMA	1,494.20
Townsend Hill WMA	535.69
Trapfall Brook WMA	45.38
Unkety Brook WMA	457.29
Upper Parker River WMA	171.00
Whittier WMA	36.00
William Forward WMA	1,918.64
Total Northeast Wildlife District	**16,738.53**

Southeast District

Access (19)	54.65
Agawam Mill Pond Access	1.40
Agawam Mill Pond Access WCE	0.50
Bakers Pond Access	1.75
Barnstable Harbor Access	2.78
Big Sandy Pond Access	0.20
Childs River Access	0.25
Cook Pond Access	3.00
Dogfish Bar Beach Access	2.40
Great Herring Pond Access	1.06
Johns Pond Access	0.52
Mashpee-Wakeby Pond Access	25.00
Nemasket River Access	0.46
Popponesset Beach Access	1.50
Robbins Pond Access	1.00
Scorton Creek Access	5.48
Shubael Pond Access	0.35
Snipatuit Pond Access	0.50
Spectacle Pond Access	0.50
Tispaquin Pond Access	6.00
Installation (3)	114.36
Lobster Hatchery	14.80
Sandwich Fish Hatchery	69.76
Southeast District HQ	29.80
Sanctuary (4)	73.00
Billingsgate Island Sanctuary	6.50
Penikese Island Sanctuary	60.00
Ram Island Sanctuary (South)	2.00
Tarpaulin Cove Sanctuary	4.50
Wildlife Conservation Easements (25)	10,677.80
Acushnet River WCE	30.20
Agawam River WCE	3.98
Angeline Brook WCE	50.70
Assawompsett Pond Complex WCE	3,065.00
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	789.00
Halfway Pond WCE	28.00
Lake Nippenicket WCE	8.35
Maple Springs WCE	101.63
Pickerel Cove WCE	78.30
Pilgrim Springs WCE	17.05
Plymouth Pine Hill WCE	240.70
Plymouth Town Forest WCE	296.00
Poor Meadow Brook WCE	101.00
Quashnet River WCE	14.10
Santuit Pond WCE	293.00
Sippican Woods WCE	390.14
South Triangle Pond WCE	47.50
Stump Brook Reservoir WCE	174.00
Taunton River WCE	125.07
Watuppa Reservation WCE	4,300.00
Weweantic River WCE	10.08
Wildliife Conservation Restrictions (2)	37.90
Plymouth Grassy Pond WCR	33.90
Taunton River WCR	4.00
Wildlife Management Areas (59)	53,182.99
Bearse Pond WMA	5.80
Black Brook WMA	411.32
Blueberry Pond WMA	1.50
Brayton Point WMA	2.20
Burrage Pond WMA	1,817.43
Camp Edwards WMA	15,013.16
Canoe River WMA	116.60
Chase Garden Creek WMA	56.40
Church Homestead WMA	163.00
Clapps Pond WMA	68.35
Cooks Pond WMA	69.18
Copicut WMA	3,992.56
Dartmoor Farm WMA	473.00
Dennis Grassy Pond WMA	7.24
Eastham Salt Marsh WMA	7.44
English Salt Marsh WMA	288.50

Erwin S. Wilder WMA	581.45
Fisk Forestdale WMA	235.00
Fox Island WMA	71.10
Frances A. Crane WMA	2,165.31
Freetown Swamp WMA	570.52
Gosnold WMA	3.45
Halfway Pond WMA	122.64
Hartley Reservoir WMA	70.00
Haskell Swamp WMA	3,083.96
Head Of The Plains WMA	2.00
Hockomock Swamp WMA	4,498.94
Hog Ponds WMA	24.50
Hyannis Ponds WMA	365.00
Katama Plains WMA	18.57
Maple Springs WMA	524.36
Marconi WMA (by agreement)	-
Mashpee Pine Barrens WMA	198.35
Mashpee River WMA	55.80
Meetinghouse Swamp WMA	123.00
Miacomet Heath WMA	3.83
Muddy Pond WMA	72.00
Noquochoke WMA	204.50
North Attleborough WMA	36.46
Old Sandwich Game Farm WMA	93.13
Olivers Pond WMA	12.00
Peterson Swamp WMA	250.00
Pickerel Cove WMA	15.90
Plymouth Grassy Pond WMA	25.50
Poor Meadow Brook WMA	161.61
Provincetown Corridor WMA	122.00
Purchade Brook WMA	106.00
Quashnet River WMA	79.54
Quashnet Woods State Reservation & WMA	360.00
Red Brook WMA	683.20
Rocky Gutter WMA	3,143.89
Sandwich Hollows WMA	224.20
SE Pine Barrens WMA	436.84
Sly Pond WMA	192.00
South Shore Marshes WMA	22.40
Taunton River WMA	349.17
Triangle Pond WMA	92.16
Wasque Point WMA	99.50
West Meadows WMA	231.82
Total Southeast Wildlife District	**53,182.99**

Total Massachusetts Wildlife Lands Acreage, by Area Type

Type	**Acres**
Access	1,519.23
Installation	662.36
Other	515.04
Sanctuary	1,428.39
Wildlife Conservation Easements	46,358.66
Wildlife Conservation Restrictions	481.21
Wildlife Management Areas	155,774.92
TOTAL	**206,738.11**

New Stewardship staff. R-L District Stewardship Specialists Jennifer Jones, Jacob Morris-Seigel, Scott Kemp, Tom Wansleben, Aaron Best and Stewardship Associate Liz Newlands from DFW Field Headquarters.

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, $7,666,174, 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 $3,465,173 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 $519,776 (15%); and the balance of $2,945,397 was equally divided between the Division of Marine Fisheries and the DFW ($1,472,698 each).

Three projects were obligated with the OFBA and DFW shares of the FY 15 Dingell-Johnson and Wallop-Breaux funds. The OFBA, in cooperation with the DFW, had nine boat accommodation grants active in FY 15. 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 15 State Wildlife Grant apportionment of $672,126 was a decrease from the previous year. The SWG funds were applied to 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 the Massachusetts State Wildlife Action Plan.

Through a regional effort, New Hampshire, Connecticut, New York, Maine, and Massachusetts were awarded a total of $3,000,000 through the FY 10, FY 11, FY 13, and FY 14 national State Wildlife Grant competitive programs to implement the Rangewide New England Cottontail (NEC) Initiative. Massachusetts' share of the funds ($723,475) will be used to restore NEC habitat in Massachusetts. Implementation of the NEC Initiative will continue through FY 17.

The DFW was awarded $58,000 through the FY 11 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. This cooperative project will continue through FY 16.

The DFW was also awarded $277,719 through the FY 13 national State Wildlife Grant competitive program to fund the Conservation of Snake Species Threatened by an Emerging Fungal Skin Disease. The DFW is partnering with New Hampshire, Connecticut, Vermont, New Jersey, Tennessee, Minnesota, Wisconsin, and Illinois to address this nationally important conservation issue. This cooperative project will continue through FY 16.

The DFW served as the lead state and was awarded $269,955 through the FY 14 national State Wildlife Grant Competitive program to fund Conservation Planning and Implementation for the Wood Turtle. The DFW is partnering with Maine, New Hampshire, Connecticut, Pennsylvania, New Jersey, Maryland, and Virginia. This cooperative project will continue through FY 16.

The DFW was awarded $20,000 through the FY 15 national State Wildlife Grant competitive program to fund the Multistate Recovery Actions for the Bog Turtle and Associated Headwater Wetland Species of Greatest Conservation Need. The DFW is partnering with Pennsylvania, Maryland, New Jersey, and Connecticut. Implementation of this cooperative project will begin in FY 16 and continue through FY 18.

The Endangered Species Act (Section 6)

DFW's apportionment of $35,000 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.

During FY 14, a funding for White-nose Syndrome was awarded to the DFW in the amount of $52,500. Implementation of these funds will continue into FY 16.

During FY 14, the DFW was awarded $188,694 under the Section 6 Habitat Conservation Planning (HCP) Grant Opportunity which will increase and expand the long-term conservation of Piping Plover in Massachusetts through partnerships with municipalities and local conservation partners. Implementation of the HCP will continue into FY 16.

North American Wetlands Conservation Act (NAWCA)

During FY 15, the DFW was awarded $720,002 under the North American Wetlands Conservation Act for a proposal to fund wetland protection, restoration, and enhancement in the Great Marsh in Essex County. The DFW has established partnerships with other state agencies, municipalities, conservation organizations, and private individuals to accomplish the goals of the project. Project implementation will continue through FY 17.

Landowner Incentive Program (LIP)

The federal government did not fund the LIP in FY 15; 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.

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. The FY 07 Tier I apportionment of $180,000 was used for project coordination. The 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 45.

Audits

One audit was conducted during FY 15. The US Department of Interior, Office of the Inspector General (OIG) completed a federal audit of all Wildlife and Sport Fish Restoration grants administered by the DFW for fiscal years 2013 and 2014. The Coordinator's Office spent considerable time facilitating the audit by providing records, performing additional data analysis, and coordinating the audit efforts within the agency. The OIG audit report will be issued during FY 16. These federal audits are conducted once every five years.

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.

In February of FY 15, Debra Chamberlain was hired to fill the previously vacant *Assistant to the Federal Aid Coordinator* position.

Federal Aid Program Personnel

Kris McCarthy, *Assistant Director of Finance and Administration*
Michael Sawyers, *Federal Aid Coordinator*
Lori Cookman, *Fiscal Program Coordinator*
Debra Chamberlain, *Assistant to the Federal Aid Coordinator*
Debbie McGrath, *Federal Aid Bookkeeper*

MAINTENANCE & DEVELOPMENT

Mark S. Tisa, Ph.D.
Project Manager

Overview

The new Field Headquarters officially opened its doors for business the week of September 8, 2014. It was almost exactly two years to date that we packed up and left the old Field Headquarters and returned to our new state-of-the art office facility. The move from our temporary office space in West Boylston back to Westborough went off without a hitch.

Designed by Architerra, Inc., this was one of three projects selected by Governor Patrick's Zero Net Energy Building Taskforce to become the first public sector zero net energy buildings in the Commonwealth of Massachusetts. This facility is designed to produce as much energy on site from clean renewable sources as it consumes. The Field Headquarters building produces 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 stormwater recharge, and the use of low maintenance native plantings. Certification is still in process, but the building is designed to achieve either a rating of LEED Gold or Platinum.

The new Massachusetts Division of Fisheries and Wildlife Field Headquarters is truly a public destination center offering new spaces for meetings, teaching, outreach, educational displays, and unprecedented access to the many wildlife and habitat resources and publications offered by DFW. This is a dynamic, state-of-the art office building with ample meeting, support, and storage space. The facility has nine meeting rooms ranging in capacity from 15 to 150 persons. The building includes a 150-person flexible multi-purpose room, classrooms, environmental review conference rooms, a reference library, a Geographic Information Systems (GIS) laboratory, and field research (wet-bench) laboratories. At the heart of the building, a two-story central gathering space with an indoor trout pool provides views to the wildlife management lands to the east and access to an outdoor terrace perched on the edge of a hilltop.

The building houses approximately 120 employees, including about 90 Division of Fisheries and Wildlife employees that worked at the former Field Headquarters building. In addition, DFW closed its office in Ayer and relocated approximately five employees in its Hunter Education program to the New Field Headquarters building. Further, six employees from the DFG's Office of Fishing and Boating Access working in outdated office space in Brighton, were also relocated into the new facility.

Fleet Maintenance

Throughout FY 15, Gary Zima continued to assist in the operations of the Division's vehicle fleet. Responsibilities associated with Fleet Maintenance consisted of delivering DFW trade-in vehicles to the state auction lot, relocating vehicles amongst agency installations, and maintaining the database of agency fleet vehicles.

We were fortunate to purchase 11 new DFW fleet vehicles during FY 15. Of those vehicles, three were minivans. Two were placed with the Hunter Education Program and the third with the Information & Education Section. The hatchery program received five new trucks; four are standard ¾ ton pick-ups and the fifth is a flat-bed stocking truck for the McLaughlin Hatchery. The remaining three vehicles (two pickup trucks (¾ ton) and one SUV) were assigned to the Westborough Field Headquarters. The corresponding trade-in vehicles were then delivered to the state auction lot.

LEGISLATIVE REPORT

Jack Buckley
Deputy Director and Legislative Liaison

During FY 15, 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 - Employee			
Name	**Title**	**Action**	**Date of Action**
Buckhout, Nathan	Game Biologist III	New Hire	November 2, 2014
Caljouw, Caren	Game Biologist III	New Hire	April 19, 2015
Callahan, Emily	Game Biologist I	New Hire	May 3, 2015
Chamberlain, Debra	Office Support Specialist II	New Hire	February 22, 2015
Connors, Chris	Wildlife Technician II	New Hire	March 2, 2015
DeAngelis, Nicole	Aquatic Biologist II	New Hire	July 13, 2014
Ford, Jennifer	Clerk III	New Hire	February 22, 2015
Jones, Jennifer	Game Biologist I	New Hire	April 19, 2015
Lipa, Debra	Clerk III	New Hire	August 10, 2015
Newlands, Elizabeth	Environmental Analyst III	New Hire	May 17, 2015
Stover, Matthew	Game Biologist I	New Hire	April 19, 2015
Wansleben, Thomas	Game Biologist I	New Hire	April 19, 2015
Wernerehl, Robert	Conservation Biologist IV	New Hire	February 8, 2015
Seasonals & Interns			
Ferry, Nicholas	Fisheries Technician	Contract Seasonal Employee	April 20, 2015
Johnson, Jason	Fisheries Technician	Contract Seasonal Employee	April 5, 2015
McDermott, Derek	Fisheries Technician	Contract Seasonal Employee	April 5, 2015
Pszybysz, Tara	Fisheries Technician	Contract Seasonal Employee	April 20, 2015
Ramasci, Robert	Fisheries Technician	Contract Seasonal Employee	April 29, 2015
Stewart, Toni	Fisheries Technician	Contract Seasonal Employee	May 7, 2015
Bates, Chad	Tern Colony Project	Contract Seasonal Employee	May 13, 2015
Berge, Earle	Tern Colony Project	Contract Seasonal Employee	May 15, 2015

Clark, Emily	Tern Colony Project	Contract Seasonal Employee	May 4, 2015
Gensler, Meghan	Tern Colony Project	Contract Seasonal Employee	May 3, 2015
Smith, Allison	Tern Colony Project	Contract Seasonal Employee	May 10, 2015
Terminations - Employee			
Name	Title	Action	Date
Deblinger, Robert	Program Manager VIII	Resigned	September 4, 2014
Lodowsky, Craig	Fish Culturist III	Retired	May 29, 2015
MacCallum, Wayne	Adminstrator IX	Retired	March 14, 2015
Wright, James	Wildlife Technician III	Retired	June 30, 2015
Gola, Anthony	Game Biologist III	Retired	May 2, 2015
Isles, Douglas	Wildlife Technician III	Retired	January 24, 2015
Terminations - Contractors			
n/a			
Promotions			
Name	Title	Action	Date
Best, Aaron	Game Biologist I	Promotion	April 12, 2015
Kemp, Scott	Game Biologist I	Promotion	April 12, 2015
Morris-Siegel, Jacob	Game Biologist I	Promotion	April 12, 2015
Morelley, Michael	Game Biologist III	Promotion	March 28, 2015
Pelosky, Kevin	Wildlife Technician III	Promotion	November 2, 2014
Schluter, Everose	Environmental Anaylst V	Promotion	September 7, 2014
Tisa, Mark	Program Manager VIII	Promotion	January 29, 2015
Buckley, Jack	Administrator IX	Promotion	March 14, 2015
Reclassifications			
Name	Professional Titles	Action	Effective Date
Maier, Sarah	Conservation Biologist III	Reclassification	February 1, 2015

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, 2014 to June 30, 2015

PROGRAMS/ASSESSMENTS	TOTAL	PERCENTAGES
Administration:		
Administration	$1,938,128	
Information-Education	$1,027,115	
Dcamm ISA Field Headquarters	$93,852	
Rent	$64,001	
Total	**$3,123,096**	**17%**
Fisheries and Wildlife Programs:		
Hatcheries	$3,038,734	
Game Bird Program	$594,724	
Seasonals	$49,816	
Cooperative Units	$197,460	
Fisheries and Wildlife Management	$6,720,257	
Total	**$10,600,991**	**59%**
Other Programs:		
Land Acquisitions	$1,483,463	
Waterfowl Management Program	$52,392	
Hunter Safety Program	$,494349	
Total	**$1,885,349**	**11%**
Other Assessments:		
Payroll Taxes	$131,581	
GI and Other Fringe Benefits	$2,264,612	
Total	**$2,396,193**	**13%**
TOTAL EXPENDITURES	**$18,005,628**	**100%**

Summary
Revenues, Expenditures and Fund Equity
Natural Heritage & Endangered Species Fund
July 1, 2014 to June 30, 2015

REVENUES:	
Natural Heritage and Endangered Species Tax Checkoff Donations	$220,365
Sales	$7,119
Reimbursements	$859
NRCS Wildlife Habitat Incentives Program (WHIP)	$93,663
State Wildlife Grant (SWG)	$1,316,804
EBTJV	$42,871
Massachusetts Endangered Species Act Fees	$425,050
Contracts	$2,139
Direct Donations	$8,030
Interest	$188
TOTAL REVENUES:	***$2,117,088***
EXPENDITURES:	
Natural Heritage and Endangered Species Program	$1,485,365
Tern Restoration	$97,158
State Wildlife Grant	$27,173
TOTAL EXPENDITURES:	***$1,609,696***
FUND EQUITY AS OF JUNE 30, 2015	***$1,937,945***

Other Funds and Programs Expenditures
Division-wide
July 1, 2014 to June 30, 2015

CAPITAL OUTLAY FUNDS:	
Land Protection - Habitat Management- CR Stewardship	$652,398
Staffing for Land and Infrastructure Programs	$390,918
Hatchery/District/Westborough Field Headquarters Repairs	$2,119,033
Climate Change Assessment	$150,000
Bird Island Restoration	$696,500
Dam Safety and Repair	$281,266
TOTAL CAPITAL EXPENDITURES	***$4,290,115***
INTERDEPARTMENTAL SERVICE AGREEMENTS:	
Massachusetts Highway Department	$102,382
Executive Office of Energy and Environmental Affairs	
Dept of Environmental Protection ISA	$34,199
Dept of Conservation and Recreation	$19,193
Division of Capital Asset Management and Maintenance	$168,173
TOTAL ISA EXPENDITURES	***$323,946***
Natural Heritage and Endangered Species Line Item	**$147,581**
Federal Grant Accounts:	
Landowner Incentive Program	$78,076
New England Cottontail	$175,184
White-Nose Syndrome	$4,446
TOTAL FEDERAL EXPENDITURES	***$257,705***
OTHER TRUST ACCOUNTS:	
Upland Sandpiper	$82,678
TOTAL OTHER TRUST EXPENDITURES	***$5,102,026***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2014 to June 30, 2015

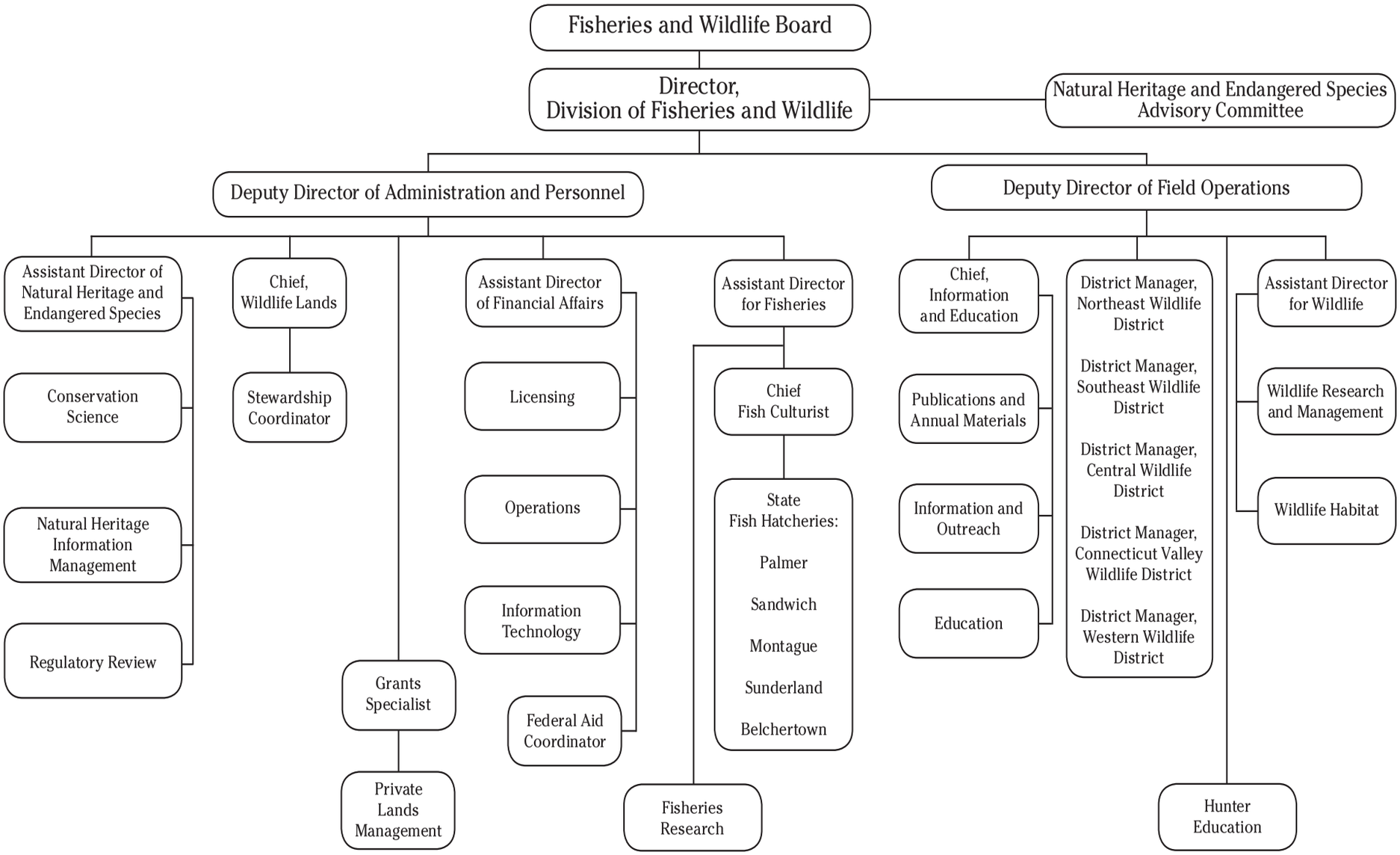
DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$5,164,269
Archery Stamps	$176,926
Primitive Firearm Stamps	$190,026
Waterfowl Stamps	$65,416
Wildlands Stamps	$962,215
Trap Registrations	$2,505
Antlerless Deer Permits	$181,935
Bear Permits	$54,420
Turkey Permits	$128,020
Special Licenses,Tags and Posters	$44,078
Magazine Subscriptions	$130,674
Sales,Other	$112,179
Rents	$49,434
Donations	$31,708
Miscellaneous Income	$11,191
PAC	$31,220
NSF Charge/Debt. Collection	$120
Total Revenues	***$7,336,336***
FEDERAL AID REIMBURSEMENTS:	
Dingell-Johnson (Fisheries)	$1,941,998
Pittman-Robertson (Wildlife)	$6,153,076
TOTAL REIMBURSEMENTS	***$8,095,073***
TAXES:	
Gasoline Tax Apportionment	$986,146
OTHER FINANCIAL SOURCES:	
Reimbursement for Half-Price Licenses	$186,933
Investment Earnings	$2,101
TOTAL	***$189,033***
TOTAL REVENUE:	***$16,606,590***
FUND EQUITY AS OF JUNE 30, 2015	***$16,033,712***

License and Stamp Sales

July 1, 2014 to June 30, 2015

Code	Type of License	Unit Cost	Quantity	Amount
F1	Resident Citizen Fishing	22.50	110,025	2475,562.50
F2	Resident Citizen Minor Fishing	FREE	7,815	0.00
F3	Resident Citizen Fishing (Age 65-69)	11.25	8,296	93,330.00
F4	Resident Cit. Fishing (Over 70)	FREE	11,821	0.00
F6	Non-Res. Citizen/Alien Fishing	32.50	9,962	323,765.00
F7	Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,954	54,649.00
F8	Resident Fishing (3 day)	7.50	2,320	17,400.00
F9	Non-Resident (Citizen) Minor Fishing	6.50	336	2,184.00
DF	Duplicate Fishing	2.50	0	0.00
	Quabbin 1-Day Fishing	5.00	3,367	16,835.00
T1	Resident Citizen Trapping	30.50	624	19,032.00
T2	Resident Citizen Minor Trapping	6.50	8	52.00
T3	Resident Citizen Trapping (Age 65-69)	15.25	41	625.25
H1	Resident Citizen Hunting	22.50	16,852	379,170.00
H2	Resident Citizen Hunting (Age 65-69)	11.25	1,01811	452.50
H3	Resident Citizen Hunting (Paraplegics)	FREE	9	0.00
H4	Resident Alien Hunting	22.50	136	3,060.00
H5	Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,770	261,765.00
H6	Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	1,116	67,518.00
H8	Resident (Citizen) Minor Hunting	6.50	1,564	10,166.00
S1	Resident Citizen Sporting	40.00	33,735	1,349,400.00
S2	Resident Citizen Sporting (Age 65-69)	20.00	4,054	81,080.00
S3	Resident Citizen Sporting (Over 70)	FREE	5,735	0.00
S4	Resident Sporting Paraplegic	0.00	228	0.00
	TOTAL LICENSE SALES (GROSS)		***224,786***	***5,167,046.25***
	Type of Stamp			
M1	Archery Stamps	5.10	34,700	176,970.00
M2	Waterfowl Stamps	5.00	13,088	65,440.00
M3	Primitive Firearm Stamps	5.10	37,269	190,071.90
W1	Wildlands Stamps	5.00	175,305	876,525.00
W2	Non-Resident Wildlands Stamps	5.00	17,138	85,690.00
	TOTAL STAMP SALES (GROSS)		***277,500***	***1,394,696.90***
	Previous Years Stamp Sales			
M1	Archery Stamps	5.10	0	$10.00
M2	Waterfowl Stamps	5.00	2	$10.00
M3	Primitive Firearm Stamps	5.10	0	$0
	TOTAL STAMP SALES (GROSS)		***2***	***$10.00***
	Fees Retained and Adjustments by Clerks			(553.55)
	Refunds			(2,347.29)
	TOTAL			-2,900.84
	TOTAL LICENSE/STAMP SALES (NET)			***$6,558,852.31***

Commonwealth of Massachusetts
Division of Fisheries and Wildlife Organizational Chart



June 2015