Annual Report 2014

Massachusetts Division of Fisheries & Wildlife

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An Agency of the Department of Fish & Game

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About the Cover:

Central District staff conducting a coldwater stream survey (fish census) in Worcester County. Wading upstream with a backpack electro-shocker, a fisheries biologist sends an electric current through the water, temporarily stunning any fish in the vicinity. Fish are netted, counted, measured, identified, and then returned to the stream. During the 2013 field season, an intense effort by Division staff resulted in surveys of 135 new rivers and streams. Fish census data from these water bodies were added to DFW's Fisheries Survey Database. Of the 135 waters surveyed, 61 were found to support native coldwater fish such as eastern brook trout (shown) and slimy sculpin. Photo by Senior Photographer Bill Byrne.

THE BOARD REPORTS

George Darey
Chairman

Overview

The Massachusetts Fisheries and Wildlife Board consists of seven persons appointed by the Governor to 5-year terms. By law, the individuals appointed to the Board are volunteers, receiving no remuneration 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.

Adopted Regulations and Other Votes of the Board

Free Licenses Issued by the Division

At the Board's July meeting, Deputy Director Buckley recapped the proposed changes, which were detailed at the public hearing held during the previous fiscal year. The Division was updating definitions, including 1) for blindness, to require the state-issued certificate of blindness; 2) changing 'mentally retarded' to 'intellectually disabled,' and requiring a doctor's letter; and 3) the definition of a resident alien, to align with the definition in the statute. All the proposed changes were to place into the regulations what has already been in the statute, and the vote of the Board was unanimously in favor.

Ashby WMA (Dionne Meadow) Naming Request

Chief of Wildlife Lands MacDonnell presented a request from the Fitchburg Sportsmen's Club and the Massachusetts Sportsmen's Council, also at the July meeting. The Dionne parcel was an addition to the Ashby WMA as an acquisition from the Estate of Eugene Dionne in December 2011. The property lies below Mt. Watatic, and was purchased at 40% of value. The request was that the Dionne parcel be designated as the Dionne Meadow, and the Board voted its unanimous approval.

Grassland Bird Conservation Plan

The Grassland Bird Conservation Plan, brought to the Board for a vote of approval at its August meeting by State Ornithologist Andrew Vitz, focuses on two MESA-listed species, the Upland Sandpiper (UPSA) and the Grasshopper Sparrow (GRSP), which, according to the Breeding Bird Survey, have suffered serious declines in the eastern U.S. since 1966; 78% and 89%, respectively. These birds are area-sensitive, needing large patches of grasslands, greater than 125 acres for UPSA and greater than 25 acres for GRSP, to breed successfully and maintain their populations, and there are very few sites left in Massachusetts with sustainable populations of these species.

Grasslands are part of our natural heritage, going back to the sandplain grasslands left by the glaciers; because of the fires, floods, and beavers that once maintained these natural openings in a patchwork across the landscape; and from the agricultural fields that were cleared and maintained by the indigenous peoples and early settlers. With farm abandonment in the mid 1800s, the state saw forest regeneration and consequent declines in grassland birds, which have continued to the point where there is an urgent need to conserve large patches of grassland habitat wherever they still occur.

Bobolink male singing.

The goals of the plan are to bring together a multi-agency committee to work toward grassland-bird conservation; to identify and rank all sites with recent records of UPSA and GRSP; to set guidelines for the use of MESA mitigation funds to restore or maintain the habitat these birds require; and to use the report that has been created to document the project thus far as an educational tool. The vote was unanimous to approve moving forward with the implementation of the Grassland Bird Conservation Plan as proposed.

Migratory Game Bird Review and Proposed 2013-2014 Hunting Regulations

The August meeting brought Waterfowl Project Leader H Heusmann's annual presentation on the framework and proposed season dates and bag and possession limits for the 2013-2014 migratory game bird seasons. Mr. Heusmann reported that the big change for 2013-2014 was the possession limits, which are now three times the daily bag for each species.

Following an informational hearing on the proposed dates and limits at which oral comments were accepted, Director MacCallum stated that, due to time constraints, the proposed regulations would be filed as emergency regulations that would expire in 90 days.

The Board voted unanimously at its October meeting to adopt as regular regulations the Migratory Game Bird emergency regulations as presented at the August informational hearing.

The Artificial Propagation of Birds, Mammals, Reptiles, and Amphibians; the Exemption List; and the List of Domestic Animals

Assistant Director for the NHESP Tom French began his September hearing presentation by observing that Massachusetts is one of the only states that has a List of Domestic Animals, and that it has saved the state a lot of problems. In particular, it allows the agency to automatically exclude those animals that are considered, for the purposes of jurisdiction, to be domesticated, i.e., bred in captivity and adapted by man over succeeding generations of the species for use, and therefore not wildlife. The regulations define exempt animals and provide an Exemption List. The propagation regulation allows for a permit to be issued by the agency for (most commonly) scientific or educational purposes; it is, in fact, a possession permit, in that it allows the party to possess the species, but the party will not be breeding, and usually only have one individual of the species.

The regulation was designed to be reviewed every couple of years, but it's been a long time since it was reviewed. The Exemption List includes examples of animals for which healthy feeding and housing techniques are very well understood now, so the agency doesn't need to regulate them anymore. During his review, Assistant Director French noted that the Emerald tree boa would now be allowed because propagation techniques allow them to be bred in captivity very successfully, so the trade in these animals is not depleting wild, natural populations, which is what was happening previously.

A big change where the Massachusetts list is more restrictive is the permit requirement for the red-eared slider, which historically caused so much salmonella contamination that the FDA had to prohibit the sale of turtles < 4" in size. This is a species that naturalizes in New England, and there are breeding populations in the state, so it is of conservation concern.

The List of Domestic Animals is a list of species that can be farmed, and the American Alligator is now prohibited. Massachusetts also prohibits people from commercially farming turtles. In the only change to the domestic-animal list, the European Wild Hog was domesticated and became domestic hogs; feral hogs have escaped and are free-living.

After the 2-week written comment period had elapsed, the Board voted unanimously at its October monthly meeting to adopt the changes as proposed.

The Taking of Certain Fish; the Taking of Carp and Suckers for Purposes of Sale; the Taking of Commercial Eels from Inland Waters; Propagation, Culture, Maintenance, and Sale of Protected Freshwater Fish

Aquatic Biologist Dr. Caleb Slater presented each of the proposed regulations individually at the December hearing, then explained why each is proposed. He immediately noted one clarification: The proposed changes did NOT remove the right of people to catch their own bait fish: this was a common misconception among commenters heard from to that point, but it was not accurate. The regulations as proposed:

- Eliminate the commercial licensing provisions that provide for the taking of eels, carp, suckers, and "shiners" (baitfish) from inland waters of the Commonwealth for the purposes of sale;
- Amend the list of commercial baitfish to exclude Emerald Shiner, Spottail Shiner, Fallfish, and Bluntnose Minnow;
- Amend the list of baitfish that licensed fishermen are allowed to harvest for personal use to exclude American eel, Emerald Shiner, Spottail Shiner, and Creek Chubsucker;
- Establish a grandfathering provision (for the current calendar year) for persons currently licensed to harvest certain fish species for commercial baitfish purposes;
- Provide a definition of "transgenic fish";
- Add the Quinapoxet River back to the list of "Major Trout Rivers" for the purposes of the regulation;
- Remove eels and suckers from the list of fish that may be taken by spear or archery.

The Board voted on the proposed regulations at the following meeting, in January, and approved them as proposed, with the exception of the prohibition on spearing suckers: After reviewing the public comments, staff had changed the proposal to remove

only eels and not suckers, or carp.

Dr. French noted during the December public hearing that the regulations regarding the taking of reptiles and amphibians have not been reviewed in quite some time and needed to be updated. He listed the proposed changes in detail:

- Remove the 19 species that are already protected by the MESA;
- List the 6 other species that are protected from killing or capture without a permit: Spotted Salamander, Four-toed Salamander, Spring Salamander, N. Leopard Frog, Spotted Turtle, E. Hognose Snake;
- Eliminate the commercial Harvest of Common Snapping Turtles;
- Establish conditions for personal harvest of snapping turtles;
- Update scientific names.

Dr. French pointed out that no changes are proposed to the regulations relating to the harvest of frogs for bait or personal consumption.

Dr. French then listed the proposed conditions for the personal harvest of snapping turtles: a fishing license is required; the turtle must be a minimum of 12 inches in straight-line carapace length; the daily bag limit is two, as is the possession limit; and Snapping Turtles may not be taken from May 1 to July 16, in order to avoid the nesting season. Dr. French also gave the reasons for eliminating the commercial harvest of the Common Snapping Turtle, noting that the demand for wild-caught turtles for the international food trade is rapidly increasing, that long-lived turtle species cannot sustain the large-scale removal of adults, and that the USFWS and the states are cooperating to curtail the commercial wild harvest of native turtle species across the U.S. for conservation reasons.

After a brief deliberation at the January monthly meeting, the Board unanimously voted to approve the proposed changes.

Rockhouse Mountain WCE Partial-sale Request

Chief of Wildlife Lands Craig MacDonnell reported at the April meeting on a matter related to a land transfer. He explained that built into every conservation restriction (CR) is a provision that an owner can sell an entire property with a CR but can't sell a portion of a CR's protected land, and therefore can't subdivide the CR, without the written permission of the Commonwealth.

He provided some background to the matter by reminding the Board that Bill Hull had purchased and protected thousands of acres of Peck Lumber lands in 2000. Now, in 2014, Mr. Hull would like to sell Rockhouse Mountain, a 78-acre property that exists within a multi-lot CR covering roughly 1,000 acres. The process for sale is spelled out in the CR; it requires a formal petition from the landowner, and Mr. Hull has so petitioned. Chief MacDonnell advised the Board that staff and counsel had reviewed the matter and were recommending that the Board approve an amendment of the previous CR with an amended order of taking.

After deliberating briefly on the possible precedents in the amendments and then listening to public comment at the end of the meeting from Mr. Richard Evans, Esq., who was the attorney for the buyer and questioned the necessity for the proposed amendments, the Board voted to postpone a vote on the issue until the following month's (i.e., May) meeting. At that time, the Board voted unanimously to approve the transfer as proposed.

Proposals for New, Updated, or Amended Regulations

Wildlife Conservation Easement Regulations

Chief MacDonnell gave a brief presentation to the Board at the July meeting, outlining the potential need for regulations for Wildlife Conservation Easements (WCE) that will be separate and different from those for Wildlife Management Areas (WMA). Chief MacDonnell noted that the DFW land program is an expression of the agency's mission and DFW holdings now encompass a very large numbers of acres. WCEs now constitute almost a quarter of DFW acreage, and Chief MacDonnell urged that this large amount of acreage needs to be regulated appropriately. He noted some legal concepts for the Board members to keep in mind: Because the DFW doesn't own the fee, the agency needs legal methods for enforcement that really work. We must be careful to distinguish between rights of the Landowner and those of the general public, and all people involved need to know clearly what the rules are.

Chief MacDonnell reviewed the structure of a WCE, that it is a contract between the landowner and the state. Divided into sections, each WCE covers prohibited activities, reserved rights, public access rights, the right of DFW to set public access rules, etc. So the DFW's right to set access rules is there, we just haven't done it to this point.

After detailing a few examples of the ambiguity and awkward application of some of the WMA rules, Chief MacDonnell pointed out that the biggest legal problem is that there have been cases where the OLE officers are not willing to enforce WMA regulations on WCEs because clerk magistrates are not allowing enforcement.

Chief MacDonnell proposed to develop a set of WCE regulations that will parallel the WMA regulations and will be clear for the landowner, clear for the public, and clear for the OLE; they will be very similar, but would apply to WCEs only, and would primarily apply to the public and not to the landowner. Over time, he observed, staff will be able to develop additional regulations for other WCEs that may warrant slightly different rules, depending on the terms of the easement. After some discussion, the Board voted unanimously that regulations be developed for WCEs and brought to the Board for a public hearing.

Coldwater Fisheries Regulations

Aquatic Biologist Todd Richards provided a brief introduction to the proposed Coldwater Fish Resources regulations at the February meeting, with the historical background of the Coldwater Fisheries project; some products that have come out of it, such as the Coldwater Fishery Resource List; and a review of the identification and designation process. A Coldwater Fish Resource Plan has been developed for the Commonwealth. The purpose of 321 CMR 5.00 is to codify in regulation the definitions, the criteria, and the procedures used by the Division to designate waterbodies as CFRs. These regulations also provide notice of where the Division's current list of CFRs is available for review by regulatory authorities and the general public.

A Water Management Act Permit applicant with one or more withdrawal points impacting a coldwater fish resource shall, after consultation with the Division and the EEA, submit a plan to minimize impacts at the coldwater fish resource by optimizing use of the applicant's other withdrawal points, if any.

The proposed regulations define a coldwater fish resource; list examples of coldwater species; provide additional criteria for salmonids; and provide searchable lists by watershed, including a map, for public review. Deputy Director Buckley noted that this is a case of taking something that we've been doing for a long time and putting it into the regulations. Assistant Director Tisa added that there is another reason these regulations are important: Sometimes in other work, like in pollution work, the agency has identified that the water body is an important coldwater fisheries resource; this regulations change codifies or makes official those coldwater designations.

After some discussion, the Board voted unanimously to hold a public hearing on the regulations with the April meeting, if possible. The hearing was delayed until the June meeting by scheduling difficulties, and no vote was taken on the matter before the end of the fiscal year.

Youth Deer Hunt

Assistant Director for Wildlife John O'Leary presented the Board with a report at the March meeting on research his staff had performed on establishing a Youth Deer Hunt in Massachusetts: the rationale for and background behind such a hunt, the options available to the agency and the issues associated with them, and staff recommendations. The rationale was to offer a Youth Deer Hunt to increase youth opportunity and recruit new youth to hunting while also minimizing impacts to other hunting that would be occurring at the same time. As background, he recapped the current youth hunting laws and regulations, both for 12-14-year-olds and for 15-17-year-olds, and he reviewed in detail the implications of a Youth Deer Hunt for the other hunting opportunities and limitations that currently exist, including in the statutes. After taking all the factors and variables into account, Assistant Director O'Leary reported that staff recommended the Youth Deer Hunt be for 12-to-17-year-olds; on a single day, the fourth Saturday after Labor Day, which was determined to be the best date to minimize statutory impacts to other hunters; enabled by a free "Youth Deer Hunt Permit," which would come with an either-sex tag valid only during the Youth Deer Hunt, for either an antlered deer in any zone or an antlerless deer in any zone specified by the Director; and all regular-season youth requirements would apply.

After some discussion, the Board voted unanimously to direct staff to move forward with developing the appropriate regulations needed to establish a Youth Deer Hunt and go directly to a hearing as quickly as possible.

2014 Deer Review

Deer and Moose Project Leader David Stainbrook provided the Board with an overview during the May meeting of some of the deer program elements that had been developed or improved since the previous year, including discussing the implications of the roll-out of online deer-harvest checking and the improved convenience of the existing instant-award process for antlerless-deer permits. He provided an overview of how the agency manages deer across the state, including the current age structure; detailed the 2013 harvest in all seasons, noting that staff had not seen a drop in reporting rates with the online reporting; discussed the current population trends; and gave the Board the staff recommendations for the antlerless deer permit allocation for 2014.

WMZ	Change from 2013	2014 Allocation
1	--	400
2	--	175
3	--	1,100
4N	--	375
4S	--	275
5	--	1,250
6	--	450
7	--	2,250
8	--	2,800
9	--	4,100
10	+1,000	12,000
11	+500	11,000
12	+150	800
13	Functionally	2,700
14	Unlimited	2,700

Total Deer Harvested, By Season:

Hunting Season	3-year Average: 2010-2012	2013	Percent Change
Archery	3,815	4,486	18% increase
Shotgun	5,048	4,609	9% decrease
Primitive	2,036	2,343	15% increase
Total	10,905	11,444	5% increase

Proposed 2014 Antlerless Deer Permit Allocations, by Wildlife Management Zone:

After some discussion, the Board voted to accept the staff recommendations for the 2014 antlerless-deer-permit allocations.

Director MacCallum then noted that there was a good-news story here; specifically, that two-thirds of the state is at goal with regard to the deer population. He stated that he was not aware of another state in the country with as healthy a population. Even with a hard winter, there had been no significant impact to the herd. And even relative to trophy deer-hunting, which some people desire, the DFW's management is giving excellent results. The Director stated that we achieved these ends because the Fisheries and Wildlife Board gave staff the stability to get there. In particular, it gave staff 10 years to develop the database it has now. The DFW had employed an excellent model-builder in former Deer Project Leader Steve Williams, who did very good work for the agency; Director MacCallum noted that we are fortunate to have successors with those same strengths, which, he said, Mr. Stainbrook brings in spades. Now, with our electronic data and quick turnaround, the Director advised that the Board will probably have some proposals before it in the coming years with more refined approaches to even better manage the state's deer population.

Black Bear Review

Furbearer and Bear Project Leader Laura Hajduk-Conlee presented the Board with the annual Black Bear Harvest Review and a Bear Research and Management Strategy update at its June monthly meeting.

Ms. Conlee began by reviewing the current bear-hunting framework, displaying maps and graphs of the numbers of the black-bear harvest over time and the distribution of bears in the Commonwealth (both the primary and dispersal ranges), and the results of a recent survey of deer hunters about their sightings of and interest in hunting bears while hunting deer. Then Ms. Conlee presented the following staff recommendations:

Remove the current zone restriction; and

Allow bear hunting during the Shotgun Deer season, provided that the agency:

Continue to require a Bear Permit;

Allow no rifles or handguns; only shotguns (slugs only), muzzleloaders, and/or archery equipment;

Require hunters to wear hunter orange;

Allow successful hunters to report the harvest online.

In response to questions from the Board, Ms. Conlee noted that staff used the data from bear reports from two years (2012-2013) and that staff has begun to develop a comprehensive, long-term strategy to manage the population. She explained that staff thought that expanding the hunting zone and giving potential bear hunters a chance during deer season will both go toward increasing the harvest. She confirmed that staff is looking at an adaptive process, without making a bold jump. Chairman Darey noted that with Question 1 and the loss of the use of dogs and baiting, we lost two important and effective management tools and the opportunity to get control over this expanding population.

When asked about vehicle mortality, Ms. Conlee said that staff knows there is underreporting, but also that younger bears and dispersing yearlings are the ones most susceptible to vehicles. Director MacCallum noted that this is one of the reasons for the 5-year study the agency has undertaken: We want to know if there will be a differential in vehicle mortality as these animals move eastward.

After the discussion, the Board voted unanimously to continue forward to a public hearing with the bear review recommendations.

The Display of Hunting, Sporting, Fishing, or Trapping Licenses: Proposed Regulations to Clarify the use of an Electronic License (321 CMR 2.11)

Assistant Director for Administration and Finance Kris McCarthy presented the Board with a brief, thorough analysis during a June public hearing of proposed changes to the regulations that would allow the use of electronic licenses as displayed on mobile computer devices. She advised the Board that the proposed regulation changes would enable the use of an electronic signature; clarify the definition of "possession" for the purpose of license display; clarify the tagging requirements for harvests; and provide other "housekeeping" benefits, including defining a "Mobile Device" and an "Online System" and removing language requiring that Massachusetts waterfowl, archery, or primitive firearms stamps be signed across the face in ink and adhered to the back of the license.

No vote was taken on the matter before the close of the fiscal year on June 30. A List of the FY 14 Informational and Public Hearings, in Brief

- Informational Hearing: 2013-2014 Migratory Game Bird Regulations (August)
- The Artificial Propagation of Birds, Mammals, Reptiles, and Amphibians; the Exemption List; and the List of Domestic Animals (September)
- The Taking of Certain Fish; Taking of Carp and Suckers for Purposes of Sale; Taking of Commercial Eels from Inland Waters; Propagation, Culture, Maintenance, and Sale of Protected Freshwater Fish; and Hunting, Fishing, Trapping, and Taking of Reptiles and Amphibians in all Counties of the Commonwealth (December)
- The display of hunting, sporting, fishing, or trapping licenses (June)
- To codify in regulations the Division of Fisheries and Wildlife's criteria, procedures, and related

definitions used to designate waterbodies as Coldwater Fish Resources (June)

Agency Program Reviews

Surplus Antlerless Deer Permit Sales

Deputy Director Robert Deblinger introduced Kevin Fuller, Senior Client Manager, and Paul Hesson, the Senior Project Manager at Active Outdoors Corporation, at the July meeting. Both gentlemen were before the Board to give a short presentation on the system that will process and sell the surplus antlerless deer permits (ADP) in October.

The Deputy Director said that, as everyone is aware, in the past, people would start lining up at 3 A.M. to be sure to get the zone they wanted. So, in 2012, everyone got online at 8 A.M. The system in place had not anticipated all those simultaneous users and was not set up to immediately handle the overload. Mr. Fuller explained that the software used for *MassFishHunt* operates 24-7-365. The system had a bad day last year, and actually just a bad two hours. Mr. Fuller said he was there to present and explain the operational plan to handle such a large influx of users this year. He observed that, even in last year's difficult period, the system kept track of and knew who the people were who had attempted to buy permits, even though they couldn't buy them in the moment. Customer service representatives called all those customers and told them how to buy, then the system opened back up and sold the rest of the permits.

Mr. Fuller reported that, through the day of the meeting, Active Outdoors knows it can now process 2,000 concurrent users, and it is in the process of testing for 8,000 concurrent users; he will report back and let staff know. In fact, the developers intend to continue to ramp up the capacity for concurrent users and get it as high as they can. Mr. Fuller said that other things are also being done. Wait times are approximately 6 seconds per page; they will be capturing customer preference information on login; they will follow each user through the process, all the way to purchase; and, if anyone falls out for any reason, the system will know who they are and enable Active Outdoors staff to reconnect with them. Mr. Fuller also said that Active Outdoors' corporate office has committed four high-level engineers who are experts in system development, noting that this is a serious commitment from the corporate level.

Last year, he went on, *MassFishHunt* did not have a robust reporting system for how many permits were sold as they went. That will be improved this year so that staff can close the system when all available permits have been sold. The development team also decided to eliminate some risk by staggering the opening days for some permits. Also, the users will find it takes fewer clicks to get into the system. As part of the contingency plan, the team is developing phone messages to keep clients abreast of permit sales progress, and will be sending emails to hunters ahead of time. Mr. Fuller also said that a user guide is available online.

After some discussion, including of the DFW website in general, Director MacCallum offered his special thanks and acknowledged Mr. Fuller's work last year; his bad day was also the Director's bad day. Director MacCallum said Mr. Fuller has been very responsive and the Director had wanted to wait until the new system development was far along before asking him to address the Board. Director MacCallum believed that some of the innovations Active Outdoors has developed will definitely help.

Interagency Agreement with MassDOT

Endangered Species Review Biologist David Paulson presented a report to the Board in August on the Interdepartmental Service Agreement (ISA) between the Mass. Department of Transportation (MassDOT) and MassWildlife. MassDOT needed an expedited review process thru MESA to implement its Accelerated Bridge Program, with 250 structurally deficient bridges scheduled for repair or replacement over an 8-year period. The ISA was originally a 3-year agreement established in December 2008; it was very successful, and was renewed in December 2011 with funding for the *Linking Landscapes* project, of which, more below. Components of the ISA include a dedicated reviewer in the NHESP (Mr. Paulson); the opportunity for early project data coordination; and streamlined permit application review, which cut the average project review time from 30 days to 14 days, with some projects or project changes approved within a few or even the same day. Mr. Paulson stressed the value of early coordination for both agencies, and detailed several projects with photos to show the benefits to the MassDOT, to the Division, and to numerous state-listed and common species, from large mammals like deer and bear to reptiles and amphibians to moths and plants.

Mr. Paulson explained that the ISA is also a cooperative, non-regulatory relationship. With a view to possible design innovations that might reduce wildlife mortality as well as improving public safety, among other benefits, the partners developed *Linking Landscapes*, which uses a web page to allow citizens to access the Statewide Road Mortality Database to report wildlife sightings (including road kills), report vernal pool migration points, and to report what they see when they go out at intervals and survey their neighborhoods. The end result is often avoidance or minimization of wildlife-vehicle collisions and the resulting road kills; techniques employed include installations of barrier fencing or wildlife crossing structures (i.e., under the roadway) along "hot-spot" roadways.

Mr. Paulson reported that the *Linking Landscapes* program was so effective at getting the public engaged that the partners began to ask what more they could do. One result was the development of "GreenDOT," to providing funding and staff support to actively manage habitat. He cited numerous examples, including a roadside project in New Salem: a state-listed moth's habitat was being shaded out by overgrown trees and other vegetation along Route 122. MassDOT and DFW

staff went out and, in one day, removed a lot of very young white pine that had seeded in along the road: a very quick project with long-term benefits on both sides.

Deputy Director Buckley noted that Mr. Paulson has been able to leverage money from an agency with significant resources for the direct benefit of wildlife-population and habitat enhancement. And because the ISA is streamlining the work on both sides of the partnership, the Division has gotten no more last-minute permits that need to be dealt with on an emergency basis, which used to happen regularly.

Fox and Coyote Review

At the September monthly meeting, Furbearer and Black Bear Project Leader Conlee provided the Board with the 2012-2013 Hunter Survey results; reviewed the existing laws and regulations for predator hunting affecting hunting implements, hours, and equipment; and made a recommendation pertaining to the regulations.

Ms. Conlee reported that 32,304 invitations to take the 2012-2013 Hunter Survey were sent out, which is the number of license buyers who provided email addresses when they purchased their licenses. The agency received 8,906 completed responses, a response rate of approximately 30%. The survey seeks information about the hunter's sightings of various game species, the effort expended in hunting, and harvest data for many game species. Ms. Conlee noted that the replies received provided an excellent sample of hunters statewide (it includes more than 10% of all hunters), and she showed maps indicating that the number and geographic locations of the respondents correlates perfectly with the distribution of license buyers across the state. She also noted that the ages of respondents matched very well with the ages of license buyers.

Ms. Conlee reported that less than 15% of predator hunters targeted fox or bobcat, therefore the balance of her review would focus on the coyote-specific survey results. When asked what time of day the hunter primarily hunted coyotes, 34% said they hunted at sunset, 30% at sunrise, 19% after dark, and 17% during the daytime. Ms. Conlee then reviewed the current laws and regulations on allowed coyote-hunting implements (archery, muzzleloaders, shotguns, rifles, and handguns) and reported that the survey showed that the vast majority of daytime coyote hunters (62%) used rifles, while 22% used shotguns and 5% or less used each of the other available implements. The survey results indicate that the rifle and the shotgun are both used by 22% of coyote hunters who hunt primarily at night, while 52% of coyote hunters said that they do not hunt coyotes at all at night. When asked about equipment used to hunt coyotes at night, 46% of coyote hunters said they did not use night vision (amplifying ambient light; not using artificial light) and 49% said they did not hunt at night.

In conclusion, Ms. Conlee reported that, after review of the hunter survey data, staff was recommending no change to the hunting season, the hunting hours, or the implements or equipment that can legally be used to hunt coyote. After some brief discussion and questions from the Board members, Ms. Conlee reported that staff estimates a summer population of 10,000 coyotes, based on last review in 2007. She noted that coyotes have saturated the state, with the exception of Martha's Vineyard and Nantucket. Chairman Darey thanked Ms. Conlee on behalf of the Board for her thorough and excellent presentation.

MassWildlife Website Review

Chief of I&E Marion Larson reported to the Board at its September meeting on the recent changes to the DFW website. Her presentation explained why the changes were made and the process staff followed in making them, gave the Board a brief tour of the new website, demonstrated how staff was addressing the concerns users of the website had expressed so far, and indicated remaining work to be done to complete the transition. She explained that the administration was in the process of standardizing all state agency websites, primarily so that users would know they were on state government sites and would have a similar browsing experience on all state sites. She reported that the DFW, as part of the EEA secretariat, was mandated to launch its new website via the state portal by the end of June 2013 and that this deadline had been met after a concerted effort by all staff involved. Chief Larson detailed the process the DFW team followed to update and transition the site, and then gave the Board a guided tour of it, with technical assistance from DFW Business Manager Rob Morley, that explained how users move through the pages and offered a few tips for more efficient browsing within the DFW pages.

Chief Larson noted that work was ongoing to locate and fix broken links left by the migration and to enhance the DFG and DFW Help Site pages. She reported that staff had recently had training on using website analytics to better understand the way users were navigating through the site, and that the newest I&E staff member, Communications Specialist Emily Stolarski, was to receive specialized training on the new website software. After some discussion, Chairman Darey thanked Chief Larson and Mr. Morley for their informative and very helpful review.

BioMap2 Next Steps: Key Sites

In October, NHESP Information Manager Sarah Haggerty opened a joint presentation with Chief of Conservation Science Jon Regosin by reviewing the basics of *BioMap2*, noting that it was developed and designed to guide strategic biodiversity conservation in Massachusetts. Given *BioMap2*, then, the question became: How should the state prioritize land protection and stewardship within *BioMap2*? Ms. Haggerty noted that *BioMap2* works very well for local organizations, and at the local level. But the concepts are much harder to apply at a landscape, statewide level, and that's why the

Key-Sites concept was developed. The Key-Sites analysis has looked at *BioMap2* areas to identify and prioritize the sites most critical for achieving biodiversity conservation through land protection and habitat management. Ms. Haggerty reported that staff had developed and applied three criteria for inclusion in the *BioMap2* Key Sites, discussed each criterion in detail and presented state maps of each one, then showed a map that combines them all, with the resulting 175 sites on 522,730 acres, which represent 9.6% of the *BioMap2* study area and of which 258,000 acres (49%) are already protected.

Chief of Conservation Science Jon Regosin continued the presentation with detailed discussions and examples of the application of the Key-Sites concept to land protection, including prioritizing among the Key Sites, prioritizing among available parcels, and the development and refinement of Focus Areas; and habitat restoration, which seeks to protect the investment the state has made when it protected wildlife lands by identifying their most significant habitats, what kind of work or restoration they need, and then prioritizing the accomplishment of the work when active management is required to maintain the habitats. Chairman Darey thanked Ms. Haggerty and Mr. Regosin for their excellent presentation and complimented the hard work that had been put in by staff on the Key-Sites analysis.

Phragmites Ecology, History, Consequences, and Methods of Control

In response to a Board request for the information, NHESP Restoration Ecologist Tim Simmons reviewed the history of the spread of *Phragmites* in the United States and in Massachusetts during the November meeting. He reported that it had been spread by international commerce, probably beginning in the 1700s. *Phragmites* populations have exploded since the 1950s, and though there is a native version, the nonnative varieties have been the cause of most of the problems with habitat degradation. Traits include a wide tolerance for water depths and salinities; a thick litter layer that prevents native plants from germinating; secreted toxins that suppress other plants; wind-pollination; and the ability to exploit disturbances to the native vegetation to establish itself. These last two traits were demonstrated by Mr. Simmons researches in aerial photos and in marshes and wetlands across the state, which both show that high-energy tropical storms and hurricanes have played a major role – in addition to beaver activity, boats, and vehicles – in dispersing *Phragmites* up and down the coast. The plants reproduce either by their windblown seeds or by bits of rhizomes from underground, which make chopping it up or trying to dig it out effective at spreading instead of removing it. Further, he reported that 80% of *Phragmites'* biomass is underground, and it is both a symptom of problems in and also a disease of the ecosystem it invades.

Some of the consequences of *Phragmites* invasion that Mr. Simmons reported were biodiversity loss, hydrological alteration, clogged intakes, increase wildfire hazard, and impeded access and recreation in the area. After years of carefully adaptive management, Mr. Simmons reported that the best method of control of *Phragmites* combines mechanical with chemical, and if technicians can also incorporate a controlled burn, that is the ideal. This process has evolved, too, from cutting and dripping into single stems to cutting, bundling, and then wiping the herbicide directly onto 100 or so stems per swipe. Throughout the development of these methods, Mr. Simmons reported that managers have conducted very careful monitoring, which shows clearly that non-targeted and rare species are either unaffected or rebound vigorously after treatment and release from the influence of the *Phragmites*.

Mr. Simmons stressed that local opposition to any form of *–cide* has been very strong through the years, and he and others have spent many evenings giving talks to local boards and groups to convince them of the efficacy and safety of carefully applied herbicides against *Phragmites*. Mr. Simmons also reported that permitting for these management activities can take 2 years or longer, and can involve the town, the Mass. Department of Environmental Protection, our own NHESP review if the parcel is in Priority Habitat, the U.S. EPA, and other state and federal agencies.

Mr. Simmons detailed a number of projects to demonstrate results, including the Crane Pond WMA; the Berkshire fens, including the Kampoosa Bog; Agawam Lake; and the Great Marsh in the Newbury area. Mr. Simmons reported that there are over 40 sites in the Commonwealth where *Phragmites* has been controlled or control is underway.

2013 Jefferson Salamander Inventory Project: Strategic Surveying to Better Inform the Regulatory Approach

Conservation Scientist Jacob Kubel, who leads most of the DFW's vernal pool and amphibian conservation work, came before the Board in December to report on a project to come up with a more strategic system of surveying for listed species that could ensure that all the most important populations were known and could be protected, which would result in regulatory enforcement that targets those priority areas.

The goal of the study was to increase confidence in the security of the Jefferson Salamander in Massachusetts so that we may decrease our reliance on the regulation of privately-owned lands as a conservation strategy. Mr. Kubel noted that the goal provides two benefits: It could reduce the regulation of private land, and it would free up resources for the agency to allocate to other, higher conservation needs.

Integration of the survey data into the NHESP habitat-delineation process resulted in 30 entirely new populations (a 33% increase); a substantial increase in the geographic extent of other, previously known populations; and the identification of approximately

seven new stronghold sites for Jefferson Salamander, i.e., five or more breeding wetlands across hundreds of acres of contiguous, predominantly protected forest. He also noted that, since the last *Atlas*, we have doubled the number of extant populations, more than doubled the amount of habitat identified, and almost quadrupled the amount of identified habitat that occurs on protected land.

As a result of the work, our regulatory approach will be improved, with a focus on habitat areas (or portions thereof) that maximize important qualities that relate to local and statewide conservation values. Mr. Kubel noted that another outcome is that the agency can exclude certain habitat areas that seem less likely to contribute significantly to long-term conservation of the species at the local and/or state level or to benefit substantially from standard regulatory practices and outcomes.

Competitive State Wildlife Grant: Conserving Snake Species of Greatest Conservation Need Threatened by an Emerging Fungal Skin Disease, a Multistate Effort

Dr. French told the Board at its January meeting that the Timber Rattlesnake is listed as Endangered in Massachusetts, New Hampshire, Vermont, Connecticut, New Jersey, and Ohio, and as Threatened in New York. Timber Rattlesnakes and other related rattlesnakes in the eastern United States are now being further threatened by a skin disease caused by the increased virulence of common soil fungi that are not new but are opportunistic, with the worst effects when the animals are stressed. He provided some settlement-history, natural-history, distribution, and habitat background on rattlesnakes in the eastern U.S. and discussed some of the particulars of the disease, with numerous photos of both healthy and afflicted animals of the species affected.

In response to this emerging threat, Dr. French had written a highly competitive wildlife grant to assess the causes and conservation significance of the emerging fungal skin disease in snake Species of Greatest Conservation Need in the eastern U.S., and develop a response. The main objective of the grant is to identify the causes of the disease and whether it is of conservation concern for the populations or just a few individuals are affected. He detailed the three sub-projects associated with the grant and then reported that the full $500,000 request has been awarded.

Dr. French said that he believed the full grant was received because of the size of the project and the list of cooperators, which includes the state wildlife agencies of New Hampshire, Connecticut, Vermont, New Jersey, Tennessee, Minnesota, Wisconsin, and Illinois. Other partners include UMass, the University of Illinois, the Roger Williams Park Zoo, the USGS National Wildlife Health Center, the Wildlife Conservation Society, and the Orianne Society.

Mr. Winthrop moved to formally express that the Board is very impressed, both by the presentation and the capture of the grant; Dr. Van Roo seconded the motion; it was approved unanimously. Chairman Darey asked Dr. French to be sure to keep the Board informed on the progress and outcome of this important work.

Landscape Legacy Initiative Using the Key-Sites Concept

Deputy Director Buckley reported at the February meeting that the agency has built a management machine of forestry staff, technicians, and contractors. Staff is now proposing to use this Biodiversity-Initiative-made machine to do habitat management and stewardship work. In particular, we want to redirect some staff to perform management and stewardship activities concurrently with land acquisition. He noted that an integral part of the existing machine is the iterative, integrated decision-making process that staff follows, and he listed a few examples of funded projects and several examples of short-term management needs.

He reviewed the process staff followed to develop the Key-Sites analysis and then presented staff recommendations for uses the Key-Sites concepts in land protection and in habitat restoration. For land protection, the plan would be to prioritize Key Sites for land protection/landowner outreach, and he noted that DFG already targets 54 Key Sites. For habitat restoration, the approach would provide funding for restoration projects on DFG and DCR lands, increased DFG/DCR partnership and coordination to manage our most important sites, and building organizational capacity, i.e., dedicated staff and skills development. He identified two key needs that could be addressed immediately. The agency has a major deficit in staff capacity to monitor Wildlife Conservation Easements, which are up to 46,000 acres statewide, and perform outreach to the fee owners of the land to build and maintain a good rapport. The other urgent need Deputy Director Buckley identified was for boundary work. Specifically, the DFW's acreage has increased by more than 400% during the era of bond financing, from under 50,000 to over 200,000 acres. As a result, the number of unmarked boundaries has grown substantially, with over 1,700 miles needing attention.

Director MacCallum observed that this is the second time in his time with the agency that we will be at full basic operational capacity; i.e., 146 full-time employees, with three vacancies we anticipate filling. Of contract employees, we have about 15. These have happened because of funding limitations or because of functional hiring freezes. He said that we will see a transition in administrations, and currently have no idea of the priorities of a new administration. A large part of recent acquisition funding is coming out of bond money, with the Governor's support, but that may not continue. He noted that the agency has evolved away from hatcheries and bird-raising to a new model, and submitted that the time is right to make investment in management while the time and resources are there.

Chairman Darey observed that this was a lot for the Board to absorb; the Deputy Director noted that the concept is quite new and came out of the discussions at the previous meeting. Staff is seeing the opportunity, in particular, for more management and better stewardship. Chairman Darey stated that he was wary of putting more and more on the Districts, and that he would like to see one more person in each District.

New Cronin Building Maintenance

Assistant Director Tisa gave the Board a brief update at its March meeting on the new Cronin Building in Westborough, stating that it is still on schedule for late summer. One aspect to the project is the actual construction of the building and the other is the preparation for ongoing operations and maintenance. Assistant Director Tisa reported that, over the previous 3 months, he had been working with the Division of Capital Asset Management and Maintenance (DCAMM) on the operations and maintenance budgets for the building. He introduced Bob Cahill, Chief Financial Officer of DCAMM, and Vincent Cirigliano, who is the Chief Operating Officer.

DCAMM and the Division are entering into an Integrated Facilities Management Commission Agreement, and DCAMM is in the process of taking on 500 active leases for Commonwealth agencies. DCAMM staff has expertise in managing buildings across the state. The Commonwealth is the largest property owner in the state with approximately 6,400 buildings encompassing over 81,000,000 square feet. Mr. Cahill said that DCAMM was setting standards and integrating management over all different kinds of state buildings and has a lot of experience in that area as a result.

Mr. Cahill said that DCAMM and the Division are developing a charge-back model at the present time. Staff would come up with a budget for the new building that includes facilities and grounds-keeping. The plan is that the Division will take care of that maintenance, and the janitorial services, for the first year, to see how it goes, and that the balance of the building, especially its advanced energy systems, would be maintained by DCAMM. The cost was projected to be under $300,000 for everything. For comparison, he noted that the Division was spending about $20 per square foot in the current West Boylston location, and that those costs will be under $7 per square foot in the new building. Chairman Darey asked whether the charge was an assessment on the Inland Game Fund. Director MacCallum replied that it was as reported previously, and that any charge goes directly to DCAMM.

Landowner Incentive Program: 5-year Review

Federal Aid Coordinator Mike Sawyers gave a report during the April meeting on the Landowner Incentive Program (LIP), which he had coordinated until his recent promotion. He began with a brief history of the LIP in Massachusetts, noting that, in 2004, Congress had passed legislation to fund the LIP to make funds available for conservation efforts on private lands, to be administered by the states, which was particularly important because 80% of the land base in Massachusetts is privately owned. Under this program, the DFW covered up to 75% of the total habitat-management cost in a single year, with the remaining 25% covered by the landowner, either through a cash match or in-kind or volunteer services. He reported that, in total, we spent $3.5 million on habitat management on private lands over the 5 years, with 157 projects on a total of 9,822 acres, some of which connected to protected parcels where we were doing similar management, for 13,549 connected acres of habitat improvement.

Mr. Sawyers also detailed the results of a survey conducted with the landowners who had participated in the LIP, showing the multiple effects and benefits of the Program, and reported that the economic activity generated by the LIP represented $2.1 million paid to contractors, which was a substantial business benefit to the Commonwealth. He closed by summarizing the program benefits; the diversity of landowners and habitats; and the continued investment in conservation of the LIP, including the local economic activity it generates.

Other Presentations on Topics of Interest to the Board

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

Supervisor Andrew Madden of the Western Wildlife District and Supervisor Jason Zimmer of the Southeast Wildlife District both gave brief reports to the Board at the May and June monthly meetings, respectively, detailing some of the recent work their staffs were engaged in, including recent fish-stocking, work on access and/or habitat at a number of WMAs, fish population monitoring, and Bald Eagle banding, to include just a few.

Youth Turkey Hunt Recognition

After the formal proceedings at the July monthly meeting, DFW Recruitment and Retention Specialist Astrid Huseby made a short presentation to the Board in concert with the National Wild Turkey Federation (NWTF) Massachusetts Chapter. Ms. Huseby provides support and oversight for the Youth Pheasant and Youth Turkey hunts, which had been transferred to the I&E Section from the Wildlife Section shortly after Ms. Huseby was hired by the agency in 2012.

After a brief history of the Youth Turkey Hunt Program, Ms. Huseby gave great credit to the clubs, listing 12 of them in total, which actually make the program possible, from registering the youth to providing mentors for those who need them. Ms. Huseby introduced Ron

Gleason, Vice President of the NWTF Massachusetts Chapter. Mr. Gleason said he had been involved in the Youth Turkey Hunt since the beginning, in 2009; he was a lifelong turkey hunter and very glad to be involved in the program. He said it was a credit to the safety and success of the program and the process the clubs follow that there have been no accidents in its history.

Mr. Gleason then presented the Board and the Division with a plaque of appreciation from the NWTF, listing all the clubs involved, with room left at the bottom for more clubs. Mr. Gleason also presented representatives of all the organizations, many of whom were present, with individual plaques, observing that they are completely volunteer-led, with hundreds of volunteers, and he also offered his thanks to the Board and the Division for their ongoing support.

Off-road Vehicle Enforcement Update: Southwick WMA

Deputy Director Deblinger reported at the March meeting that there was an operation coming up that he thought was interesting and exciting, and he wanted to share the details with the Board. As background, the Deputy Director noted that the Division had bought 250 acres of former farm land in Southwick and created the Southwick WMA, which was to be maintained for rare habitats and grassland birds, and that the state of Connecticut had purchased another 200 acres right over the border for the same purpose. What came with it, unfortunately, was an historical, extensive use of dirt bikes and other ORVs. He explained that the situation was further exacerbated by the near proximity of a commercial track offering off-road competitions that charges users for practice time; riders have known that they could go just a few miles away and skip the extra expense.

Deputy Director Deblinger remarked that the Board members have heard about the District staff's frustration with the trespass and resulting damage situation, and OLE Major W. F. Gray III has reported repeatedly about ORV damage on state forests, parks, and WMAs in general and on the Southwick WMA in particular. He noted that there have also been changes to the laws, with greater penalties, including confiscation of vehicles. In addition, the laws have fines associated with them that are put in a pool for overtime pay for OLE officers.

The Deputy Director reported that, starting that spring, there would be a major crackdown on illegal and habitat-damaging activities at the Southwick WMA. On April 2, there would be a meeting in Southwick at the Town Hall that would include a presentation to area residents, so that the locals were prepared and would not be impacted by the crackdown. The presentation would go through the reasons why the Division and the OLE were doing this: We are responsible for managing the habitat in this area for these animals and the illegal vehicle use was destroying that habitat. Deputy Director Deblinger noted that Major Gray had hoped to be able to report details of the OLE's plans at this meeting, before he was prevented from attending by other matters.

Farm Bill Review

In April, Habitat Management Biologist Marianne Piché provided the Board with a review of the 2008 Farm Bill and an overview of what is currently known about the 2014 Farm Bill, which was passed in early February. Ms. Piché briefly outlined the work of the USDA's Natural Resource Conservation Service (NRCS), which implements the Farm Bill's programs, and noted that the NRCS cooperates in her employment under an MOU to implement the programs for the DFW in Massachusetts. The major habitat programs under the 2008 Farm Bill included the WHIP, specifically for wildlife; EQIP, historically for farming and more recently forestry but with the same habitat management practices as WHIP; and WRP, used to place easements on land altered by farming activities, but which could also be used to put easements on land that connects two protected parcels along a stretch of stream or river.

Ms. Piché detailed the DFW-NRCS partnership as it relates to the state's SWAP species, SWAP habitats, and the development and implementation of conservation plans for landowners. She then explained the 2012 program, Working Lands for Wildlife (WLFW), which was developed by the USFWS and the NRCS when the 2012 Farm Bill failed to pass, noting that two Massachusetts species' habitats benefited from it: those of the Bog Turtle and the New England Cottontail.

In the 2014 Farm Bill, Ms. Piché noted that habitat management as a program purpose is specifically included, using EQIP as the main program, with WHIP now gone and WLFW folded into EQIP. She noted in closing that the tricky part of the new Farm Bill looked to be landowner eligibility, and the fact that the rules were still being written, so that the details for the implementation of the programs were not yet available.

Laurel Lake Boat Ramp and Parking Reconstruction Project Update

Chairman Darey welcomed Terry Smith, engineer with the Office of Fish and Boating Access (OFBA), to the May meeting. Mr. Smith stated that he appreciated the Board inviting him out because he thought it was important for those not familiar with Laurel Lake to know some of the background and the history, as well as some of the damage that has occurred over the years, so that they better understand the context for the project to that date. Mr. Smith reported that the parking lot and surrounding guard rails had been stabilized in the fall of 2013 for a total cost of $10,750, which included only the equipment and materials because the OFBA had contributed 2 weeks of his labor, thus reducing the public-works cost by two-thirds. He showed photos to the Board that detailed the improvements to the facility that were wrought by the stabilization effort, with before and after versions.

Mr. Smith provided a detailed analysis of the project, which he broke down into three phases. The geotechnical-services phase was the first, with soil borings and sampling to avoid ledge completed in December 2013. The second was the design phase, with Mr. Smith working very closely with the contractor, Bourne Consulting Engineers. He noted that his ability to provide his time and expertise had kept costs down dramatically. Task 1 of the design phase was to do surveys and collect data; this was complete in April 2014. Mr. Smith broke the design phase into a total of six tasks: design development (50% of which was expected to be complete by the end of June 2014), permitting (March 2015), completion of contract documents (June 2015), and construction services, which will be dependent on OFBA project funding. He gave a preliminary cost estimate of $485,000 for the construction phase, subject to favorable budgeting, to include the boat ramp, the boarding float system, the parking lot reconstruction, and the shoreline wall and accessible-fishing walkway.

Mr. Smith showed the Board the engineering plans that the consultant was given, which were created by Mr. Smith. He also showed the example of the Comet Pond boat ramp in Hubbardston, which is very similar to the one designed for Laurel Lake in terms of its reconstruction. Vice Chairman Creedon asked Mr. Smith to confirm that OFBA projects must go out to bid. Mr. Smith replied in the affirmative, noting that OFBA man-hours had cut the costs of the initial phase but that those kinds of savings are not always possible in all phases of projects.

Chairman Darey stated that the reason he had pushed this is that he always sees fishermen at the Laurel Lake boat ramp, and that a lot of those people have been laid off and are not wealthy. He stated that he felt very strongly because the ramp and parking area were dangerous, yet very well used, making an updated facility a real need for that area. He offered his thanks to the OFBA and the Commissioner because this was a very important project for the local anglers. Mr. Smith commented that the project was in the hands of the Department of Environmental Protection (permitting) and contingent on the budget (financing). Chairman Darey closed by offering his personal thanks also to Mark Jester and the Berkshire County League for their persistent efforts to bring attention to the degraded facility.

Conflict of Interest Law Review

Vice Chairman Creedon briefed the Board on the Conflict of Interest law at the June meeting. Relative to the required testing, he informed the Board that once every 2 years the members have to log in to the State Ethics Commission site to read through a set of circumstances and then answer questions. He noted that the most obvious place where there could be a conflict situation for this Board would be in land protection, with the other possible conflict being if a non-qualified person were to apply and be brought to the Board for approval, its members would need to refuse to participate. He also reminded the members that they can't accept gifts worth over $50.

FISHERIES

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

Overview

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

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

Fisheries Watershed Projects

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

Language within the Sustainable Water Management Initiative required that coldwater fisheries habitat be defined and mapped throughout the state. Since the implementation of the revised lotic sampling collection methods in 1998, there are now approximately 5000 sampling locations that need to be mapped. As such, the positional accuracy of each sampling point had to be verified and the fish community at that point had to be assessed to determine if coldwater fish were present. The Project Leader wrote detailed programming scripts in the software *R* and GIS that combed through the fisheries database and characterized the fish communities of each sample and assigned them coldwater status or not. Both cold- and warm-water samples and the streams in which they were collected were delineated by hand in GIS and tagged with a unique SARIS number. Programming scripts initiated in GIS then allowed for comparative analyses that identified discrepancies between sample SARIS number and stream SARIS number based on proximity. Such instances, for example, represent errors where the fisheries data associated with a sample was assigned to the wrong stream. Over 100 such instances were identified and reconciled, resulting in a far more spatially accurate database. Additionally, we now possess a digital copy of the Massachusetts Stream Classification (SARIS) program, which contains georeferenced linework of all the lakes and streams that have been sampled in Massachusetts. This GIS layer will be extremely useful in future web-based applications, as it provides a link between the physical location of a stream and its name and SARIS number; something only previously recorded on paper in the SARIS catalog. The coldwater fisheries resources list and map is culled from this larger dataset.

Using similar computer scripts, the Project Leader created a GIS layer that summarizes fisheries and associated metadata for every scientific sample that has been recorded in the fisheries database. Once plotted in GIS, users may click on any sampling point and receive summary information regarding that sample 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. (The link to this layer can be found at: ***L:\Gisdata\Fish\Covs\fish_maps\fish_sample_sites.lyr***).

The Project Leader has also been involved in the creation of new bathymetry maps for inland lakes and ponds. While the Anadromous Fish Project Leader, Caleb Slater, and Fisheries GIS Leader, Dave Szczebak, have largely been collecting data in the field, the Fisheries Watershed Project Leader has written computer scripts in *R* and GIS to automate the statistical analysis and plotting of new bathymetry data. Thus far, the Project Leader has analyzed bathymetry and produced depth maps for five ponds.

Working with Caleb Slater, the Project Leader has begun a preliminary analysis of the 10 years of salmon data he has collected. Site locations and sample sizes were determined and a power analysis conducted. These

analyses provided insight on the amount of field work that will be required in the coming years to obtain a statistically valid comparison between salmon stocking and post stocking years.

Additional Projects

Organization and filing of 20 years of scientific sampling forms.

Gave a talk to the Nashua River Watershed Association on watershed scale biological and physical processes and how they affect Brook Trout and other lotic fishes.

Assessed roughly 50 culverts on state owned roads for potential replacement.

Constructed 12 new electrofishing batteries.

Aided Todd Richards in stream sampling for his Ph.D. research.

Shocked six lakes as part of our standard lake sampling protocol.

Analysis and synthesis of Lake Trout tagging data and salmon catch in Quabbin Reservoir.

Synthesis of Congamond Lake sampling data.

Fisheries Survey and Inventory

Leanda Fontaine, *Coordinator*

Fiscal Year 2014 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 Reservoir

Annual Stream Survey Meetings

Annual stream survey meetings were held with each of the District Fisheries biologists and technicians between mid-June & early July 2013 to discuss the Stream Survey Priority Lists for the 2013 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 14, sampling 279 sites in 22 watersheds (Table 1) and capturing 37,385 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. As a result of this intense sampling effort, a total of 135 new rivers and streams were surveyed and added to DFW's Fisheries Survey Database. Of these 135 new waters, 61 were found to support coldwater species.

Five lakes and ponds were surveyed in FY 14 as well; Congamond Lake (Middle Basin and Southern Basin) in Southwick, Paradise Pond in Northampton, Nipmuck Pond in Mendon, and Spectacle Pond in Lancaster. The surveys conducted on the Congamond Lake basins are part of an annual Largemouth Bass survey to assess the health of the bass population there, as that waterbody hosts the greatest number of bass tournaments in the state per year.

Lake Trout PIT Tagging on Quabbin Reservoir

2013 was the eighth year field crews have conducted PIT tagging efforts on Lake Trout on Quabbin Reservoir in Belchertown. Field crews included staff from the Field Headquarters, Connecticut Valley District, and Central District offices. Sampling was conducted along Windsor Dam between October 24 and November 7, 2013 and along Goodnough Dike on November 14, 2013. This was the first year Lake Trout tagging operations expanded to include Goodnough Dike as a capture location. From the six nights of gillnet sampling, 254 Lake Trout were captured and of those, 199 fish were implanted with PIT (Passive Integrated Transponder) tags and released back into the reservoir. A total of 132 Lake Trout captured along Windsor Dam were tagged and 16 Lake Trout tagged in previous years had been recaptured. In addition to those caught along Windsor Dam, 67 Lake Trout were captured along Goodnough Dike and tagged. No previously tagged fish were captured at Goodnough Dike.

DFW Biologists, Richard Hartley and Jonathan Brooks, examine a trophy Northern Pike captured and released during electrofishing sampling operations.

Table 1. Watersheds and number of samples on rivers and streams in each watershed sampled in FY 14.

Watershed	Number of Surveys
Nashua	43
Connecticut	57
Westfield	45
Deerfield	39
Chicopee	30
Nashua	29
Concord	28
Millers	18
South Coastal	17
Blackstone	16
Housatonic	13
Merrimack	11
Taunton	11
Charles	9
Farmington	9
Mt.Hope/Narragansett	9
French	8
Hoosic	8
Quinebaug	4
Cape Cod	2
Neponset	2
Ipswich	1
Shawsheen	1

Stream and River Research Project

Todd Richards, *Project Leader*

Fiscal Year 2014 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 investigating stream habitat restoration activities on Hamant Brook, a stream flowing through the Leadmine Mountain WCE in the town of Sturbridge. Stream survey and inventory procedures revealed a coldwater population of fish upstream of three impoundments on the property and a population of fluvial species, primarily cyprinids and catostomids, below the three impoundments. Removal of the three dams and replacement of a perched box culvert at the confluence of Hamant Brook and the Quinebaug River would help to restore stream form and function, improve the stream temperature regime, restore coldwater habitat downstream to the Hamant Brook confluence with the Quinebaug, and improve fish passage from the Quinebaug upstream into Hamant Brook to benefit native fluvial fish species in the Quinebaug River.

Progress on the Hamant Brook Culvert Replacement Project focused on development of the 90% design drawings for the culvert replacement and dam removal, establishment of preferred alternatives with stakeholders, permitting meetings, and a request for and recommendation of a MEPA waiver for an ENF. As designed, the existing 6 foot by 7 foot concrete box culvert will be replaced by a 36' wide corrugated arch culvert with natural bottom substrate and three dams will be removed. The anticipated construction is the summer of 2015. The Division also continues to observe 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 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: relatively unaltered stream flow conditions (those without large water withdrawals); stream flow conditions downstream of water supply reservoir impoundments; and 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. Efforts to create stage/discharge relationships are underway at all pressure transducer installation sites. Fish community sampling was conducted in the Pecks Brook, Cone Brook, West Branch Housatonic River, and Larrywaug Brook, in conjunction with lake- drawdown studies. Additional sites will be sampled in 15 sample reaches in July of FY 14.

Sustainable Water Management Initiative

Draft Water Management Act regulations were established and released for public comment. Public outreach meetings were developed through state agencies. Several meetings were held with EOEEA agencies to prepare for informational meetings with the South Coastal basin. Coldwater resource regulations were also developed by the Division to support the new DEP regulations. Public meetings and a public hearing were held.

Instream Flow Council Activities

Division representatives held the biennial meeting of the Instream Flow Council (IFC), participating in meetings and training programs. Responsibilities also focused on planning for a workshop in 2015 that will be open to all instream flow practitioners and held in Portland, Oregon. Other responsibilities included assisting in the completion of an IFC review of research conducted on the Niobrara River, Nebraska, developing a scope of work

regarding a peer review of North Carolina instream flow policy, scheduling and participating in Excom meetings, archiving historical instream flow resources, facilitating votes for executive committee members, and presenting awards according to IFC bylaws.

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 2014, 35,525 juvenile Northern Pike were made available to the Division and were stocked into Quinsigamond Lake in Worcester and Cheshire Reservoir in Cheshire.

Freshwater Sportfishing Awards Program

Spring of 2014 marked 51 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

Table 2. Species, number and length information for fish captured in rivers and streams during FY 14.

		Length in mm		
Common Name	**Number Captured**	**Average**	**Min.**	**Max.**
American Eel	254	252	80	710
Atlantic Salmon	2442	104	39	205
Banded Sunfish	30	63	48	84
Black Crappie	4	204	185	238
Blacknose Dace	12192	56	13	158
Bluegill	508	80	34	218
Bluntnose Minnow	7	58	50	73
Brook Trout	6780	100	29	315
Brown Bullhead	132	122	40	231
Brown Trout	254	133	41	420
Central Mudminnow	184	61	32	93
Chain Pickerel	154	142	46	465
Common Carp	3	101	88	120
Common Shiner	930	70	27	150
Creek Chub	1456	78	22	170
Creek Chubsucker	11	103	39	163
Fallfish	869	90	26	295
Golden Shiner	181	73	32	200
Green Sunfish	13	77	45	95
Lake Chub	32	86	67	104
Landlocked Salmon	658	86	53	*192*
Largemouth Bass	216	82	37	428
Longnose Dace	2763	74	24	146
Longnose Sucker	129	107	35	188
Pumpkinseed	673	73	40	165
Rainbow Trout	11	256	195	320
Redbreast Sunfish	46	114	59	167
Redfin Pickerel	712	102	52	232
Rock Bass	3	152	149	154
Sea Lamprey	5	129	100	175
Slimy Sculpin	2907	65	16	112
Smallmouth Bass	6	103	64	196
Swamp Darter	1	-	48	48
Tessellated Darter	277	62	30	97
White Sucker	876	105	26	279
Yellow Bullhead	176	131	44	265
Yellow Perch	86	107	56	258

addition has resulted in a near doubling of the number of pins awarded annually. Upon weighing a fish on a state certified scale, the angler receives a bronze pin depicting the species of fish with the weight and year of catch stamped on the back. In addition to the bronze pin, the lucky adult and youth anglers who weigh in the largest fish of the year for each of the categories is awarded a plaque and gold pin at an annual awards ceremony. Affidavits are still being received for 2014, so results from 2013 are presented here (Table 3). After a record setting year in 2010 (1,131), the number of pins awarded annually has dropped slightly with 842 awarded in 2013 (up 60 from 2012). Pins were awarded in 21 of 22 categories for both adult and youth anglers (395 for adult and 447 for youth) for calendar year 2013. The elusive Tiger Muskellunge was the only category with no entries for either adult or youth.

For the second year in a row, Crappie was ranked number one overall as well as for adult anglers, while Brook Trout was ranked number one among youth anglers. New for 2013 is the awarding of both an Adult and Youth Angler of the Year Award. Presented to the anglers who submit the highest number of eligible species, the first ever Adult Angler of the Year was presented to Mark Mohan, Jr., of Pembroke who weighed in 8 different species, while the first ever Youth Angler of the Year was awarded to Jake Souza, Berkley (who also won Angler of the Year in 2012) who weighed in 12 species.

Bass Tournament Creel Analysis

For the past 18 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 now be filled out and submitted electronically. The completed creel sheets are mailed to the Warm/Coolwater Project Leader at Field Headquarters. The creel sheet seeks the following information: club name, date of event, location of event, start and end time, number of anglers, number of anglers weighing bass, number of anglers with limits of bass, total number of bass weighed in by species, total bass over five 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

Table 3. Freshwater Sport Fishing Gold Pin Awards for 2014

Species	Number of Adult Pins	Number of Youth Pins	Weight of Gold Pin Adult	Weight of Gold Pin Youth
Broodstock Salmon	3	5	10 lb. 6 oz.	13 lb. 12 oz.
Brook Trout	17	66	3 lb. 7 oz.	2 lb. 5 oz.
Brown Trout	14	9	11 lb. 4 oz.	3 lb. 12 oz.
Bullhead	13	32	2 lb. 8 oz.	6 lb. 1 oz.
Carp	12	11	40 lb. 2 oz.	23 lb. 2 oz.
Chain Pickerel	15	22	6 lb. 7 oz.	6 lb. 1 oz.
Channel Catfish	41	4	13 lb. 9 oz.	9 lb. 4 oz.
Crappie	50	46	3 lb. 1 oz.	2 lb. 11 oz.
Lake Trout	10	4	17 lb. 9 oz.	13 lb. 6 oz.
Landlocked Salmon	16	15	6 lb. 5 oz.	4 lb. 11 oz.
Largemouth Bass	17	51	9 lb. 8 oz.	7 lb. 8 oz.
Northern Pike	10	9	24 lb. 5 oz.	21 lb. 4 oz.
Rainbow Trout	26	21	6 lb. 11 oz.	4 lb. 0 oz.
Shad	3	10	5 lb. 5 oz.	4 lb. 15 oz.
Smallmouth Bass	20	31	6 lb. 1 oz.	5 lb. 2 oz.
Sunfish	42	26	1 lb. 8 oz.	1 lb. 2 oz.
Tiger Muskie	0	0	N/A	N/A
Tiger Trout	33	28	3 lb. 12 oz.	3 lb. 3 oz.
Walleye	7	3	7 lb. 14 oz.	7 lb. 7 oz.
White Catfish	14	2	7 lb. 14 oz.	4 lb. 0 oz.
White Perch	21	26	3 lb. 0 oz.	2 lb. 13 oz.
Yellow Perch	11	26	2 lb. 4 oz.	1 lb. 10 oz.

to allow the Division to detect long-term trends in the bass populations in some of the Commonwealth's most heavily fished waters. Creel sheets are still being received for the 2014 tournament season, so results from the 2013 season are presented here.

In 2013, a total of 191 usable creel sheets were sent in to Field Headquarters. This represents a voluntary reporting rate of 28% based on the number of Special Use Permits issued by the OFBA. In an attempt to increase participation in the voluntary creel survey, 2013 was the first year that tournament organizers could fill out the creel sheets and submit them electronically. Tournament organizers have embraced this option, as 55% of the creels sheets for 2013 were submitted electronically. These 191 tournament creel sheets represented 54 different bass organizations fishing on 52 different waters. A total of 6,754 Largemouth Bass and 1,158 Smallmouth Bass were weighed in, for a catch rate of one bass per 3.1 angler hours. The average weight of a bass weighed in was 1 lb. 14 oz. Eighty-nine percent of all anglers weighed at least one bass, while 39% caught a limit (5 bass total of either species). Ninety-nine percent of all bass were returned to the waterbody where they were caught alive at the close of the tournaments. These indices have not changed significantly since tracking began in 1996. For waters with more than four tournaments, Congamond Lake in Southwick yielded seven Largemouth Bass over five pounds during 16 tournaments, the Connecticut River yielded five during 15 tournaments, and Nippenickett Lake yielded five during 4 tournaments. The Connecticut River had the highest catch rate overall at one bass per 2.2 angler hours. Whitehall Reservoir in Hopkinton and Mashpee-Wakeby Lake in Mashpee yielded the highest percentages of anglers weighing bass (94%) while Quaboag/Quacumquasit Ponds in Brookfield had the highest percentages of anglers with limits (56%). A breakdown of the number of tournaments by waterbody revealed that most waterbodies hosts only a few a year while the two highest occurrences continue to take place on the Connecticut River and Congamond Lake in Southwick, which generated creel sheets for 15 and 16 tournaments respectfully (16% of all tournaments). Over time, this data will aid in detecting possible changes to these important bass fisheries.

Beginning in 2006, due to its status of hosting the highest number of tournaments outside the Connecticut River, the bass fishery of Congamond Lake in 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 2013, DFW received 33 calls relative to incidents which involved dead fish. Of these 33 reports, 16 (48%) required field investigations by DFW, DMF, DEP, or local officials to determine the cause of the kills. The final disposition of the 33 calls was 30 natural events including species-specific kills involving Black Crappie, Atlantic Salmon, Shad, Yellow Perch, Bullhead, Sunfish, and trout species, 1 kill due to agricultural practices, 1 kill due to vandalism of a dam, and 1 low water stranding of anadromous fish.

Environmental Review

In 2013, DFW reviewed and provided comments on all major projects affecting fisheries resources published in the Environmental Monitor. DFW also provided technical information to a wide variety of consultants, town officials, and state officials on local projects. Projects were reviewed potentially affecting 35 different waters (23 rivers, streams, and unnamed tributaries and 12 lakes and ponds) in 19 different cities and towns. Fifty-five percent of the requests were received from environmental consulting contractors to fulfill DEP and MEPA filing requirements or at the request of local conservation commissions. Other requests were from state agencies such as DEP and MassHighway (33%), lake associations (4%), and local associations, such as Trout Unlimited and Rushing Rivers (8%). Fisheries resources were partitioned as follows: warm water (29%), coldwater (31%), trout stocked waters (23%), anadromous (4%), and unknown (13%). The majority of the projects reviewed consisted of bridge replacements/rehabilitations over rivers and streams and road reconstruction including culvert replacements and retaining walls (27%) and repairs or breaching of dams (26%). The remainder of the projects included lake management issues such as drawdowns, dredging, beach maintenance, and stream improvements (31%), pipeline repairs (8%), and proposed new well fields (8%).

Fisheries GIS

David Szczebak, *Project Leader*

During FY 2014, the Fisheries section spent a good deal of time integrating decades' worth of sampling information into a spatial environment for several projects. While sampling information had always been recorded to a point of latitude/longitude, most of the spatial data going forward will reference the new National Hydrographic Dataset (NHD) data. To this end, sampling information has been fixed to individual NHD reaches, both sets of data linked via the long-used SARIS numbers. Using the corrected sampling data, we updated the Coldwater Fisheries Resource (CFR) data layer to reflect sampling information collected through June 2014. The new CFR data layer was thoroughly checked for errors, a number of which were found and corrected. This was essentially the first time the coldwater data

had been spatially checked for locational accuracy, and corrections were made in both the Fisheries database and spatial data sets. The final CFR information was then uploaded to the DFW website as both a searchable list and as an interactive web map. The data was also documented and made publically available through the state MassGIS website. The coldwater data will be kept updated internally on an ongoing basis and publicly updated once a year. Working with Field Headquarters staff as well as District fisheries biologists, we produced an updated template for the DFW pond maps. The new maps will be available in both color and black and white and will feature all-new information, where available. The templates will be distributed to District staff for the editing of updated information, while the maps and final layout will be completed at FHQ.

To produce the updated pond maps, we started to take new bathymetric data. We acquired and installed new sonar units and after conducting initial pilot runs, developed a protocol for taking new bathymetric data. Seven ponds were completed by summer 2014, with the ponds mapped based on priorities for future data collection.

Fish Culture Program

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

The Division's four trout hatcheries produced a total of 450,887 pounds of trout in 2014. 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 536,909 Brook, Brown, Rainbow and Tiger Trout were stocked during FY 2014 (fall 2013 and spring 2014) (Tables 4 and 5).

A total of 67,006 Rainbow Trout, comprising 11,576 fish in the 12+ in. size category and 55,430 fish in the 14+ in. size category, were stocked during the fall of 2013. A total of 69,120 pounds of Rainbow Trout were stocked during the fall, comprising 8,047 pounds of 12+ in. fish and 61,073 pounds of 14+ in. fish.

During spring 2014, a total of 381,767 pounds of trout were stocked comprising a total of 469,903 fish. There were 329,065 pounds of Rainbow Trout stocked comprising 341,005 fish. More than 190,000 of the Rainbow Trout were in the 14+ in. size category and averaged 1.1 pounds apiece. Spring stocking also included a total of 37,377 pounds of Brook Trout comprising 78,682 fish that ranged between 6 and 18+ inches long. Forty percent of these Brook Trout were in the 12+ in. size category. 111,970 Brown Trout that ranged between 6 and 18+ inches long and totaling 78,336 pounds were also stocked. Thirty-eight percent of these Brown Trout were in the 13+ in. size category. Spring stocking also included 5,252 Tiger Trout in the 14+ in. size category and averaged 1.2 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. 10,000 smolts averaging 8.7 inches long and weighing a total of 2,500 pounds were stocked in Quabbin Reservoir. 2,000 smolts weighing 391 pounds were transferred to the New Jersey Fish and Wildlife in trade for 300,000 Brown Trout eggs 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. In 2014, 418,600 Brook Trout eggs were produced, marking the first Brook Trout eggs produced at Roger Reed Hatchery in more than 40 years (Table 6). A portion of these eggs were kept at the hatchery to rear out for the Brook Trout brood stock line. The remainder (300,000) was transferred to McLaughlin Hatchery where they were incubated and hatched. The resulting fry were transferred to other Division hatcheries for rearing. In December 2013, 2,600 disease-free Brown Trout eggs were transferred from Sandwich Hatchery to Roger Reed for hatching and rearing with the goal of creating a Brown Trout brood line. The first eggs from these fish are expected in FY 2016.

Several important infrastructure improvement projects were done at Division hatcheries in FY 2014. Well Number 1 was cleaned and redeveloped and the turbine pump and motor serviced at McLaughlin Hatchery. Another project completed at McLaughlin Hatchery was the replacement of the water flow meter and flow control valve in the Cady Lane well. Materials and equipment were procured at Montague, Sandwich, and Sunderland Hatcheries to replace raceway dam boards and for raceway reconstruction by hatchery staff. At the Roger Reed Hatchery, a new water flow meter was installed on the "Road Well".

There were no changes in permanent hatchery -personnel in FY 2014. Timothy Mathews was hired for a 6-month seasonal position at Sandwich Hatchery in May 2014.

Table 4. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY 14.

(Fall stocking 2013 and Spring stocking 2014)

Size Cat. Species	(inches)	Weight of fish (lbs) Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total No of Fish
Rainbow	9+	10500	8700	0	0	0	19200
Trout	12+	0	0	0	27068	48591	75659
	14+	28500	207841	0	9805	0	246146
	Subtotal	**39000**	**216541**	**0**	**36873**	**48591**	**341005**
Brook	6 - 9	10000	0	0	0	0	10000
Trout	9+	0	0	1200	0	36440	37640
	12+	18400	0	0	6360	5000	29760
	18+	0	0	362	920	0	1282
	Subtotal	**28400**	**0**	**1562**	**7280**	**41440**	**78682**
Brown	6 - 9	0	0	0	0	0	0
Trout	9+	19950	21650	0	0	27590	69190
	13+	17900	0	0	8470	15720	42090
	18+	0	0	0	690	0	690
	Subtotal	**37850**	**21650**	**0**	**9160**	**43310**	**111970**
Tiger	14+	0	0	0	5252	0	5252
Trout	**Subtotal**	**0**	**0**	**0**	**5252**	**0**	**5252**
Total		**105250**	**238191**	**1562**	**58565**	**133341**	**536909**

Table 5. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY 14

(Fall stocking 2013 and Spring stocking 2014)

Size Cat. Species	(inches)	Weight of fish (lbs) Bitzer	McLaughlin	Palmer	Sandwich	Sunderland	Total Wt. of Fish (lbs.)
Rainbow	9+	5168	2901	0	0	0	8089
Trout	12+	0	0	0	21157	36002	57159
	14+	28718	223569	0	11550	0	263837
	Subtotal	**33886**	**226470**	**0**	**32707**	**36002**	**329065**
Brook	6 - 9	2098	0	0	0	0	2098
Trout	9+	0	0	516	0	10081	10597
	12+	13321	0	0	5610	3087	22018
	18+	0	0	757	1907	0	2664
	Subtotal	**15419**	**0**	**1273**	**7517**	**13168**	**37377**
Brown	6 - 9	0	0	0	0	0	0
Trout	9+	6131	12062	0	0	8413	26606
	13+	21078	0	0	9742	19236	50056
	18+	0	0	0	1674	0	1674
	Subtotal	**27209**	**12062**	**0**	**11416**	**27649**	**78336**
Tiger	14+	0	0	0	6109	0	6109
Trout	**Subtotal**	**0**	**0**	**0**	**6109**	**0**	**6109**
Total		**76514**	**238532**	**1273**	**57749**	**76819**	**450887**

Table 6. Summary of Landlocked Salmon and Brook Trout produced at the Roger Reed Hatchery in FY 14.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked Salmon	smolts (8+)	12000	2891
	Subtotal	**12000**	**2891**
Brook Trout	Eggs	418000	Not determined
	Subtotal	**418000**	

Federal and State Baitfish Prosecutions

A four-year investigation by the U.S. Fish and Wildlife Service, Office of Law Enforcement; the Massachusetts Division of Fisheries and Wildlife; the Massachusetts Environmental Police; and the New York State Department of Environmental Conservation was successfully concluded in federal court in the spring of 2014. The owners and operators of Michael's Wholesale Bait in West Springfield were charged with transporting tens of thousands of pounds of live fish valued in millions of dollars across state lines without required health certifications and permits. In addition, they imported protected Eastern silvery minnows into Massachusetts from Vermont in violation of the Massachusetts Endangered Species Act. These crimes created a significant risk of infestation and disease potentially harmful to fish, wildlife, and the inland waters of Massachusetts. The two defendants (father and son) pled guilty to federal felony criminal violations of the federal Lacey Act. In March 2014, one owner/operator was sentenced to one year and one day in prison, two years of supervised release, and was ordered to pay a $50,000 fine to the Lacey Act Reward Fund. The other owner/operator was sentenced to six months in prison, two years of supervised release and fined $50,000 to the Lacey Act Reward Fund. Both men are prohibited from dealing in live fish during their post-prison terms of supervised release. In a related Massachusetts criminal case that concluded in October of 2013, one man pled guilty to violations of the Massachusetts Endangered Species Act (MESA) in Springfield District Court for the possession and sale of Eastern Silvery Minnows, a fish listed for protection under the Division's MESA regulations. He was fined $500.

In the spring of 2014, Dr. Ken Simmons, of the Massachusetts Division of Fisheries and Wildlife, and Thomas Ricardi, Jr., Special Agent for the United States Fish and Wildlife Service, were honored with an Investigative Achievement Award by the United States Attorney's Office and the Department of Justice (DOJ). Simmons and Ricardi's efforts over 4 years included review of thousands of pages of business records and interviews with witnesses from as far away as Wisconsin. Cases receiving this award are selective and limited to those who have substantially and significantly contributed to the mission of the U.S. Attorney's Office and the DOJ. The award recognizes very high levels of commitment and professionalism within a prosecution team.

Anadromous Fish Investigations

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

General

In FY 14, 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. Holyoke Gas & Electric, as directed by the conditions of their FERC hydroelectric license, hired seasonal employees to staff the Holyoke fishway and Firstlight Power and USGS employees from the Conte Lab monitored fish passage at the Turners Falls fishways. The Project Leader supervised these activities.

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 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 four 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 14.

During FY 14, the Project Leader was actively involved in Federal Energy Regulatory Commission (FERC) Hydroelectric proceedings concerning:

Application for an exemption at the Westfield Paper dam on the Westfield River in Russell.

Application for an 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.

Design of a minimum flow unit at the Glendale Project on the Housatonic River in Stockbridge.

Penstock replacement at the Gardner Falls Project on the Deerfield River in Buckland.

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.

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

Methuen Falls Project, Spickett River

Boatlock Project, Holyoke Canal

Riverside Project, Holyoke Canal

Glendale Project, Housatonic River

Red Bridge Project, Chicopee River

Ice House Project, Nashua River

Indian Orchard Project, Chicopee River

Dwight Project, Chicopee River

Milford Project, Penobscot River, ME

West Springfield Project, Westfield River

Stillwater B Project, Penobscot River, ME

Deer Island Project, Boston Harbor

Hoosic Project, Hoosic River, NY

Worumbo Project, Androscoggin River, ME

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) began this year. This will be a 5-year process that will require close attention.

Holyoke

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

Because 2014 fish passage operations are ongoing at this time, this report summarizes the 2013 fish passage activities. No major malfunctions were experienced any of the fishways on the Connecticut or Westfield Rivers in 2013.

The Holyoke fish passage facility operated for 68 days during the spring/summer season, passing a total of 416,409 anadromous fish. Three Shortnose Sturgeon were collected during the spring season. One Atlantic Salmon and three Shortnose Sturgeon were collected during fall lifting operations.

The number of days that passage was greater than 1% of the seasonal total was considerably less than 68. The number of days that passage is greater than 1% of the seasonal total, and the percentage of the total run that these days comprise, is a measure of the temporal distribution of the run. The "over-1%-daily-passage" totals were: American Shad, 94% of 392,967 in 25 days; Blueback Herring, 89% of 250 in 29 days; Sea Lamprey, 97% of 22,092 in 21 days; Striped Bass, 73% of 250 in 29 days; Gizzard Shad, 87% of 827 in 24 days; and Atlantic Salmon, 100% of 68 in 32 days.

Atlantic Salmon

Sixty-eight (68) Atlantic Salmon were counted during the spring/summer fish passage season at the Holyoke fishlift. 2013 passage was 19% of the record passage of 1992, 121% of the previous 5-year mean, and 97% of the previous 10-year mean. Ten Atlantic Salmon trapped at Holyoke during the spring/summer season were radio-tagged and released as per agreement with TransCanada.

American Shad

The total number of American Shad lifted in 2013 (392,967) was 54% of the record high passage of 1992. 2013 passage was 162% of the previous 5-year mean, and 185% of the previous 10-year mean. Including American Shad transferred to trucks for transport (2,541) and sacrificed for biological sampling (547), the total American Shad count was 396,505. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed this project on the 22nd day of passage (May 13). A total of 547 American Shad were sampled for biological data on 31 days from April 28 through June 17. Fork length, weight, sex, and scale samples were collected from all individuals. This represents 0.1% of the total American

Shad passed for the year and between 0.1% and 80% 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 78%. The weighted sex ratio of American Shad lifted at the Holyoke facility in 2013 was 48% males and 52% females.

American Eel

In 2013, eel ramps were deployed beginning May 2 and were operated until November 12. New for 2013, a fixed eel ramp, designed to withstand fish lift attraction flows and a wide range of tailrace water surface elevations, was constructed and permanently installed in the tailrace fish lift entrance channel during the summer. Collections during 2013, totaling 13,584 eels, were the third highest recorded at Holyoke Dam, following 2012 (39,423) and 2008 (13,864). The majority of eels (11,142) were collected from the stilling basin ramp, 761 from the South Hadley ramp, 492 from the spillway ramp, 229 from the tailrace ramp, 944 collected in a passive trap or manually dip-netted from the tailrace fish lift basin, and 16 from the bypass reach ramp.

The majority of the annual count, 76% (10,274), were collected during a protracted period of the summer from June 26 through July 22 when water temperatures ranged from 22– 28°C (the seasonal maximum temperature). Water temperatures had first warmed to 20°C just three days prior, on June 23. That period also encompassed the last of three distinct high river discharge pulses that occurred between late May and early July. Only the third discharge pulse resulted in relatively abundant eel collections.

Other Anadromous Fish Species

Blueback Herring passage in 2013 was 976. This was 1294% of the previous 5-year mean and 383% of the previous 10-year mean.

Sea Lamprey passage in 2013 (22,092) was 22% of the record passage of in 1998 and was 74% of the previous 5-year mean and 64% of the previous 10-year mean.

Gizzard Shad passage in 2013 was 827. This was 312% of the previous 5-year mean and 296% of the previous 10-year mean.

Turners Falls

The fishladders at Turners Falls were operated for a total of 60 days from May 3 through July 15, 2013. 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.

Anadromous Fish Passage

American Shad and Atlantic Salmon were identified and enumerated at the Spillway, Gatehouse, and Cabot ladders. Sea Lamprey were counted only at Gatehouse.

Atlantic Salmon

During the spring/summer migration, 10 adult Atlantic Salmon were allowed to pass the Holyoke fish passage facility.

American Shad

The number of shad passing the Gatehouse fish ladder in 2013 (35,494) was 38% of the maximum passage of 1992, 261% of the previous 5-year mean and 421% of the previous 10-year mean.

The number of shad passing the Spillway fish ladder in 2013 (10,571) was 90% of the maximum passage of 1992, 314% of the previous 5-year mean and 383% of the previous 10-year mean.

The number of shad passing the Cabot fish ladder in 2013 (46,886) was 58% of the maximum passage of 1992, 170% of the previous 5-year mean and 245% of the previous 10-year mean.

Examining the cumulative percent of shad passed at Gatehouse, 50% of fish passed this ladder on the 28th day of the migration, 19 May, 2013.

Examining the cumulative percent of shad passed at Spillway, 50% of fish passed this ladder on the 20th day of the migration, 11 May, 2013.

Examining the cumulative percent of shad passed at Cabot, 50% of fish passed this ladder on the 22nd day of the migration, 13 May, 2013.

Only 9% of the shad lifted at Holyoke (392,967) passed the Gatehouse observation window, well below the restoration goal of 50%.

Other Anadromous Fish Species

In 2013, 6,016 Sea Lamprey passed the Gatehouse fishway. This represents 19% of the maximum passage of 2008, 57% of the previous 5-year mean and 60% of the previous 10-year mean.

Westfield River

In 2013, a fish ladder was operated for the 16th 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.

50% of the American Shad passage had occurred by the 18th day of operation, May 16.

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 2013.

Anadromous Fish

The West Springfield fish passage facility operated for 76 days in the spring of 2013. The number of days that passage was greater than 1% of the seasonal total was considerably less than 76. The number of days that passage is greater than 1% of the seasonal total, and the percentage of the total run that these days comprise, is a measure of the temporal distribution of the run. The "over-1%-daily-passage" totals were: American Shad, 95 % of 4,938 in 17 days; Sea Lamprey, 93% of 729 in 13 days; and Atlantic Salmon, 100% of 11 in 8 days.

During the spring/summer season, 11 Atlantic Salmon passed the ladder. Nine Atlantic Salmon were trapped and two salmon escaped upstream due to a rusted gate that was replaced. All trapped salmon were transported by personnel of the United States Fish & Wildlife Service to the Richard Cronin National Salmon Station, Sunderland, MA.

A total of 4,938 American Shad; 11 Atlantic Salmon; 729 Sea Lamprey; 0 Striped Bass; 0 Blueback Herring; 16 American Eel; and 0 Gizzard Shad were passed upstream in spring/summer 2013. The 2013 shad passage was the second highest recorded and represents 47% 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 2013.

Merrimack River

In FY 14, the Project Leader actively participated in Merrimack River Policy and Technical Committee meetings, as well as several working group meetings. The two mainstem fishlifts on the Merrimack River in Massachusetts (Lawrence and Lowell) were operated and monitored for anadromous fish passage during the spring of 2014. Because 2014 fish passage operations are ongoing at this time, this report summarizes the 2013 fish passage activities. No major malfunctions were experienced at any of the fishways on the Merrimack River in 2013.

Essex Dam

The Essex Dam fish elevator operated for 89 days between April 15 and July 12, 2013. For the fall season, the fishway was operated from September 15 through November 1. 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

22 adult Atlantic Salmon were captured at the Essex fishlift during spring 2013. This was 5% of the record passage of 2011. Salmon returns were 13% of the previous 5-year mean and 18% of the previous 10 -year mean. No salmon were captured in the fall. All were trapped for broodstock purposes. The captured salmon were transported to the U.S. Fish and Wildlife Service National Fish Hatchery at Nashua, New Hampshire to be spawned.

American Shad

The total number of shad lifted in 2013 (37,166) was 50% of the record high passage of 2001. 2013 shad passage was 198% of the previous 5-year mean and 173% of the previous 10-year mean. 492 shad were trapped and trucked to the USFWS Nashua Fish Hatchery for spawning where 4.6 million fry were produced and stocked into the Merrimack River. 514 shad were trapped and trucked to the USFWS North Attleboro Fish Hatchery for spawning where 9.1 million fry were produced; 3.1 million were stocked in Charles River, MA; 3.5 million were stocked in The Pawtucket River, RI; and 2.5 million were stocked in the Pawtuxet River, RI. 245 shad were sampled for biological data collection over 14 days.

River Herring

2013 passage was 17,359, this was 5% of the record high passage of 1991. 2013 herring passage was 735% of the previous 5-year mean and 432% of the previous 10-year mean.

Other anadromous fish

Total number of Sea Lamprey, Striped Bass, and Gizzard Shad passing through the Lawrence fishlift were 548, 0, and 11 respectively.

American Eel

Between counts from the new permanent eelway at the Essex Dam and estimates of passage in the lift hopper, it is estimated that a total of 203 Yellow Eels and 3,362 Elvers passed the Essex Dam.

Table 7. 2013 Lawrence Anadromous Fish Passage.

	American Shad	River Herring	Sea Lamprey	Striped Bass
2013 passage	**9756**	**13490**	**70**	**3**
vs. max passage	61%	36%	2%	2%
vs. 5 yr. avg. passage	468%	2401%	23%	113%
vs. 10 yr. avg. passage	320%	1194%	14%	12%

Note: Assorted riverine species have been noted but not counted.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator began (May 1) one week after shad began passing at the Lawrence fishway, approximately 12 miles downstream, and concluded on July 15. 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 2013 was 9,756; this represents 26% of the shad passing through the Lawrence fishway this season (Table 7). While nowhere near the 50% goal, it is significantly better than the average. We will continue to experiment with the floating screen in the tailrace- designed to guide fish to the fishway entrance.

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

Atlantic Salmon Restoration program

The collective efforts of the states of Vermont, New Hampshire, Massachusetts, Connecticut, and the United States Fish and Wildlife Service to restore Atlantic Salmon to the Connecticut River Basin ended in FY 13 after nearly four decades.

The underpinning of the Connecticut River salmon restoration program was the production of millions of eggs and fry by the U.S. Fish and Wildlife Service's White River National Fish Hatchery in Bethel, VT and sea-run brood stock management and spawning operations at the Cronin National Salmon Station in Sunderland, MA. In August 2011, Tropical Storm Irene severely damaged the White River Hatchery, leading to its depopulation and closure in early 2012. This event and continued disappointing returns of adult Atlantic Salmon to the Connecticut River led the U.S. Fish and Wildlife Service to withdraw its support and resources from the Connecticut River Atlantic Salmon restoration program in July 2012. As a result, the number of fry available for stocking was dramatically reduced in both 2012 and 2013 and the last Atlantic Salmon fry and smolts were stocked in 2013.

The U.S. Fish and Wildlife Service egg/fry production and broodstock management operations were critical components of the restoration program and without them, the restoration effort has no viable chance of success moving forward. Therefore, at its November 2012 meeting the Division's Fisheries and Wildlife Board accepted the staff's recommendation to end DFW's efforts to restore Atlantic Salmon to the Connecticut River. The last Atlantic Salmon fry were stocked out of Roger Reed Hatchery in April 2013 and all remaining broodstock Atlantic Salmon were stocked out as well.

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

Atlantic Salmon Fry Stocking

No Atlantic Salmon fry were stocked in 2014.

Atlantic Salmon Fry Survival

Selected salmon stocked streams were sampled for juvenile Atlantic Salmon in 2013. In 2013, 48 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 2014 smolt production (39,717) was produced by multiplying the population estimate of 1+ salmon by the estimated over-winter survival (0.6).

Brook trout at Roger Reed Hatchery, Palmer.

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WILDLIFE

John O'Leary
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Overview

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

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

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

Habitat Management Programs

Landscape Analysis Projects

Jonathan Brooks, *Wildlife Population Ecologist*

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

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

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

Private land (which makes up about 94% of all lands in Massachusetts) offers the majority of potential hunting opportunities in the state, with approximately 78% of Massachusetts hunters surveyed reporting that they use private land for all types of hunting. Private landowners and local communities must therefore cooperate in any long-term plan for sustaining both hunting access and the public benefits of hunting and wildlife management. GIS analysis was conducted using the number and location of hunting and sporting licenses sold in order to identify land parcels for potential purchase. Areas with more hunters and less huntable land were given a higher priority.

A statewide beaver flood-lands visualization project is ongoing, using a model to identify potential low-gradient beaver sites on those portions of Massachusetts that

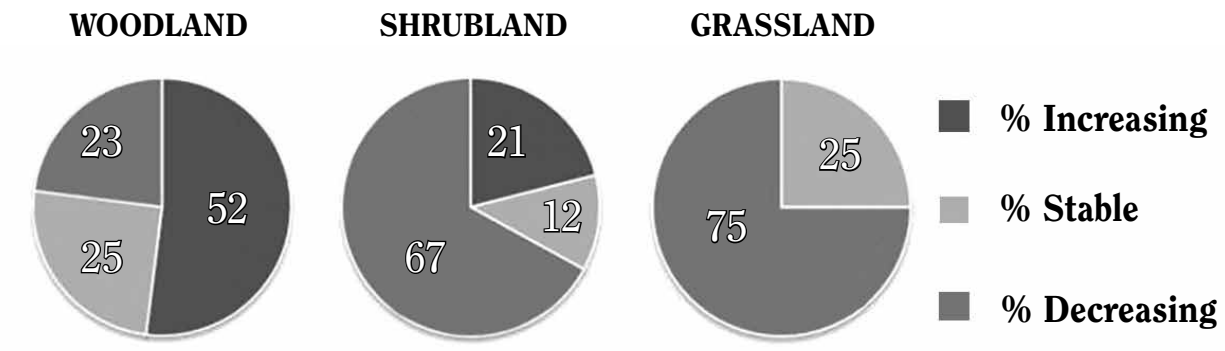


Figure 1. Data from the North American Breeding Bird Survey, indicating the declines in bird species that depend on shrublands and grasslands for some part of their life cycle.

are currently supporting some type of development. This provides an idea of potential acres of habitat on significant portions of the landscape where humans have excluded this vibrant natural disturbance process.

Wildlife Habitat Program
John Scanlon, *Habitat Program Leader*

The Wildlife 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 this important 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 beaver impacts across the landscape, for example, and has greatly reduced the natural occurrence of fire in the coastal regions and major river valleys of the state. The extensive open habitats that formerly resulted from these natural disturbances can be emulated through management of abandoned-field sites, which typically involves some tree clearing, extensive brush mowing, 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 is also responsible for monitoring forest cutting operations on over 50,000 acres spread across >175 parcels of private land that are subject to a Wildlife Conservation Easement (WCE), assisting with land acquisition, and providing technical assistance to private and other public landowners interested in enhancing wildlife habitat for species of conservation need.

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

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

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

3) Systematically monitor the effects of habitat management on plant and animal communities to ensure that managed habitats continue to support the native biodiversity of Massachusetts.

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

DFW landscape composition goals for the state's WMAs (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), 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 three Habitat Biologists conduct tree clearing, brush mowing, invasive plant control, and biological monitoring statewide through a public, competitive bidding process to help move from current 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).

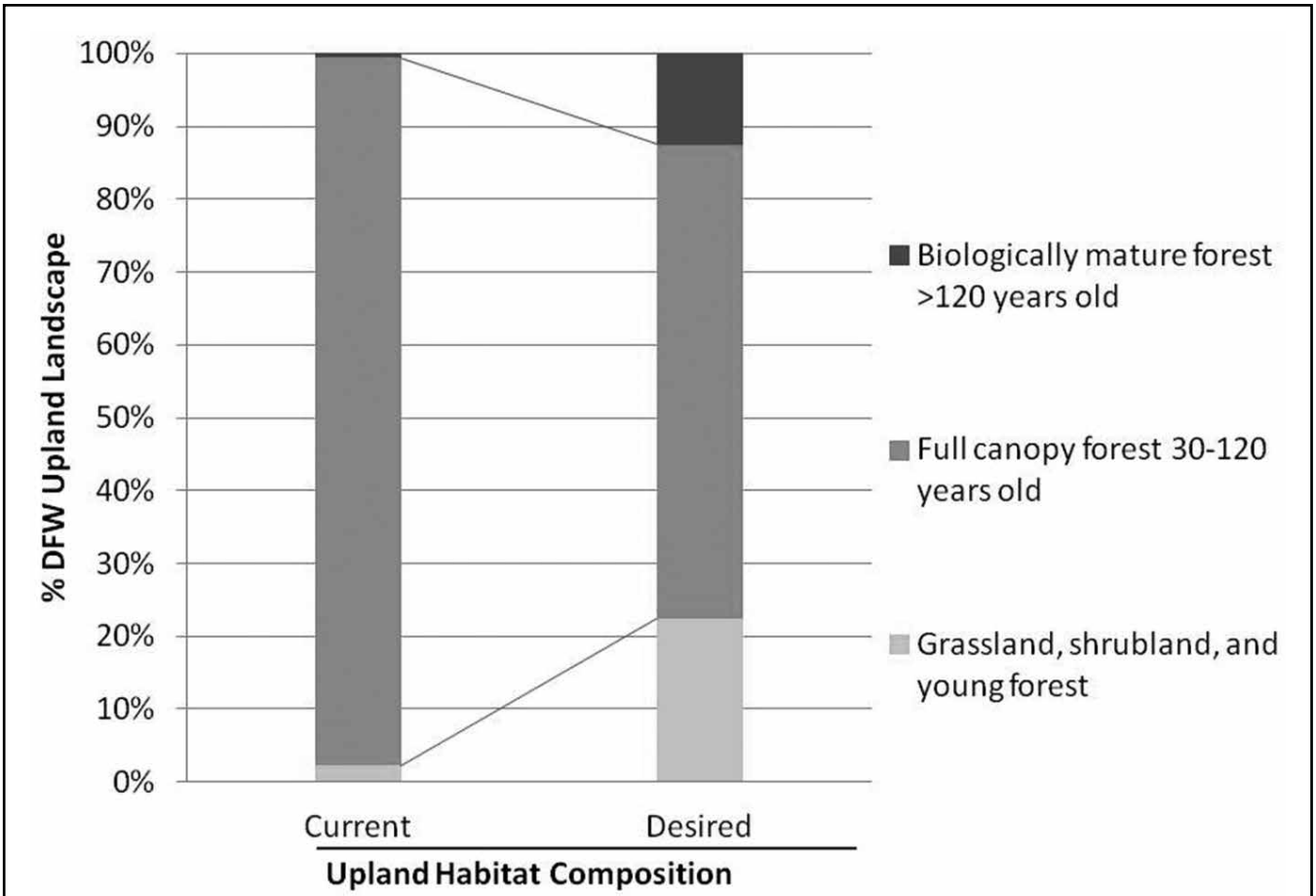


Figure 2. Current and desired habitat-composition goals for upland sites on DFW Lands.

The BDI made good progress towards achieving the landscape goals shown in Figure 2 by actively managing over 900 acres of grassland, shrubland, and young forest habitat in FY-2014 (Table 1).

Table 1. BDI Active Habitat Management in FY-2014

Habitat Type	FY 2014 Acres	Management Interval
Grassland	481	1-2 years
Shrubland	225	3-8 years
Young Forest	197	20-30 years
Totals	**903**	

Grassland Habitat Project

Benjamin Mazzei, ***Habitat Biologist***

Grassland management occurred on 481 acres across four 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

Invasive plant control work occurred on 143 acres of existing grassland and 27 acres of adjacent, recently cleared and harrowed land to control Mile-a-minute vine, Japanese knotweed, honeysuckle, buckthorn, multiflora rose, and bittersweet and to promote native warm season grasses including little bluestem. Following invasive plant control treatment, 14 of the 27 cleared/harrowed acres were planted to native warm season grasses, primarily little bluestem. In addition, 51 of

Table 2. Grassland Habitat Management in FY-2014

Site Name	Town	Habitat Type	Objective	Acres
Frances Crane WMA	Falmouth	Grassland	Restore/Expand	170
Noquochoke WMA	Dartmouth	Grassland	Maintain	40
SouthwickWMA	Southwick	Grassland	Restore	163
Bolton Flats WMA	Lancaster	Grassland	Restore	108
Total				**481**

the 143 acres of existing grassland were burned using prescribed fire to promote little bluestem.

Noquochoke WMA

Invasive plant control work occurred on 40 acres of existing grassland habitat. Thirty of these 40 acres were subsequently mowed to remove standing dead invasive shrubs and encourage re-sprouting of native warm season grasses.

Bolton Flats WMA

Mowing/mulching of invading trees was conducted on a 108 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 to conduct subsequent maintenance of grassland habitat in 2015 or 2016.

Southwick WMA

Invasive plant control work occurred on 163 acres of abandoned tobacco fields to control a variety of invasive plants and promote native warm season grasses including little bluestem. In addition, 16 of these 163 acres were burned using prescribed fire to promote little bluestem.

Shrubland Habitat Project

Benjamin Mazzei, *Habitat Biologist*

Shrubland management occurred on 135 acres across seven 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

Twenty acres of existing shrubland was burned using prescribed fire to prevent succession of invading white pine trees and retain this area in a scrub oak-dominated shrubland.

Stafford Hill WMA

Mowing of scrub oak, lowbush blueberry, and other native shrubs occurred over 90 acres that had been scheduled for prescribed burning in 2010-2013, but due to staffing limitations was not burned. By 2014, fuel loads were too high in these shrubland sites to burn safely, so mowing was applied to reduce fuel loads to the point where future burning can occur.

Invasive plant control work occurred on 110 acres of existing shrubland habitat to control Japanese knotweed, honeysuckle, buckthorn, multiflora rose, and bittersweet. These 110 acres are scheduled for mowing in FY2015/2016 to prevent succession of invading trees and retain this area in open shrubland habitat.

Herm Covey WMA

Invasive plant control work was carried out on two acres of recently established black swallowwort by DFW Licensed applicators. It is critically important to catch new infestations of highly invasive herbaceous plants like black swallowwort in their infancy because several herbaceous invasives become prohibitively expensive to control once they become established over large areas.

Southampton WMA

Invasive plant control work was carried out on two acres of recently established black swallowwort by DFW Licensed applicators. It is critically important to catch new infestations of highly invasive herbaceous plants like black swallowwort in their infancy because several herbaceous invasives become prohibitively expensive to control once they become established over large areas.

Leyden WMA

A half-acre of invasive plant control was accomplished by DFW Licensed Applicators using cut-stem herbicide applications of >6´ tall honeysuckle, autumn olive, and buckthorn stems that were too large to treat effectively with a foliar application. Asiatic bittersweet vines were also treated using cut stem applications. These invasive woody plants were growing within acreage being reclaimed as lowbush blueberry barrens.

Poland Brook WMA

A half-acre of invasive plant control was accomplished by DFW Licensed Applicators using cut-stem herbicide applications of >6´ tall honeysuckle, autumn olive, and buckthorn stems that were too large to treat effectively

Table 3. Shrubland Habitat Management in FY-2014.

Site Name	Town	Habitat Type	Objective	Acres
Frances Crane WMA South	Falmouth	Shrubland	Maintain	20
Montague Plains WMA	Montague	Scrub Oak Shrubland	Maintain	90
Herm Covey WMA	Belchertown	Shrubland	Maintain	2
Southampton WMA	Southampton	Shrubland	Maintain	2
Leyden WMA	Leyden	Shrubland	Maintain	0.5
Poland Brook WMA	Conway	Shrubland	Maintain	0.5
Stafford Hill WMA	Cheshire	Shrubland	Maintain	110
Total				**225**

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

Site Name	Town	Habitat Type	Objective	Acres
Frances Crane WMA North	Falmouth	Pitch pine/Scrub oak	Expand	32
Bolton Flats WMA	Lancaster	Pitch pine/Scrub oak	Restore	9
Montague Plains WMA	Montague	Pitch pine/Scrub oak	Restore	156
Total				197

with a foliar application. Asiatic bittersweet vines were also treated using cut stem applications. These invasive woody plants were growing within acreage being reclaimed for highbush blueberry and other native shrubs.

Young-forest Habitat Project

Brian Hawthorne, *Habitat Biologist*

Young forest management occurred on 197 acres across three different sites (Table 4), and included selective use of herbicide by Licensed Applicators to control invasive plants, partial tree clearing by Licensed Timber Harvesters, and prescribed burning to maintain these open habitats.

Frances Crane WMA North

Over 80% of the tree canopy was cleared in these 32 acres, which included "frost pocket" depression with a desirable scrub oak understory. The tree clearing reduced woody fuel loads to the point where prescribed burning can be used in subsequent years to maintain this unique fire-adapted community that supports both rare and declining species.

Bolton Flats WMA

Between 60-80% of the tree canopy was cleared across these nine acres to favor an understory of scrub oak, and to enhance growth of retained pitch pine and tree oaks in the open overstory. The tree clearing reduced woody fuel loads to the point where prescribed burning can be used in subsequent years to maintain this unique fire-adapted community that supports both rare and declining species.

Montague Plains WMA

About 60% of the tree canopy was cleared across these 156 acres to favor an understory of lowbush blueberry and scrub oak, and to enhance growth of retained pitch pine and tree oaks in the open overstory. The tree clearing reduced woody fuel loads to the point where prescribed burning can be used in subsequent years to maintain this uncommon fire-adapted community that supports both rare and declining species.

New England Cottontail Habitat Restoration Project

Dave Scarpitti, *Upland Game Biologist*

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

Biological Monitoring, Inventory, and Analysis Project

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

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

During May-June 2014, breeding bird surveys occurred at 71 independent points on approximately 1065 acres across 11 different areas using a combination of independent contractors and DFW field staff time (Table 5). During FY2014, Habitat Biologists conducted pre-treatment monitoring of herbaceous vegetation including ferns, and broadleaved non-woody plants at the Muddy

Table 5. FY-2014 Breeding Bird Surveys.

Site	Town	# of Survey Points	Acres
Western District			
Stafford Hill WMA (Barn Area)	Cheshire	4	60
Stafford Hill WMA (Hill Top Area)	Cheshire	8	120
Peru WMA	Peru	3	45
Southeast District			
Frances Crane WMA South	Falmouth	10	150
Frances Crane WMA North	Falmouth	10	150
Northeast District			
Martin Burns WMA	Newbury	8	120
Valley District			
Poland Brook WMA	Conway	4	60
Southwick WMA	Southwick	10	150
Central District			
Winimusset WMA	New Braintree	5	75
Muddy Brook WMA (Jackson Road)	Hardwick	4	60
Westborough WMA	Westborough	5	75
Total		**71**	**1065**

Brook WMA, and on previously unmanaged portions of the Montague Plains and Frances Crane WMAs. Post-treatment vegetation monitoring occurred on managed portions Frances Crane WMA, Montague Plains WMA and Phillipston WMA. Post-2011 tornado monitoring of breeding songbirds occurred at the Brimfield State Forest in coordination with the MA Department of Conservation & Recreation (DCR) and TNC.

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

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

Rebecca DiGirolomo, *Habitat Biologist*

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

In FY2014, monitoring of active Forest Cutting operations occurred at the Paul C. Jones Working Forest WCE in Shutesbury, the Thorpe Brook WCE in Sandisfield, the Shales Brook WCE in Becket, the Dalton Fire District WCE in Dalton, the Hull Forestlands Lily Pond WCE in Goshen, the Hull Forestlands Silver Brook WCE in Sandisfield, the Hull Forestlands Ram Hill WCE in Chesterfield, the Heyes Forest Products Mountain Lot WCE in orange, the Funsch_Page WCE in Royalston, and the Leadmine WCE in Sturbridge. Long term (10-year) Forest Management Plans were also reviewed for compliance with respective WCE's for the Musco WCE in Royalston, and the Funsch_Page WCE in Royalston. Additional compliance monitoring occurred at the Hull Forestland s Abbott Brook (a.k.a. Mica Mill) WCE in Chester regarding WCE violations from construction of an unpermitted forestry access road that resulted in substantial erosion and wetlands violations. DFW Forestry program staff worked with the fee owner and with the Massachusetts Department of Environmental Protection to establish effective mitigation for this situation.

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 FY2014, compliance monitoring for fee ownership occurred at the Millers River WMA in Orange and the Montague WMA in Montague.

Technical Assistance and Outreach Project

Rebecca DiGirolomo, *Habitat Biologist*

The DFW Habitat Program receives requests from both private and other public landowners for technical assistance with determining wildlife habitat impacts of proposed forest harvesting operations. Private lands requests that potentially qualify for NRCS funding are referred to Habitat Management Biologist Marianne Piché. The Habitat Program responds directly to other public landowners and, in FY-2014, provided technical review for the revised DCR Forestry Best Management Practices manual that is used on all public and private forest harvesting operations in Massachusetts. The DFW Habitat Program also provided technical assistance to DCR by reviewing six proposed harvesting operations totaling 1,350 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 FY2014 included the town of Groton Shattuck lot, the town of Shirley Conservation Commission's Pumpkin Brook Conservation Area, the Townsend Conservation Commission Clement lot, and the town of Westborough Public Watershed Lands.

Private forest landowners also approached DFW for technical assistance on how they might modify intended harvesting practices to benefit wildlife habitat. The DFW Forestry Program provided technical assistance on private lands being harvested by Heyes Forest Products in Orange, and by the Leominster Sportsman's Club in Leominster.

These reviews enhance wildlife habitat and plant-community diversity on public lands that are not owned by the DFW but that are open to public hunting.

Wildlife Management Programs

Upland Game Program

Dave Scarpitti, *Upland Game Biologist*

Wild Turkey Harvest

A total of 159 Wild Turkeys were harvested during the 2013 fall season, on par with the long term 10 year average (142.5 turkeys). Overall, 76 male and 83 female Wild Turkeys were harvested. Also of note was the proportion of turkeys harvested with archery equipment was an all time high, at approximately 31%, whereas in the spring typically 4% of turkeys are harvested with archery equipment. The relatively high proportion of harvest via archery equipment is likely attributed to archery deer hunters that opportunistically capitalize on abundant fall turkey populations.

The 2014 Massachusetts spring turkey hunting season was held April 28-May 24, with the youth hunting day occurring on April 26. The 4-week regular season ocurred in the Wildlife Management Zones 1-13. Greater than 21,500 Wild Turkey permits were issue for the 2014 spring season, the greatest season total in the modern history of Wild Turkey hunting and continuing the trend of increasing permit sales. Total harvest during the regular spring season was 2510 turkeys during the regular spring season, and 56 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 been >2500 turkeys since 2008. Spring brood conditions in 2014 appear to have been highly variable across the state, however overall turkey populations are high and continue to provide excellent hunting and other recreational opportunities.

Ruffed Grouse

Roadside surveys to measure the conspicuous breeding activity (otherwise known as drumming) of Ruffed Grouse are conducted statewide from late April through mid-May, 2014 marked the 20th year this survey has been completed. In 2014, grouse drumming events were slightly higher than the long-term average, particularly in the Western and Connecticut Valley Districts that continue to show relatively abundant grouse populations. 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 through June across Massachusetts. This courtship display is surveyed as part of the U.S. Fish and Wildlife Service's Woodcock Singing Ground survey each spring, the results of which provide an index to the breeding population of woodcock across the state. Randomized roadside woodcock singing ground surveys were conducted in 2014 from April 20 through May 10. The average number of singing woodcock heard per route in 2014 was 1.33, relatively consistent with the number heard in recent years (2011-2013: 1.53-1.67). 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 2013 hunting season was 2400 by approximately 900 hunters. Overall, suitable early successional habitat limits the statewide abundance of woodcock, however like with Ruffed Grouse, where suitable cover exists woodcock may be locally very abundant.

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. Despite the lack of survey effort, dove populations in New England have demonstrated stable to slightly increasing populations over the short and long term periods.

New England Cottontail

DFW continued winter surveys to assess the presence of New England cottontail (NEC) and Eastern cottontail across the state. These surveys included efforts to collect road-kill, hunter-harvest, or any other rabbit specimens for analysis and winter fecal pellet collection surveys. Approximately 500 fecal pellet samples were collected at sites across the Commonwealth by DFW staff and various cooperators. Several undocumented New England cottontail populations were discovered, particularly in southern Berkshire County. Survey efforts are planned to continue during the winter of 2014-2015, and are anticipated to focus again in southern Berkshire County and across widespread open space habitat in Plymouth County.

A variety of habitat management techniques are being employed to benefit New England cottontail habitat primarily southeastern Massachusetts where they are most abundant. Activities such as prescribed burning, shrub-mowing, tree harvesting, and invasive plant species control are being widely utilized. Vegetation management and prescribed burning activities on Cape Cod were employed on several hundred acres to support habitat restoration for New England cottontail and other species associate with pitch pine/scrub oak ecosystems. An additional 200-300 acres of prescribed burning and vegetation management activities are in planning for implementation in 2014-2015. In addition, habitat management to benefit NEC and other species associated with shrubland habitats is being planned at the Farmington River Wildlife Management Area, in southern Berkshire County in the towns of Otis and Beckett.

Waterfowl Program

H Heusmann, *Waterfowl Program Leader*

Division personnel continued to conduct nest-box checks on 52 sites used to monitor Wood Duck populations statewide. The spring of 2013 was dry with drought or near drought conditions over much of the state due to lack of snow during the winter. The spring of 2013 was cooler than normal with delayed nesting. June was abnormally wet restoring water levels but drought returned thereafter.

Wood Duck nesting attempts increased from 2012 with 321 nest starts resulting in 261 hatches. Hooded Mergansers, a species that has increased substantially in the past two decades, had 157 nest starts in the study area boxes and 117 hatches.

Massachusetts participates in the Atlantic Flyway Resident-goose Banding Program. The Atlantic Canada Goose Resident Population Management Plan only 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 916 Canada Geese were banded at 70 sites in 63 cities and towns in Massachusetts. (For the first time since 2000, geese were banded on Martha's Vineyard.) The total included 435 goslings and 481 adults. Crews captured an additional 147 previously banded geese.

The 2013 airboating season was beset by several problems beginning with the need to replace the fuel pump. The early August airboating season went well with good water conditions but at the full moon hiatus period a wheel came off the trailer resulting in the need to replace the axle. While no nights were lost, after resuming operations it was discovered that the propellers were delaminating. This cost us several nights of airboating opportunity. We ended up boating on 15 nights and banded 870 birds. Among birds banded, there were 547 Wood Ducks, 171 Mallards, 9 American Black Ducks, 3 Mallard x Black Duck hybrid, 122 Green-winged Teal, 10 Blue-winged Teal, 2 Northern Pintail, 1 Shoveler, and 5 Soras. Thirty previously banded birds were also recaptured.

During the period of September 3-25, Massachusetts conducted a resident Canada Goose hunting season, with a daily bag of seven. The USFWS's HIP report is delayed in harvest estimates for the current year. However, the USFWS estimated a September season harvest of 1,600 geese in 2012. This compares to estimates of 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 60 days with a two-bird daily bag limit in the Central and Coastal waterfowl hunting zones and 50 days with a three-bird bag limit in the Berkshire zone.

The winter of 2013-2014 was marked by weather extremes with temperatures fluctuated from the teens and single digits to the 50s and back again. By the time of the midwinter waterfowl survey in late January conditions were frozen along most of the coast. American Black Duck numbers (22,018) were 18% above both last year and the 10-year average. Mallard numbers (3,218) were 6% below normal. Canada Geese (13,855) were 25% above the 10-year average. Atlantic Brant (1,185) were similar to last year but 31% lower than their 10-year average. Of the black and white birds, merganser counts were 8% above their 10 year average, goldeneyes down 19%, Buffleheads 47% below the 10 year average, and scaup numbers were 42% below average. Eider counts

were near normal (-2%); scoter counts down 26%; and Long-tailed Duck numbers were up 381%. Normally, only a small portion of Longtails wintering in Massachusetts are counted on the MWS as they fly out to sea at dawn.

From January 18 - February 15, 2014, Massachusetts held a late, resident Canada Goose season in both the Central North Coastal waterfowl zones with a five-bird daily bag in each zone. The USFWS is delayed in harvest estimates for the current year. However, the USFWS estimated a harvest of 1,500 in 2013 compared to 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 fifth year of a 5-year experiment to determine if two-season Black Duck banding efforts can improve the precision for Black Duck survival rates. Bait-trapping was carried out at 22 coastal sites in 13 towns from the New Hampshire to the Rhode Island borders. Trapping was carried out in January and February 2014. All Mallards and Mallard x Black Duck hybrids could be banded and broken down into five plumage types. Totals of 762 American Black Ducks, 120 black-plumaged hybrids, 8 intermediate types, 3 Mallard-plumaged hybrid, and 125 Mallards were banded. In addition, there were 136 previously banded birds including 23 birds by other banders.

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 1,327 plots used in the survey. The population estimate in the Northeastern states for Mallards was 289,552 pairs +13%. The estimate for Black Ducks was 23,426 pairs +33%; Wood Ducks, 177,710 pairs +16%; and Canada Geese, 341,100 pairs +15%. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its 16th year of the federal Harvest Information Program (HIP). Beginning in 2012, all migratory bird hunters could register for HIP only via an online registration system. Hunters are no longer issued a HIP number but their license indicates they completed the HIP survey. Hunters had the convenience of registering from their home computer, at venders selling hunting licenses, or at any MassWildlife office. Waterfowl and woodcock hunters are automatically given a HIP survey each time they buy a waterfowl stamp with a new hunting license through the state's MassFishHunt system.

Massachusetts issues individual egg-addling permits for resident Canada Goose control under a federal program begun in March 2007. In 2014, we issued 34 such permits, all of which were returned. The permittees reported addling 1,240 eggs in 260 nests, while USDA/APHIS Wildlife Services addled 423 eggs in 78 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. 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, and Ron Rancatti.

After only two years of the project, there are signs that the conservation measures taken are succeeding. In 2014, 120 kestrel nesting boxes were monitored in Massachusetts and 44 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% occupancy rate (Joanne Mason – Keeping Company with Kestrels), and there was a 40% occupancy rate at a set of boxes in the northern Berkshires (Ron Rancatti). Nesting boxes have been maintained in these areas for over a decade. However, results from more recently deployed nest boxes also were encouraging. In the Connecticut River Valley 6/21 (29%) of the boxes that were installed in 2013 were occupied in 2014. In this region, all of the occupied boxes successfully produced young, and additional boxes will be installed in this region before the 2015 nesting season. In central Massachusetts (Worcester County), 9 boxes were installed during spring 2014 to add to the existing boxes. Despite there being fewer breeding kestrels in this region, 25% (4/12) of the monitored boxes were used for nesting by kestrels. The effort in northeastern Massachusetts has been less successful. The Essex County Ornithological Club have been maintaining and monitoring 12 kestrel boxes since 2007 with little success. A single box, at Strawberry Hill (owned by the town of Ipswich) was used for nesting by a pair of kestrels in both 2013 and 2014, and nests successfully fledged young in both years. Given this, we are hopeful the kestrel population in this region will increase in the coming years. In addition to monitoring nesting success, we also banded nestlings and adults when possible. During 2014, 109 kestrels were uniquely color-banded. Also, two birds that were banded during the 2013 season, were re-sighted away from their Massachusetts breeding grounds. One was captured and released by a falconer in Florida during the overwintering period, and the other was found in Washington D.C. during spring migration. These data are important because they help us learn about the kestrel's wintering areas and migratory pathways. To continue to expand this project, additional boxes will be installed before spring 2015.

Shrubland Bird/Tornado Project

Early-successional forests have become increasingly scarce in Massachusetts and account for less than 4% of the total forested habitat in the state. As a result of a

reduction in habitat, many species associated with this habitat type are experiencing steep population declines. On June 1, 2011, a tornado tore through south-central Massachusetts over a 40-mile stretch, from Westfield to Charlton. This had a dramatic impact and converted nearly 5,000 acres of forested areas into young-forest habitat.

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

Results from the first year of the study (2012) were very encouraging. Almost all of the early successional forest species showing long-term population declines were documented in the tornado-impacted area, and most were also found in the tornado-impacted areas that were salvage-logged. This included 6 species listed in our State Wildlife Action Plan (SWAP), with one being state-listed (Eastern Whip-poor-will). Additionally, many forest-breeding birds were documented using the young-forest habitat (for food or other resources), despite it not providing suitable breeding habitat for most of these species.

Because the process of extracting data from the audio files is time consuming, we are still in the process of doing this for the 2013 recordings. Data were collected at the same points in June of 2014. As in previous years, recording units were moved daily among points, and all files were saved and backed up at a central location. The goal for fiscal year 2015 is to have all data extracted and summarized from the 3 year study (2012-2014).

Black Bear Program

Laura Conlee, *Black Bear Program Leader*

Black Bear Distribution and Harvest Investigations

A record total of 9,650 bear-hunting permits were issued for the 2013 hunting season. A total of 147 bears (185 in 2012) were taken during the 35-day season, including 119 during the 17-day September segment and 28 during the 18-day November segment. Ninety-two males, 54 females and 1 unknown were taken in Berkshire (n=57), Franklin (n=32), Hampden (n=25), Hampshire (n=24), Middlesex (n=1) and Worcester (n=8) counties. There were 33 additional confirmed mortalities in CY 2013. These mortality records are collected by DFW staff and through Environmental Police call logs and included: 26 road-kills; 3 bear taken under M.G.L. Ch. 131, Sec. 37 (1 for causing property damage; 2 livestock depredations); 1 illegal kill, 1 of unknown causes; and 2 euthanized in Large Animal Response Team situations. The Division received 173 bear calls and the Massachusetts Environmental Police received 439 bear calls.

In 2013, 11% (828 of 7,727) of hunter survey respondents indicated they bear hunt and 730 individuals specified some level of effort for bear hunting. Of respondents that indicated effort, 73% (536/730) utilized the September season and 72% (522/730) utilized the November season. Forty-six percent (336/730) specifically targeted bear (they did not overlap bear hunting with deer hunting). Success rates as calculated from the hunter survey were higher in September (3.7%) compared to November (1.9%). Overall success rate as reported on the survey (4.1%) is higher than success rates based solely on permit numbers (1.5%), suggesting that many permit holders likely do not spend time afield bear hunting.

Black Bear Research

From January 2014 – June 2014, 8 of 17 radio-collared sows were handled in winter dens, 2 adult sows were captured in barrel traps, and 1 adult sow was captured as a free-range bear. As of June 30, 2014, 10 adult sows were monitored with GPS collars, 7 adult sows with VHF collars, and 4 yearling females with VHF collars. In 2009, a pilot habitat study began in conjunction with the MA Cooperative Fish & Wildlife Research Unit. Three GPS collars were deployed in 2009. Five GPS collars were deployed in 2010 and nine GPS collars were deployed in winter 2011. Nine GPS collars were deployed between 2012 den work and barrel trapping or free-range capture. Twelve GPS collars were deployed between 2013 den work, barrel trapping, and free-range capture. In 2014, 6 new GPS collars were deployed through winter den work or spring/summer capture. In total, 13 sows were monitored with GPS collars during at least some point between July 1, 2013 and June 30, 2014. To date, 24 female bears have been monitored with GPS collars, 20 of which have been monitored for at least 2 reproductive seasons. The Division is working cooperatively with the MA Cooperative Fish & Wildlife Research Unit at the University of Massachusetts to refine the current black bear population model, create a statewide black bear habitat map, conduct a human dimensions study of MA residents' attitudes toward black bears and black bear management and to develop a comprehensive black bear management plan for the state.

Furbearer Program

Laura Conlee, *Furbearer Program Leader*

Overview

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

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

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

Harvest and Population

Harvest activities provide recreational and economic opportunities for citizens and households in the state. A total of 2,307 furbearers were tagged at Division check stations during the 2013-14 season. The harvest (a combination of hunted, trapped, and/or salvaged) of tagged species included 969 beaver, 103 bobcat, 420 coyote, 459 fisher, 65 gray fox, 60 mink, 166 river otter, and 65 red fox. Trapper survey results indicated that a minimum of 55 raccoons, 110 muskrat, 8 skunks, 28 opossum, and 8 weasels were trapped during the 2013-14 season.

Division staff conducted a hunter survey of all license buyers that provided an email address in 2013. Coyote is the most popular furbearer that is hunted. Nineteen percent of respondents indicated that they hunted coyote, and 58% of those respondents specifically targeted coyotes. Four percent of all respondents hunted fox, 2.5% hunted bobcat, 1.9% hunted raccoon, and .7% hunted opossum.

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

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

Wetland/Beaver Management

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

Licensed trappers tagged 934 trapped beaver during the 2013-14 trapping season, of which 281 were reported as taken under emergency permits. PAC Agents reported taking 101 beaver outside the trapping season (April 16, 2013 - October 31, 2013) under emergency permits and 67 beaver during the trapping season (during the trapping season November 1, 2013 to December 31, 2013), of which 11 were taken under emergency permit. Licensed trappers reported through the voluntary trapper survey that 140 beaver were under the local Board of Health 10-day Emergency Permit, which includes beaver taken outside the season (n=110) and only beaver taken during the season that were not sealed at a Division check station (n=30). In total, a minimum of 250 beaver were taken outside of the trapping season as nuisance animals. A minimum of 533 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. Coyote phone calls significantly outnumber those about other furbearer species. (See also the "Human-Wildlife Conflict Trends Project" section, below.)

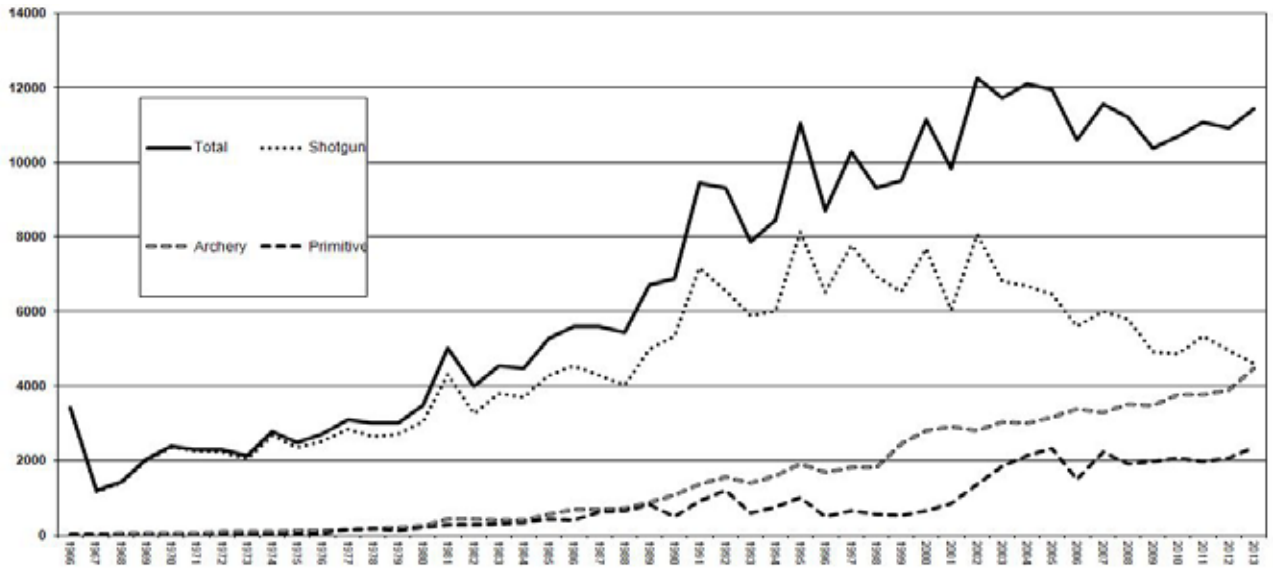
Deer Management Program

David Stainbrook, *Deer and Moose Program Leader*

Harvest and Population

The statewide 2013 harvest of 11,566 deer represents the sixth-highest harvest reported in Massachusetts since 1966 (Fig. 3). The 2013 total harvest was 5% higher than the 2012 hunting season and 5% greater than the previous 3-year average. The 2013 archery season

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



harvest was the 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 10-12 deer per square mile of forest in some areas of western Massachusetts to over 50 deer per square mile on the islands of Martha's Vineyard and Nantucket. Areas with little to no hunting access can see deer numbers above our estimates. For example, a non-harvest based deer survey on the Blue Hills Reservation near Boston yielded estimates of over 80 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 goals 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 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 goal, so antlerless permit allocations have remained high in an effort to increase harvest of females. Challenges still remain in eastern WMZs because of the difficulty of hunter access in more developed areas.

The ADP allocation for 2013 was 40,725 permits, a 4% increase from 2012. However, 32,498 permits (80% of allocated) were actually issued in 2013 (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 antlerless permit allocation, we adjusted the model to compensate for the significant proportion of applicants who do not come back to play and pay and the under-harvest associated with the permit under-issuance.

Table 6. The 2013 white-tailed deer harvest by season and sex/age class in Massachusetts.

Season	Adult Male	Female	Button Buck	Total	Percent Harvest
Paraplegic	2	2	2	6	0%
Archery	2,970	1,222	294	4,486	39%
Shotgun	2,508	1,675	426	4,609	40%
Primitive	1,039	1,100	204	2,343	20%
Sub-Total	6,519	3,999	926	11,444	99%
*Quabbin**	37	71	14	122	1%
State	**6,556**	**4,070**	**940**	**11,566**	**100%**

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

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

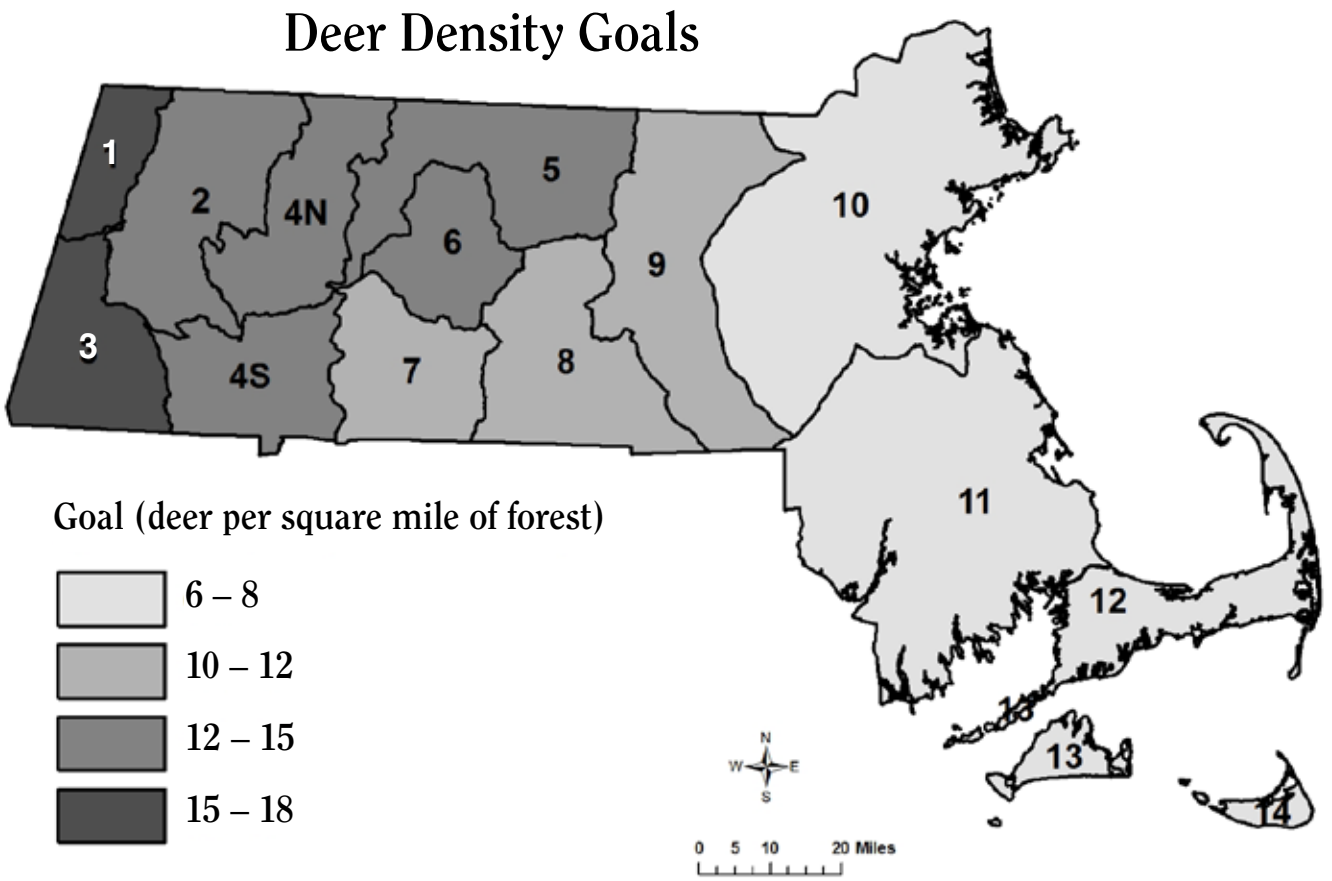


Figure 5. Map depicting how the current deer densities relate to the numeric deer density goals for the 15 Wildlife Management Zones in Massachusetts.

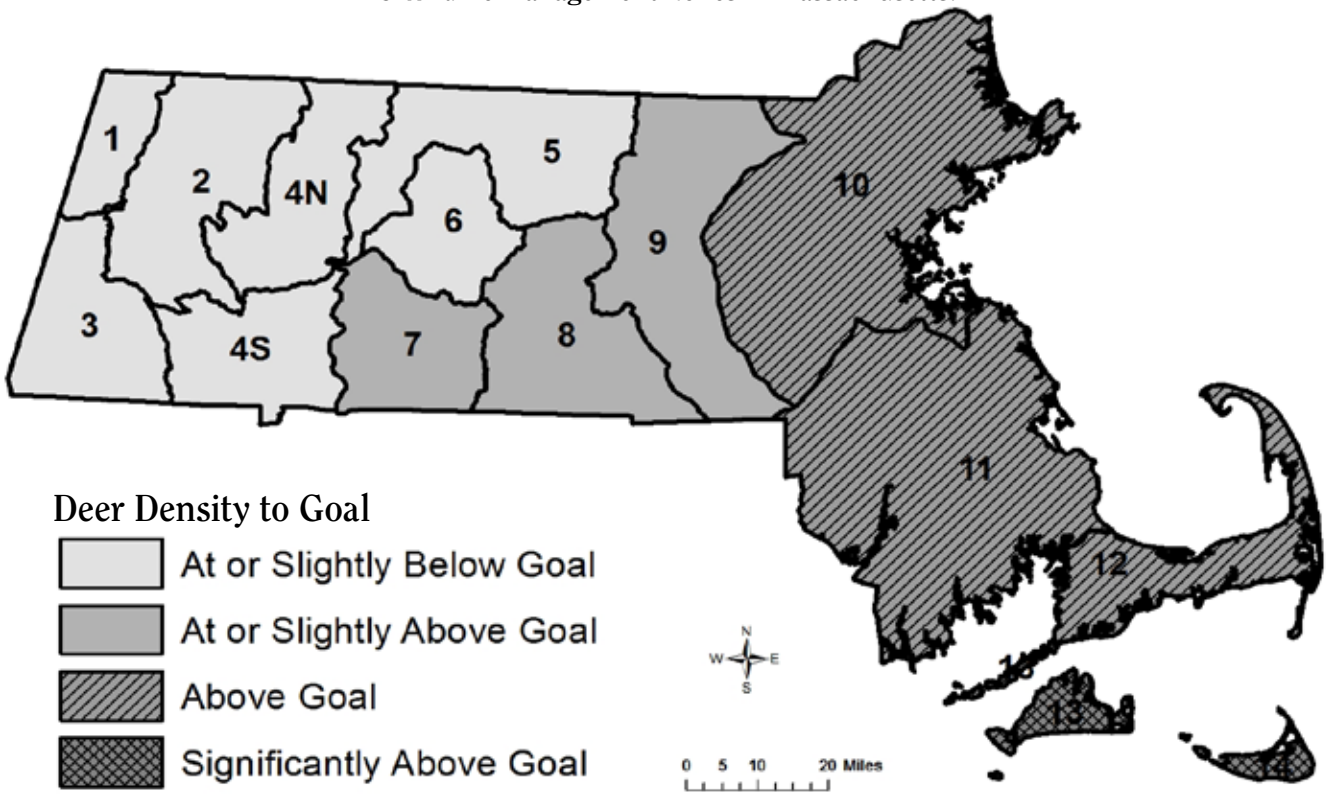


Table 7. The 2013 white-tailed deer harvest by deer sex/age and the number of antlerless deer permits allocated and issued, by WMZ, for Massachusetts (Quabbin excluded).

WMZ	Male	Female	Button Buck	Total	Goal	2013 Allocation	2013 Issued
1	157	37	3	197	Increase	400	291
2	355	24	1	380	Increase	175	137
3	355	97	20	472	Increase	1,100	861
4N	347	60	4	411	Increase	375	279
4S	176	27	2	205	Increase	275	171
5	359	176	25	543	Increase	1,250	1,007
6	111	41	5	157	Increase	450	337
7	377	189	38	604	Stabilize	2,250	1,785
8	542	260	35	836	Stabilize	2,800	2,242
9	569	304	65	932	Stabilize	4,100	3,186
10	1,068	1,019	253	2,340	Reduce	11,000	9,805
11	1,422	1,003	235	2,660	Reduce	10,500	8,541
12	167	52	6	225	Reduce	650	465
13	282	340	104	726	Reduce	2,700	1,894
14	232	370	130	732	Reduce	2,700	1,497
Statewide	**6519**	**3999**	**926**	**11,444**		**40,725**	**32,498**

Research

No deer-related research projects occurred in FY 14.

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 2013. 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.

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

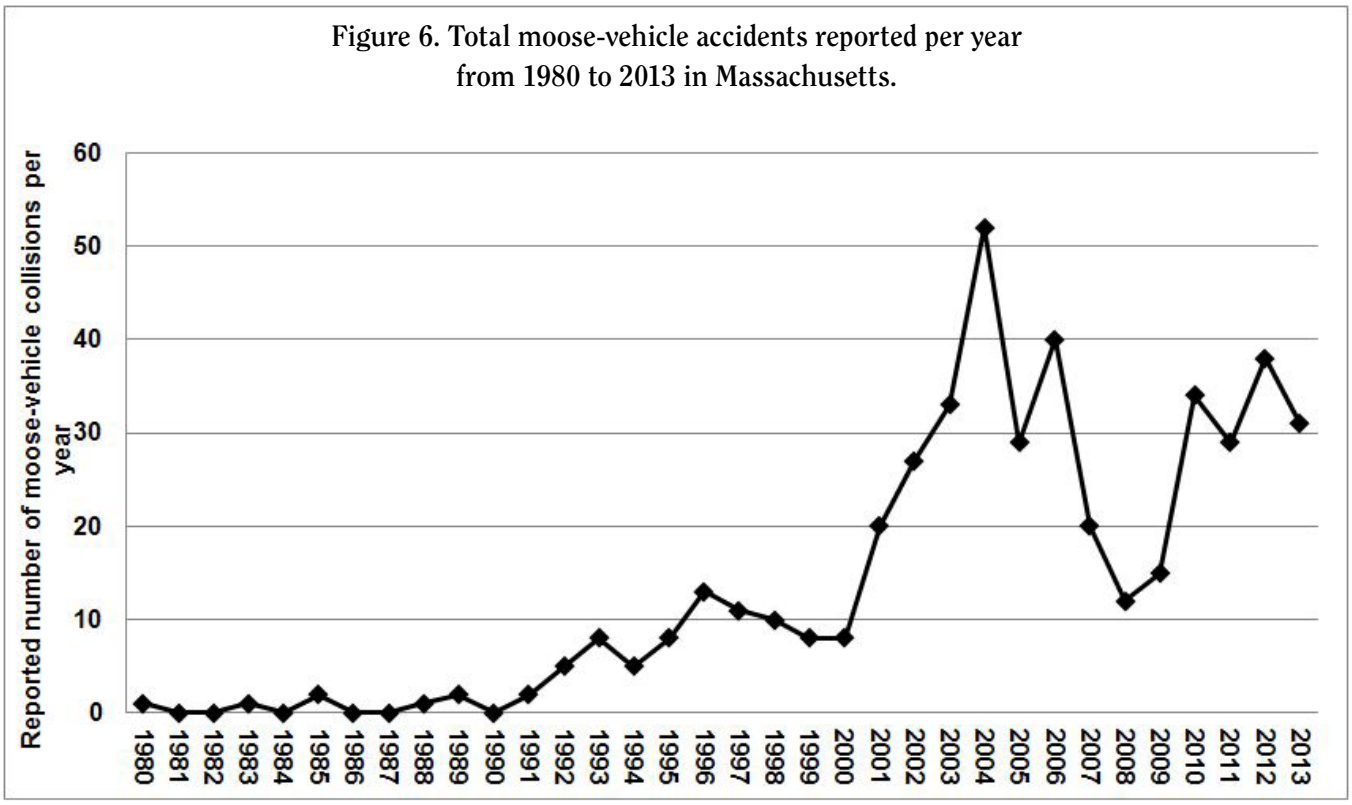
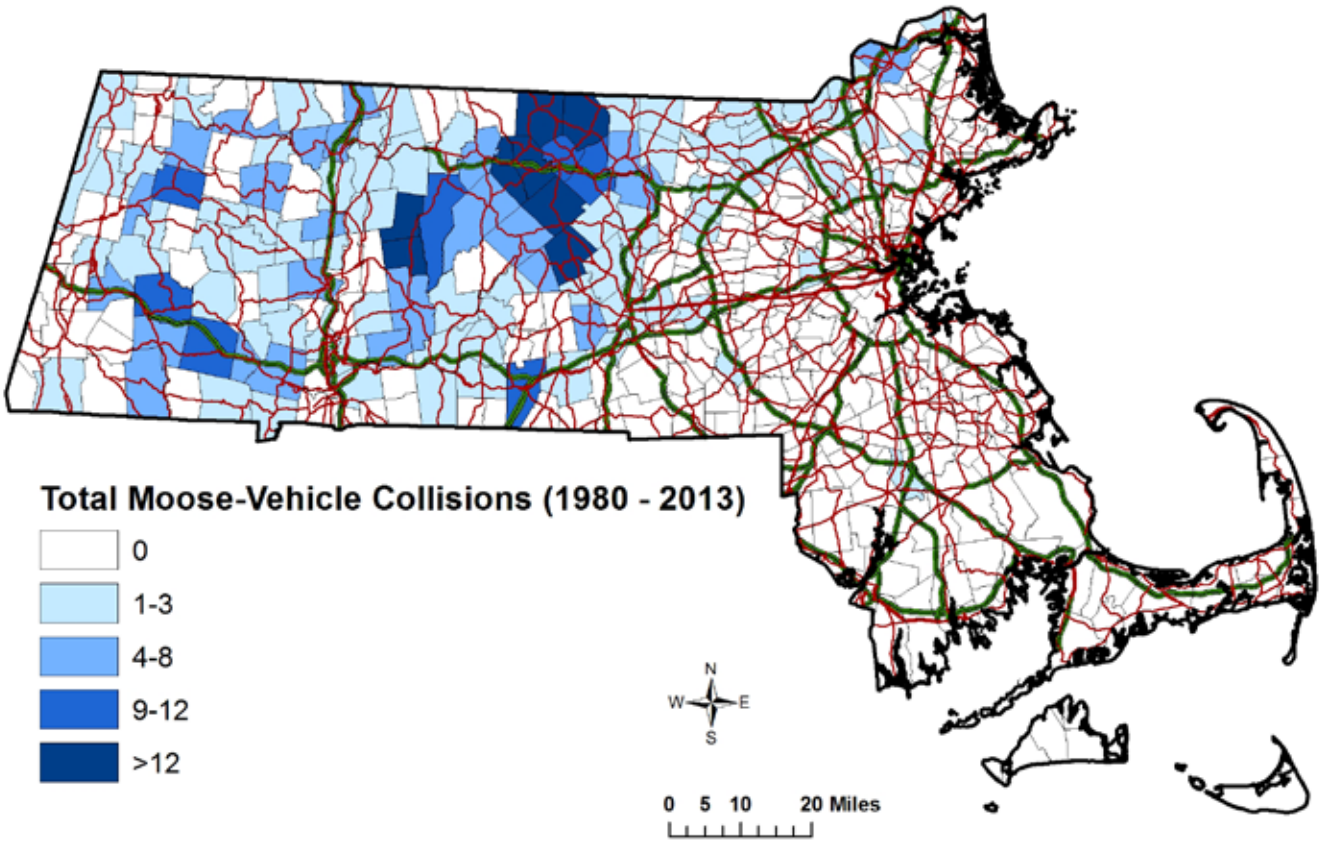


Figure 7. Total number of moose-vehicle accidents reported by town from 1980 to 2013 in Massachusetts.



Moose Program

David Stainbrook, *Deer and Moose Program Leader*

Traditionally, the DFW has collected reported data of moose sightings, moose found deceased, and moose-vehicle accidents (MVA). In 2013, there were over 50 reports made to DFW concerning moose, which included 31 MVAs, 1 train strike, 5 moose found dead, 3 illegal kill reports, 7 Large Animal Response Team (LART) responses, and 1 relocated problem moose. However, MVAs are not routinely being reported to the DFW or to the MEP; 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 that 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 (Fig. 7).

The current moose population in Massachusetts is estimated to be around 1000 animals. We use a basic population model that incorporates standardized sighting rates from an annual deer hunter survey (we ask a random sample of deer hunters how many moose sightings they had per hour of deer hunting) and available moose habitat in the 12 WMZs that we feel have the potential for moose (we exclude Cape Cod and the Islands in our estimate, as they do not represent potential moose habitat). The hunter observation data can be used to map moose distribution across the state (Fig. 8).

Chronic Wasting Disease

Funding provided by the USDA APHIS ceased in early 2012, thus we did not collect or test any moose in 2013. We will sample for CWD in suspect moose provided we can allocate the funds required for testing.

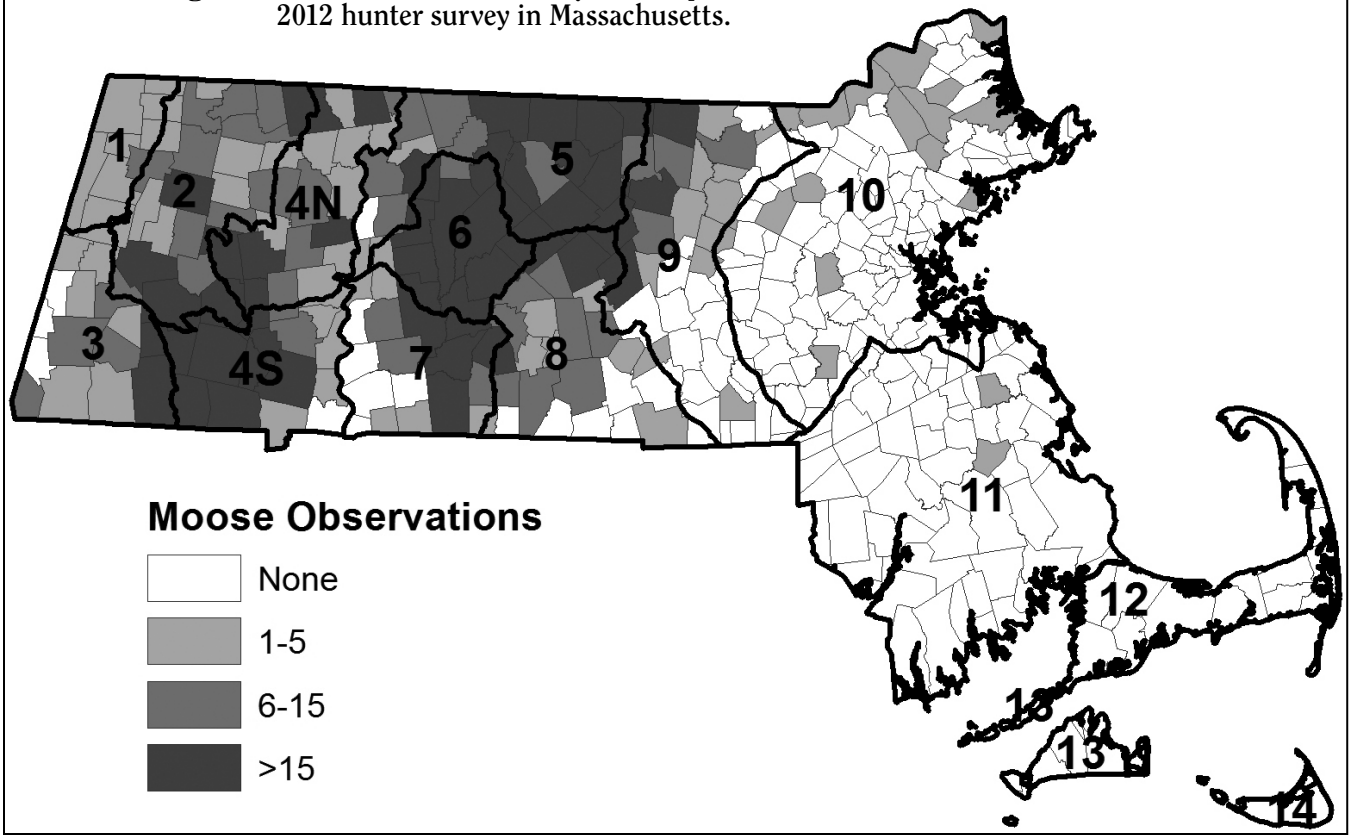
The Human-wildlife Conflict Trends Project

Michael Huguenin, *Wildlife Biologist*

Overview

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

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



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.

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 5,436 reports since 2010. Within those years, bears, coyotes, and foxes have remained amongst the top three species reported (Fig. 9). Reports were recorded from 260 of 351 towns across Massachusetts between July 1, 2013, and June 30, 2014, totaling 962 (Fig. 10). Two hundred and ninety (30%) reports came from the Central District, 260 (27%) came from the Northeast District, 171 (18%) from the Western District, 124 (13%) from the Connecticut Valley District, and 95 (10%) from the Southeast District. We averaged 3.7 reports per town (ranging from 1 to 51). The town of Pittsfield for the second consecutive year reported the highest number of interactions with 51. Worcester reported the next highest with 33 reports of interactions. Reports ranged from general inquiry to threat to public safety and covered nearly 100 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 51 reports involving threats to public safety, which include wildlife found inside a dwelling, wildlife approaching humans and/or pets on a leash, aggression toward humans, and human attack. Among these, 5 were reported as human attack and involved the following species, turkey (1), bees (1), bear (1), hawk (1) and fox (1). We received 74 reports of depredation/agricultural damage, which include missing pet or livestock, aggression toward pet, attack on livestock witnessed or not witnessed, and attack on pet witnessed or not

Figure 9. Total reports of the top five species by year.

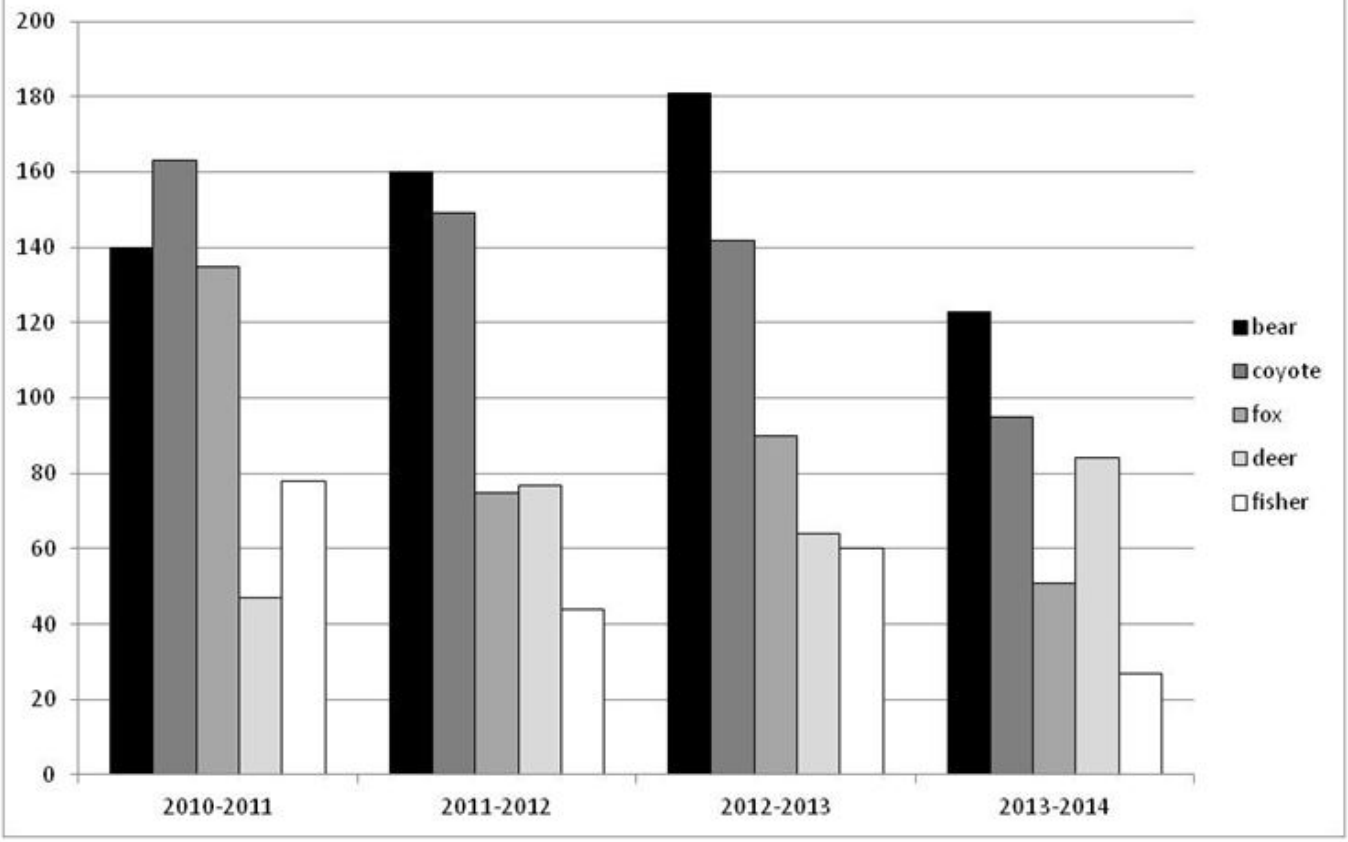
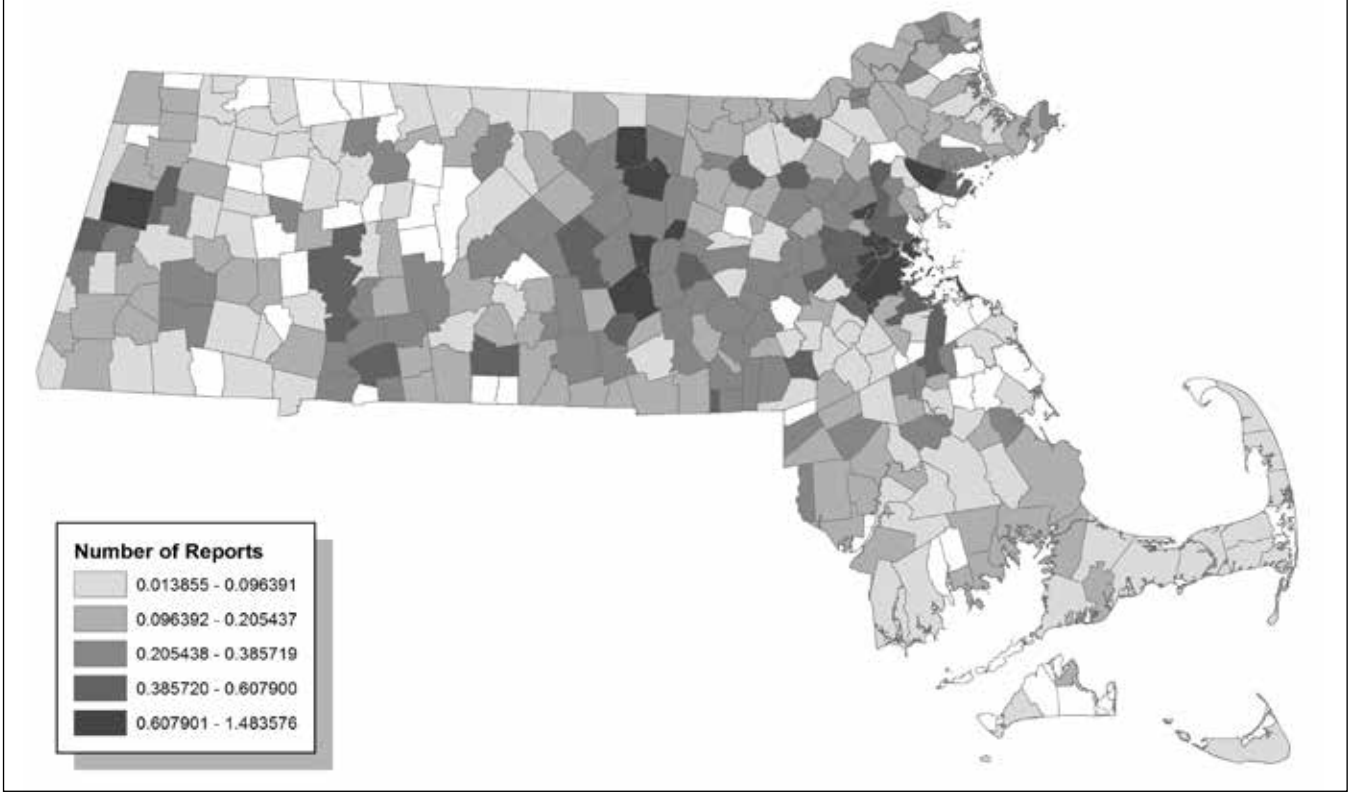


Figure 10. Map of Massachusetts, showing animal reports per square mile of town.



witnessed. Of the 74 reports, 27 included information regarding a pet or livestock species depredated and 23 were reports of crop damage.

Conclusions

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

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

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

Wildlife Section Staff

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Laura Conlee, *Bear Project and Furbearer Program Leader*
Rebecca DiGirolomo, *Habitat Biologist*
Brian Hawthorne, *Habitat Biologist*
H W Heusmann, *Waterfowl Program Leader*
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David Scarpitti, *Upland Game Biologist*
David Stainbrook, *Deer and Moose Program Leader*
Andrew Vitz, *State Ornithologist*

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; the landowner provided 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 played an integral role in restoring and conserving wildlife habitat on a diverse array of private lands across the Commonwealth with goals to (1) enhance wildlife habitat for species-at-risk, (2) identify and reclaim appropriate sites for management of declining habitats (especially open land: old-field and early-successional forest, wetlands, coastal habitat, and pine barrens), and (3) control exotic and invasive plants within habitat being created or restored for species-at-risk.

Funding for this program was allocated by Congress through the Department of the Interior's 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.

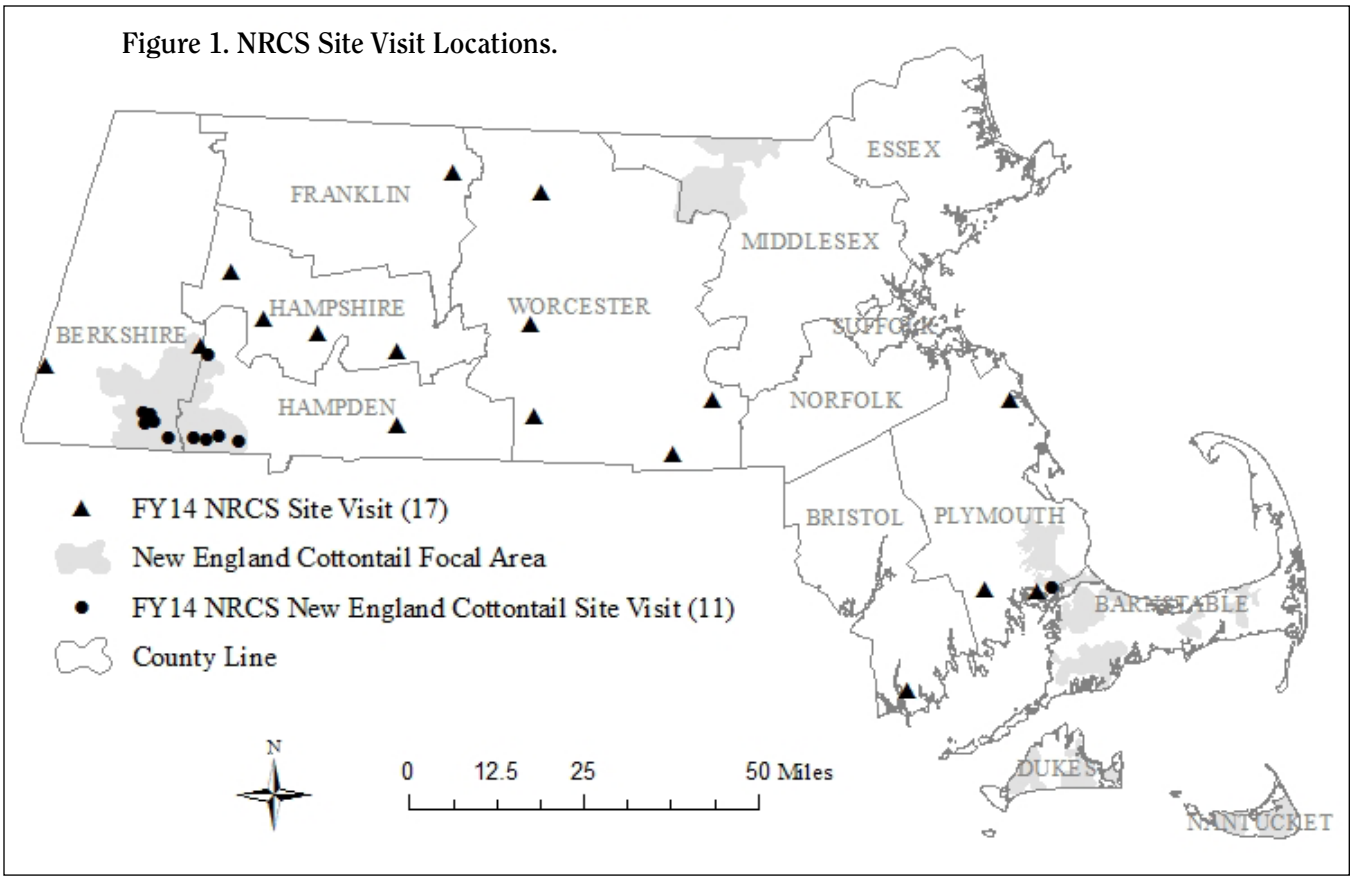
The LIP Coordinator position was vacant for FY14 which limited the program. However, other DFW staff collaborated to accomplish some LIP-related activities. This included revising and preparing a new LIP Request for Response, reviewing and scoring 19 LIP applications from 7 conservation organizations and 2 individual private landowners, completing the documentation/compliance process for funding applications, and preparing contractors for the 19 landowners selected for FY15 funding. Staff also represented Massachusetts at the annual Northeast Habitat Technical Committee meeting and gave a presentation titled "Prescribed Fire on Private Lands: Habitat Management, Flexibility, and Success Stories from the Massachusetts Landowner Incentive Program" at the Tall Timbers Fire Ecology of the Northeast Conference.

Technical Assistance Program to the Natural Resources Conservation Service

Marianne Piché, *Habitat Management Biologist*

The DFW and the NRCS completed the sixth year of a partnership whereby the DFW Habitat Management Biologist (HMB) provides habitat management technical assistance consistent with the goals and objectives of the Massachusetts State Wildlife Action Plan and Biodiversity Initiative to NRCS for Farm Bill funding programs. The Habitat Management Biologist is also responsible for serving as the liaison between NRCS and the DFW on the Conservation Strategy for the New England Cottontail. The HMB continued to provide NRCS staff with assistance in the development of funding applications and work directly with them to plan, implement, and supervise activities associated with habitat restoration and management on private lands across Massachusetts.

Figure 1. NRCS Site Visit Locations.



During FY14, the Habitat Management Biologist participated in 17 site visits to plan a variety of habitat management projects and 11 specifically for New England Cottontail (Fig. 1). The HMB prepared a total of 25 habitat management proposals with nine being for New England Cottontail. A total of 12 applications were funded with one eligible landowner receiving funding for New England Cottontail habitat management. In addition, NRCS funded one application for development of a Forest Stewardship Plan making the landowner eligible to apply for New England Cottontail habitat management and one application to manage habitat for Bog Turtle. Due to passage of the 2014 Farm Bill only those funds remaining from the 2008 Farm Bill were available. With applications totaling two times the available funding and fewer application cycles, fewer landowners were awarded contracts than in previous years. NRCS funding allocated to the 12 contracts that include plans for habitat management within 392.4 acres totaled $160,459.00.

The HMB continued to coordinate multi-agency New England Cottontail Land Management Team meetings, participate in New England Cottontail Technical Committee meetings, and promote the use of NRCS funding programs for habitat restoration and management on private land. The HMB organized or participated in 8 events to promote the use of NRCS funding including presentations at the Massachusetts Land Conservation Conference and Grassland Bird Conference. The HMB also highlighted the use of NRCS funding for managing Pitch Pine-Scrub Oak systems to benefit New England Cottontail and other rare or declining species in talks at the Tall Timbers Fire Ecology of the Northeast Conference and Southeast Massachusetts Pine Barrens Alliance Forum. In addition, 185 letters were sent to landowners inviting them to attend one of 3 events held to promote management of young forest/shrubland habitat for New England Cottontail and the public was invited to participate in a walk at an NRCS funded site to be managed with prescribed fire. The HMB attended a prescribed burn conducted by the U.S. Fish and Wildlife Service at the Mashpee National Wildlife Refuge to be interviewed for a Boston Globe article titled “New England Cottontail Population Dwindling”. The HMB also co-wrote an article with a Department of Conservation and Recreation Service Forester for the Sandisfield Times titled “It’s Magic Helping Rabbits Reappear”.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

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

Supreme Judicial Court Ruling On MESA Regulations

In FY 14, the Massachusetts Endangered Species Act (MESA) was 24 years old and the MESA regulations (321 CMR 10.00) were 22. On February 18, 2014, the Massachusetts Supreme Judicial Court (SJC) ruled that the Division of Fisheries and Wildlife's long-standing regulations for mapping and regulating development in "Priority Habitat" of state listed species are a reasonable implementation of the Massachusetts Endangered Species Act. The SJC's decision in this case, Pepin v. DFW, upheld an earlier Superior Court ruling that MESA authorized the agency to review projects in Priority Habitat and to limit or require mitigation for impacts that may threaten species' survival.

MESA is designed to prevent extinction and promote recovery of animals and plants listed in the Commonwealth as endangered, threatened, or of special concern. In the lawsuit, the litigants challenged DFW's delineation of their property in Hampden as Priority Habitat for the Eastern Box Turtle, and sought an order striking down all of DFW's Priority Habitat regulations as beyond the agency's authority under MESA.

By upholding the Priority Habitat regulations, the SJC recognized that the Legislature authorized DFW to do what it has done for the past 20 years—take reasonable steps to protect all rare species and to guard against "takes" that kill or injure rare animals and plants, or harm rare animals by disrupting nesting, breeding, feeding, and migration. The SJC affirmed that DFW's Priority Habitat regulations "serve to implement the existing statutory provision prohibiting takes of State-listed species, which is critical to the operation of MESA as a whole" and are "designed to facilitate property development, albeit in an environmentally sensitive manner." The SJC's decision also upheld DFW's delineation of the litigant's property as Priority Habitat.

Key Sites & the Public Land Management Initiative

Building on *BioMap2*, the Natural Heritage and Endangered Species Program (NHESP) completed an analysis to identify very high priority areas for biodiversity conservation. In order to coordinate efforts in land protection by the Commonwealth on these priority sites, NHESP shared the results of this analysis with the Division's Lands Committee, the Department of Conservation and Recreation (DCR) land protection staff, and EEA's Interagency Lands Committee. In addition to identifying important areas to target for land protection, the Key Sites Analysis highlights a critical need to manage habitats and carry out basic land stewardship on public land. To address this need, NHESP worked with the DFW Forestry Program, Wildlife Section, Commissioner Griffin, DFG, and EEA to initiate a major new effort to invest in habitat restoration and stewardship of state-owned public land. Our FY 14 habitat restoration effort spans over 525 acres across six different Wildlife Management Areas—the largest single-year effort ever undertaken by our agency.

Vernal Pool and Rare Species Information System

Utilization of the Vernal Pool and Rare Species Information System (VPRS) continues to expand such that the majority of new vernal pool certification and rare species observation records are now submitted through VPRS. In FY 14, NHESP successfully conducted outreach efforts to increase the use of the system, particularly by traditional data providers such as consultants, researchers, and Division staff.

For FY 14 alone, 170 new people signed up for VPRS, creating 1,807 new observation reports—593 vernal pool certification forms (549 submitted); 256 rare plant observation forms (217 submitted); and 958 rare animal observation forms (520 submitted). Additionally, NHESP Data Staff enter all submitted paper reports into VPRS to enable the processing and tracking of all new submittals through one electronic system. This added another 559 reports for a total of 2,366 observation reports created in VPRS in FY 14. Once submitted through VPRS, the information is reviewed by NHESP using standard data acceptance criteria for inclusion in our database, and the accepted records are entered into the final database by NHESP Data Staff.

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; 4) incorporate conservation priorities into transportation planning; and, 5) implement wildlife transportation and research.

In 2010, four research projects were developed to collect information through volunteer participation on wildlife roadway mortality sightings. 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 2014, over 350 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 14, LLMW installed barrier fencing at two of the highest ranking sites identified by the Turtle Road Mortality Monitoring Program.

In addition to community engagement through citizen science in FY 14, LLMW has installed improved crossing structures and wildlife barriers to enhance public safety and protect endangered species; implemented over 50 acres of 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 nine nesting boxes for American Kestrels, a declining species; and installed and monitored four Peregrine Falcon nesting boxes on bridges.

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.

2013 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 presence of breeding plovers during May and June 2013. Compilation of final census results is still underway. Preliminary results indicate that Massachusetts supported approximately 670 breeding pairs of Piping Plovers in 2013, similar to the 676 pairs tallied in 2012. The preliminary estimate of productivity for 2013 is only about 0.8 chicks fledged per pair, which falls well below that level of 1.24 chicks fledged per pair that we believe is necessary to support a stationary 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 2013.

Terns, Laughing Gulls, Black Skimmers

Cooperators in Massachusetts surveyed more than 140 coastal sites in 2013 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*). Seventy-nine sites were occupied by nesting birds of one or more of these species. Total nesting pairs of Roseate Terns (1,330 pairs), Common Terns (16,336.5 pairs), Least Terns (3,977 pairs), and Laughing Gulls (1,863 pairs) all increased compared to 2012. However, in 2012, our tallies of Common Terns and Least Terns, and possibly Roseate Terns, were artificially low due to overwash events that occurred immediately prior to censuses. Black Skimmers (3 pairs) and Arctic Tern (1 individual) were stable.

Buzzards Bay Tern Restoration Project

Collectively, Bird, Ram, and Penikese Is. supported 1,307 "peak season" pairs of Roseate Terns (vs. 1,262 in 2012; +3.6%) and 6,788.5 "peak season" pairs of Common Terns (vs. 5,231.5 in 2012; +29.8%). The substantial, apparent "increase" in overall Common Tern numbers is mostly or entirely artificial, because in 2012 nests were washed out immediately prior to the census, artificially deflating census estimates, partic-

ularly on Ram and Penikese. Compared to the reliable 2011 estimates, overall numbers were about the same (Common Terns, +5.7%; Roseate Terns, -3.0%).

Bird Island

A complete census was not conducted for Common Terns on Bird in 2013 because of weather. The sampling conducted in lieu of a complete nest count produced numbers judged to be perhaps unrealistically high (3,000+ pairs) given the history of the site, which had been stable for over 20 years at about 1,800 pairs (±140 pairs). Therefore, the estimate was adjusted downwards to 2,500 pairs (+31% compared to 1,902 pairs in 2012), taking into consideration some beneficial changes in habitat from Hurricane Sandy and an exodus of ~500-600 pairs of terns from Penikese. Productivity (1.13 fledglings/pair vs. 0.82 in 2012) was very good. Roseate Tern numbers were relatively stable at 772 pairs (vs. 814 pairs; -5%). Roseate productivity on Bird was excellent at 1.34 fledglings per pair (vs. 1.12). No major predation events were recorded.

Ram Island

Common Tern numbers on Ram jumped 31% to 3,525 pairs (vs. a minimum of 2,693 in 2012), but were essentially stable (+5%) in comparison to the reliable 2011 estimate of 3,345 pairs. Common Tern productivity was very good (1.17 fledglings/pair vs. 0.97). Roseate Tern numbers increased (+22%) to 535 pairs (vs. 439). Productivity was excellent (1.31 fledglings/pair, same as in 2012). Peregrine Falcon predation on both species of tern persisted at this site: 9 to 20 adult terns were killed.

Penikese Island

Common Tern numbers on Penikese (673.5 pairs) were very similar to 2012 numbers (636.5 pairs), but only because the latter estimate was artificially low. Numbers dropped substantially (-44%) from the 1,206 pairs that nested in 2011. This decrease was expected because the colony had experienced severe predation in the two previous years, when very few terns fledged. In 2013, productivity was 1.75 fledglings/nest (vs. 0.32). An Arctic Tern that paired with a Common Tern raised one chick to fledging. Unfortunately, no Roseate Terns nested this year (vs. 9 pairs in 2012, when nearly all nests were overwashed).

Penikese Island Habitat Restoration

Habitat restoration on Penikese 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. Partial burns were conducted in spring 2011 and spring 2012. Herbicide treatment was conducted in late-summer/fall 2012 and 2013. Some native grass (both seed and plants) was sowed/planted in more open areas on the island. A variety of native seed was collected at Crane Wildlife Management Area (Falmouth, MA) to be grown out in greenhouses for planting in fall 2014.

Controlled Burn, Penikese Island.

Common Loon

In 2013, personnel from DFW and the Massachusetts Department of Conservation and Recreation monitored Common Loon (*Gavia immer*) activity in central and western Massachusetts from May until September. In addition, personnel from the BioDiversity Research Institute of Portland, ME conducted a statewide survey of waterbodies that possessed qualities conducive to supporting breeding loons. Thirty-seven territorial loon pairs and 27 nesting pairs were found on 16 waterbodies in Massachusetts. This is the highest number of territorial pairs, the highest number of nesting pairs, and the highest number of occupied waterbodies we have recorded in recent history. However, only 12 chicks survived to fledging in 2013. The resulting productivity values, 0.44 fledglings/nesting pair and 0.32 fledglings/territorial pair, are among the lowest productivity values we have ever recorded. Average productivity from 1990 to 2012 was 0.83 fledglings per nesting pair. In 2013, the primary causes of nest loss were flooding (6-7 nests), abandonment (5 nests), and predation (2-3 nests). Cause of nest loss was unknown for an additional five nests. Two new nesting territories were discovered in 2013.

Bald Eagle

During the summer of 2013, there were 40 known territorial pairs of Bald Eagles in Massachusetts; this is 1 more pair than in 2012, but includes pairs that relocated and their new nest sites were not found. Of the 40 documented pairs, at least 32 pairs incubated eggs and at least 25 pairs successfully fledged 46 chicks. Of the 46 chicks that fledged, 25 were banded by agency staff. In 2009, 2010, 2011, and 2012, there were 27, 32, 36, and 39 territorial pairs, respectively, which produced 38, 41, 37, and 33 fledged chicks. This is the 25th year that Bald Eagles have raised young in Massachusetts since their restoration. During these 25 years, at least 486 wild-born chicks are known to have fledged, and an additional 9 chicks that were captive-born and fostered have fledged (495 chicks in total).

Nesting Bald Eagle Survey

The 2014 Spring Nesting Eagle Survey took place on April 4, when agency staff and volunteers checked known eagle territories and explored areas with potential eagle habitat to verify continued use of "old" eagle nests and try to locate "new" nests. In total, 41 volunteers participated in the count to assist MassWildlife staff on

the increasingly difficult effort to monitor the state's growing numbers of breeding Bald Eagles. The high amount of effort on this single day provides the bulk of information that we gather on the numbers of territorial and nesting Bald Eagles in the state. In addition to the single day count, information on nesting eagles is gathered opportunistically throughout the year.

In 2014, a record number of 46 territorial pairs were documented throughout Massachusetts. The highest concentrations of eagles were along the Connecticut River (11 territories) and Quabbin Reservoir (9 territories). The Merrimack River and the larger water bodies in southeast Massachusetts have multiple pairs of nesting eagles. Single nests were reported from numerous waterbodies throughout the state. New nests were documented in Ipswich, Lenox, Royalston, and Northbridge.

Peregrine Falcon

The number of pairs of Peregrine Falcons increased from 18 in 2009 to 20 in 2010, 23 in 2011 and 2012. During the 2013 nesting season, 24 nesting pairs were confirmed, but 3 additional older nesting pairs moved and were not relocated, and four established sites were not visited to be confirmed, so the total number of nesting pairs was probably at least 31. Of the 31 probable pairs this year, 24 were confirmed active and monitored for their success or failure. Of these 24 active pairs, 2 did not lay eggs, 5 laid eggs but failed, and 17 pairs fledged at least 48 chicks (31 chicks were banded from 12 nests). This is the largest number of chicks fledged in any single year, exceeding the previous year by six chicks 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" was completed in 2013 and can be found online at (http://www.mass.gov/eea/docs/dfg/nhesp/species-and-conservation/grassland-bird-plan-final.pdf).

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

The top site in terms of its current overall importance to Upland Sandpiper and Grasshopper Sparrow populations in the state (and the region) is Westover Air Reserve Base, which hosts the largest population of both species in New England. It was recognized that the Westover birds are critical in sustaining the regional population of both species. However, the two sites with the highest long-term management potential were Southwick Wildlife Management Area (Southwick) and Frances Crane Wildlife Management Area (Falmouth). Ongoing management at these sites will provide the backbone for grassland bird conservation on state land.

Reptiles and Amphibians

Northern Red-bellied Cooter; Federally Endangered

For the 29th consecutive year, efforts were made to locate Northern Red-bellied Cooter nests and place wire cages over them in order to prevent predation. The first nest was found on May 30th, which is nearly on target with the typical June 1st start of the nesting season, and the last nest was discovered on July 4th, about two weeks earlier than usual. The entire nesting season lasted 36 days, with unusually warm weather being a prominent factor of the shortened nesting period. A total of 49 nests were located and caged by contractor John Crane. These 49 nests produced 731 eggs (14.92 per nest), which resulted in 469 viable hatchlings (9.57 per nest). Of these, 100 hatchlings were saved for headstarting, and 369 were directly released back into Federal Pond. Twelve nests had to be moved due to their close proximity to existing dikes and roadways, and 15 nests were pulled in fear of the high incidence of insect infestation. Additionally, nests were picked up at the Davidson Cranberry Bog Complex, Myles Standish State Forest, Long Pond, and Great South Pond. Hatchlings from each location (15 in total) were incorporated into the Headstart Program.

A total of 115 hatchlings from Federal Pond in 2012, plus an additional 6 hatchlings from Crooked Pond, were headstarted by 24 cooperating organizations and individuals and released in June 2013. Since 1984, a total of 3,622 headstarted Northern Red-bellied Cooters have been released after nine months of headstarting.

During the 2013 field season, we initiated a study to assess the efficacy of the Headstart Program. The study focused on assessing population size and reproduction and recruitment at two early headstart release sites with no wild cooters. Preliminary results show high survivorship of headstarted turtles to adulthood and evidence of nesting and juvenile recruitment.

Bog Turtle

During the 2013 field season, turtle surveys were performed at three sites. Approximately 30 person-hours were spent surveying for Bog Turtles at these three sites. In addition, multi-day formal population monitoring was conducted at two sites, yielding observations of 29 Bog Turtles.

Habitat management activities occurred at one of our known Bog Turtle sites. Prescribed grazing was initiated, beaver deceivers and flow devices were maintained, beaver were trapped, and herbicide was used to reduce invasive plant species at the site.

Blanding's Turtle

Staff participated in a regional conservation project supported by a State Wildlife Grant. This work entailed participation in monthly meetings, site priority determination, development of a population monitoring program, and implementation of the monitoring program. Prior to the survey season, sites were selected for sampling to collect baseline data as part of the population monitoring program. During the survey season, visual surveys were conducted at six sites and trapping surveys were conducted at seven sites, using standardized protocols, from April 10 to June 21 2013. During these surveys, 11 Blanding's Turtles were observed at four of six visual survey sites and 90 turtles were captured at four of seven trap sites. Females were encountered much more frequently than males or juveniles (41.3%, 22.7%, and 36% respectively). Using Oxbow NWR data from this year's single spring trapping event and 2012 spring capture data, a population of 931 ± 124 SE individuals was estimated to be at the site.

Wood Turtle

Staff performed surveys as part of a Regional Conservation Needs Grant project funded through the Northeast Association of Fish and Wildlife Agencies. Thirty-two sites were sampled from April 9- June 2, 2013 to provide baseline abundance estimates for Wood Turtles, using protocols developed by the Northeast Wood Turtle Working Group. One hundred two turtles were observed during 98 surveys.

Marbled Salamander

Twenty-six surveys were conducted (2 dipnetting, 3 visual surveying, 21 substrate searching) at potential breeding wetlands to discover new breeding sites and/or update relatively old records. One of the surveys was performed to determine hatching success at a wetland that did not fill with water until late January or early February. The duration of egg viability in sub-freezing temperatures had not been investigated previously in MA. Surveys yielded an observation of Marbled Salamander (3 larvae) only at the wetland investigated for hatching success. The observation provides valuable insight about the breeding ecology of Marbled Salamander in MA and, in turn, helps inform future inventory planning efforts. During surveys targeting other amphibian species, Marbled Salamander larvae were observed incidentally at 12 wetlands, each representing a new breeding site.

Blue-spotted Salamander

Thirty-two surveys were conducted (egg-mass searching) at potential breeding wetlands of Blue-spotted Salamander (i.e., Ambystoma laterale side of the A. jeffersonianum-laterale complex) to confirm previous reports, update relatively old records, and/or discover new breeding sites. Surveys yielded observations of Blue-spotted Salamander at 10 wetlands, of which 6 represent new breeding sites. One of the sites, due to its geographic location, possibly represents a diploid population, which is extremely rare in Massachusetts. Following additional inventory efforts in the region during 2014 and 2015, we hope to perform genetic analyses to determine the likelihood of this and other local populations consisting entirely (or predominantly) of diploid individuals (i.e., "pure" A. laterale). A species distribution model was completedunder contract in December 2013 and will be used for inventory planning in 2014 and 2015.

Jefferson Salamander

A special inventory project for Jefferson Salamander (i.e., A. jeffersonianum side of the A. jeffersonianum-laterale complex) was developed to discover new breeding sites, confirm previous reports, and update relatively old records. The ultimate goal was to better understand the species' status in MA and inform future Priority Habitat delineations. NHESP staff, a contractor, and two volunteers collectively conducted egg-mass searches at 397 potential breeding wetlands, yielding observations of Jefferson Salamander at 149 wetlands; 142 of the wetlands represented new breeding sites. The project results give NHESP much more flexibility in prioritizing sites for conservation of the species.

Four-toed Salamander

A special inventory project was developed and administered to further investigate the distribution and relative abundance of Four-toed Salamanders in western Massachusetts. Nest searches were conducted by two contractors and one subcontractor at a total of 212 potential breeding wetlands distributed randomly among relatively unfragmented forest on protected land. Surveys yielded observations of Four-toed Salamanders at only 10 wetlands, suggesting that the species is much less common in the western region of the state compared to the eastern and central regions.

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

On 1 and 11 November 2013, the primary site for Northeastern Beach Tiger Beetle (*Cicindela dorsalis dorsalis*) was visited to assess the damage to beetle populations and their habitat by Hurricane Sandy. Thousands of larvae were observed having survived the storm. Adult surveys occurred on three days in July. The peak count for the primary site was 2,106 individuals. The secondary site had collapsed, however, and yielded a count of only 25 individuals. NHESP also assisted USFWS at the Monomoy NWR count, where nearly 5,000 individuals were observed.

Puritan Tiger Beetle (Cicindela puritan); Federally Threatened

No work was conducted on Puritan Tiger Beetle (*Cicindela puritan*) during the reporting period, and

only eight individuals were reported to NHESP by a USFWS contractor.

Moths and Butterflies

Frosted Elfin Butterfly

The Myles Standish State Forest occurrence was updated and information was simultaneously obtained for the Hoary Elfin Butterfly (*Callophrys polios*), a potential candidate for state listing.

Coastal Swamp Metarranthis Moth

Rearing of this species was initiated in 2012 and continued in 2013, in order to learn more about the life history of this species.

Culvers Root Borer Moth

There are no recent records of this very rare and ecologically specialized moth from Massachusetts. However, its host plant is Culver's-root (*Veronicastrum virginicum*), a plant that grows in Berkshire County, and is itself listed as Threatened in Massachusetts. One population of Culver's-root in Great Barrington was intensively surveyed for the Culver's-root Borer Moth without success. However, this survey resulted in a detailed occurrence update for the population of Culver's-root.

Shiny Gray Carpet Moth

This very rare and ecologically specialized moth is only known from two sites in the state. It was confirmed extant at one site in Colrain in 2012, and larvae were reared to learn about its poorly understood life history. In 2013, the second site (Knightville WMA, where it was last observed in 1997) was intensively surveyed, but the species was not found. However, at this site, data was simultaneously obtained for the West Virginia White Butterfly (*Pieris virginiensis*), a potential candidate for state listing. Several other sites with apparently suitable habitat for the Shiny Gray Carpet Moth were surveyed, but without success.

Dune Noctuid Moth

Significant progress was made in 2013, which was the first year of an ongoing study of the previously unknown life history of this species.

Plants

Rare Plant Inventory

During the 2013 field season, 344 rare plant records were updated, searched for, or discovered. One hundred and fourteen new plant populations were found and 582 plant element occurrences were verified and mapped.

Special Projects

Butternut (*Juglans cinerea*), a watch-list tree species, has been in decline due to butternut canker, a fungal infection. Additionally, hybridization with Japanese Walnut (*Juglans ailanthifolia*) may also be a threat to this species. Butternut tissue samples were collected and sent to Notre Dame during both 2012 and 2013 for genetic analysis to test for hybridization with Japanese Walnut. Results have not yet been compiled or published.

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

Sandplain Gerardia (*Agalinis acuta*); Federally Endangered: Population censuses or sampling were conducted at three locations on Martha's Vineyard and four on Cape Cod. Population numbers were lower in 2013 than in previous years, though a slight rebound was noted after the very low numbers observed in 2012.

Small Whorled Pogonia (*Isotria medeoloides*); Federally Threatened: Population censuses were conducted at two populations in 2013. The numbers were similar to past years; 69 plants were observed, 25 of which were in fruit.

Northeastern Bulrush (*Scirpus ancistrochaetus*); Federally Endangered: A survey of the two known sites, which are in different towns, was completed late in the season; the extent of population could not be determined. No de novo surveys for this species were completed during the 2013 field season.

General Habitat Management Projects

The Program continued to work in cooperation with 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 on a power line in the vicinity of a rare plant, *Carex polymorpha*.

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, DCR, The Massachusetts Department of Agricultural Resources (MDAR), and the USFWS's Silvio O. Conte National Wildlife Refuge, controlled populations of the plant for a fourth 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 demonstrated invasive tendencies in Lenox MA, 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.

Aquatic Species

Aquatic Species Distribution and Status Assessments:

Ranks and regulatory protectiveness of all MESA listed aquatic species were reviewed and new ranks were assigned using updated ranking criteria. Data and feedback were provided on region-wide conservation needs for freshwater mollusks compiled by the North Atlantic Landscape Conservation Cooperative. Initial status assessments were conducted on two species of freshwater mussel proposed for inclusion in the 2014 State Wildlife Action Plan (*Anodonta implicata* and *Margaritifera margaritifera*).

Special Projects

The Federal Energy Regulation Commission is in the process of relicensing Turners Falls and Northfield Mountain projects in Montague and Northfield, MA.

NHESP has been involved in the review of project operations on state-listed freshwater mussels and has proposed studies to examine the effects of hydropower operations on three listed species in the Connecticut River: *Alasmidonta heterodon, Lampsilis cariosa, and Ligumia nasuta*. NHESP will continue to provide feedback and technical aid throughout the studies and relicensing process.

Management of Natural Resource Damage Assessment awarded funds to survey freshwater mussels in the Connecticut River.

NHESP reviewed and selected two contract proposals to conduct surveys in 14 miles of the Connecticut River (New England Environmental, Inc.) and 15.43 miles of tributaries (University of Massachusetts Boston). Sites were selected based on proximity to Holyoke Tar impact sites, NHESP data needs, and effectiveness of environmental review or land protection in future mussel conservation. Contract management will continue through the 2014 field season and survey reports will be submitted to NHESP and the Trustees in spring of 2015.

Regulatory Review

The following table summarized the environmental reviews conducted during FY 14:

Review Type	Count
Conservation & Management Permits	20
Data Releases	64
MESA Information Requests	157
Forest Cutting Plans	98
MESA Project Reviews	665
MEPA Reviews	64
Notices of Intent	686
Scientific Collection Permits	76
Other	105
Total	**1935**

Data Management and Data Products

In FY 14, NHESP processed a total of 560 new rare species, natural community, and certified vernal pool records, and updated 1,126 existing records. The data processed were in the following categories:

FY 14 Totals	New Records	Updates to Existing Records
Vertebrates	114	592
Invertebrates	51	83
Plants	116	364
Communities	69	17
CVPs	210	70
Total	**560**	**1126**

Land Protection

In FY 14, DFW spent about $5.67 million to protect 4,004 acres of land across the state, bringing the agency's total land holdings to just over 200,000 acres. Several of this year's acquisitions were of particular relevance to protection of rare species and exemplary natural communities, as noted below.

Northeast District

Threatened Blanding's Turtles, considered to be rare across New England, will benefit from the protection of 286 acres along Unkety Brook in Dunstable and Groton, and near the upper Parker River in Groveland and Georgetown.

Southeast District

In Plymouth, DFW acquired 185 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 Threatened Barrens Dagger Moth and Special Concern Eastern Whip-poor-will.

Central District

With the acquisition of a conservation easement on 305 acres near Muddy Brook in Hardwick, protection of the habitat of a population of Wood Turtles (Special Concern) is nearing completion.

Valley District

Along the Mill River in Hatfield, DFW acquired 42 acres, conserving habitat for the federally listed Dwarf Wedge Mussel (Endangered), as well as four Special Concern species, including two mussels, a dragonfly, and a turtle.

Western District

Acquisition of fee and conservation easement on 325 acres on Monument Mountain in Great Barrington adds substantially to the protection of a *BioMap2* Forest Core Habitat, as well as a Threatened plant and two species of Special Concern.

Natural Heritage and Endangered Species Program Advisory Committee

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

Associate members are: William Brumback, Andy Finton, Timothy Flanagan, Mark Pokras, Kevin Powers (*part-year*), Karen Searcy (*part-year*), Dave Small, and Bryan Windmiller.

Presentations from Agency Staff

Finding a Balance between Restoration and Regulation after One of the Largest Inland River Violations in New England since the Passage of the Wetland Protection Act & the MA Endangered Species Act (Caleb Slater, Anadromous Fish Biologist)

Land Purchase Selection: Process and Criteria (Craig MacDonnell, Chief of Wildlife Lands, and Lynn Harper, Habitat Protection Specialist)

Interagency Agreement with MassDOT (David Paulson, Endangered Species Review Biologist)

2013 Jefferson Salamander Inventory Project: Strategic Surveying to Better Inform our Regulatory Approach (Jacob Kubel, Conservation Scientist)

Natural Communities: Field 2013 (Pat Swain, Natural Community Ecologist)

Botany Field Work 2013 (Bryan Connolly, State Botanist)

Overview of Terrestrial Invertebrate Field and Lab Work (Mike Nelson, Invertebrate Zoologist)

Key Sites: Protecting Our Investment in Public Land (Jonathan Regosin, Chief of Conservation Science)

Conserving Snake Species of Greatest Conservation Need Threatened by an Emerging Fungal Skin Disease (Thomas French, Assistant Director)

Natural Heritage and Endangered Species Program Staff

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Michael Nelson, Ph.D., *Invertebrate Zoologist*
David Paulson, *Endangered Species Review Biologist*
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Tim Simmons, *Restoration Ecologist*
Patricia Swain, Ph.D., *Natural Community Ecologist*
Amanda Veinotte, *Administrative Coordinator*

INFORMATION & EDUCATION

Marion Larson
Chief, Information and Education

Overview

The Information and Education (I&E) Section has the responsibility and challenge of keeping sportsmen and other constituents apprised of regulations, laws, and recreational opportunities related to wildlife. It also provides basic information about and science-based explanations of wildlife-related issues, in order to enhance public understanding of wildlife management and compliance with laws and regulations. Perhaps most importantly, the Section also maintains an active program of educational and promotional outreach, to instill and foster public appreciation for fish and wildlife.

Library

In 2012, a 1-year contract for an Archivist was initiated and filled by Jim Cardoza, retired DFW Wildlife Biologist. The contract provided for Cardoza to conduct research and develop a complete written history of the Division, identify items to be archived, process incoming and backlogged collections of artifacts into the main collection, organize the materials and create an inventory, prepare a collection guide, store or display documentation for preservation and integrity, and coordinate these activities with Division staff. Writing of the history commenced in December 2012 and a draft manuscript was completed in early April, with a copy provided to DFW administrators for their review. The text was essentially finalized by June 2013. However, minor updates and corrections continued for several months. Historical photographs were obtained from Division files at the State Archives and professionally scanned. Recent photographs were obtained from the Staff Photographer and a few miscellaneous ones were acquired from outside sources. The text, tables, graphs, and photographs were ready for layout and design by July 2014. Cardoza's contract was renewed for FY 14. Cardoza then consulted with Information Technology staff regarding an electronic cataloguing system for the library, to be ready for use before or soon after the move to the new Field Headquarters in September 2014. Library items will be grouped (e.g., books, journals, reprints) and processed accordingly. Archival items will be sorted and processed after completion of the library cataloguing. Archival materials (e.g., labels, document sleeves, binders) were ordered. The contract is anticipated to be renewed for 2015.

Information and Outreach

Marion Larson, *Chief of I&E*

Many information and outreach duties were handled by the Chief during this fiscal year as the Outreach Coordinator position remained vacant and the Communications Specialist was on maternity leave during the spring of 2014. The Outreach and Marketing position was posted in early spring of 2014 with interviews conducted in May. The Fisheries and Wildlife Board approved Nicole DeAngelis for the position at the June 2014 Board meeting; her anticipated start date will be sometime in July.

Responses to Public Inquiry

Agency Email Activity

A total of 2,660 agency email messages (2,219 FY 13) were processed during this fiscal year. This represents yet another increase in agency email inquiries over the past four years. Biologist Bridgett McAlice, who is assigned to the Wildlife Section, responds to agency emails with guidance from the I&E Chief.

Media Inquiries

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

In FY 14, the agency received 278 media inquiries (391 FY 13) from 117 different media outlets; 179 of the inquiries resulted in interviews with DFW staff; 5 resulted in interviews with DFG staff. EEA handled 70 media inquiries directly, with the remaining 24 inquiries resulting in joint interviews with some combination of DFW, DCR, EEA, DFG, and/or OLE staff. EEA press team members often call the Outreach Coordinator for guidance on DFW staff members to be interviewed. The vast majority of inquiries came from newspapers (189); 59 inquiries came from television (including public access); 13 from magazines; 11 from radio; and 5 from online publications.

Geographically, the highest number of media inquiries came from outlets based in the Northeast Wildlife District (71), with 66 from outlets in the Southeast Wildlife District, 45 inquiries from Central Wildlife District media outlets, 29 inquiries from Valley Wildlife District outlets, and 5 inquiries from outlets in

the Western Wildlife District. The remaining inquiries were from New England-based, national, or unknown media outlets.

A brief breakdown of the topics of interest to media, by DFW section, is as follows: 177 Wildlife topics, 52 NHESP, 37 Fisheries, 13 Realty, and 2 I&E topics. In some cases, there were topics of interest that involved several sections.

Communications

Emily Stolarski, *Communications Specialist*

Website

The MassWildlife website is housed under the Energy and Environmental Affairs (EEA) website. Web-use statistics are therefore analyzed in the context of the EEA site as a whole. In FY 14, the MassFishHunt licensing page was the 2nd most viewed page on the EEA site with 509,995 views (2.3% of all EEA page views); the MassWildlife homepage was the 6th most popular page and received 367,534 views (1.7%); and the 10th most viewed page was the trout stocking schedule, which was viewed 193,534 times (0.9%). Fifty-nine percent of internet users accessed the MassWildlife web page using a desktop computer, 31% used a mobile phone, and 10% used a tablet.

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 37% of all searches on the EEA web site. The following is a list of the search terms that were entered most often:

1. Fishing license
2. License
3. Licenses
4. Pond maps
5. Hunting license
6. Hunting seasons
7. Stocking schedule 2014
8. Trout stocking schedule 2014
9. Trout stocking 2014
10. Trout stocking
11. MassFishHunt
12. Doe permits
13. Fishing license renewal
14. Stocking schedule
15. Stocking
16. Hunting
17. Maps
18. Permits
19. Doe permit winners
20. Hunting zones
21. Hunter safety course schedule
22. Doe permit

MassWildlife E-newsletter and Advisories

Thirteen issues of the electronic newsletter were published this fiscal year and emailed through the DFW listserv to over 6,790 subscribers. Advisories alerting subscribers of new regulations, special events, public meetings and hearings, etc., were also sent out through the listserv. All newsletters are posted on the agency website; analytics show that newsletters from FY 14 were viewed on the website 4,155 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 Sportsmen's 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 Sportsmen's Clubs hosts all agency 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 1,428 in FY 14 (2,519 FY 13), with an average of 119 articles per month. These articles reached 20,546,804 individuals and are valued at $5,588,765. Of the articles mentioning the agency, 38.9% appeared in newspapers with a circulation of less than 5,000; 38.6% were in publications with a circulation between 5,000 and 20,000; 19.6% appeared in newspapers with a circulation between 20,000 and 100,000; and 2.9% of articles were published in papers with a circulation between 100,000 and 500,000.

Promotion of Agency Activities

I&E Staff

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

Fairs and Trade Shows

The Wildlife District offices and the hatcheries that are open to the public have traditionally offered the agency's most frequent opportunities for face-to-face interactions with members of the public, so support is given to these installations every year, through publications and through staff time. Agency presence at regional and county fairs (late summer-early fall) and sportsmen's shows (late winter-early spring) has traditionally been provided by the Wildlife District within which the event occurs (with limited assistance from staff at the Field Headquarters), but competing demands and limitations on staff time often hamper an individual district's ability to install and man a display to provide visitors with opportunities to ask questions and make connections to the agency. The 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.

Table 1. Publications taken at the Fairs and Shows in FY 2014

Fair / Show	Marshfield Fair	Spencer Fair	Franklin County Fair	Topsfield Fair	Worcester Show	Springfield Show	Boston Flower Show
Publication							
Fishing & Hunting Abstracts	303	83	60	287	884	1291	446
Outdoor Recreation Maps	279	86	30	121	226	94	595
Freshwater Fishing Guide	275	70	370	639	321	722	592
Massachusetts Wildlife Magazine	324	95	63	330	144	194	400
Hunter Education Brochure	70	45	55	80	131	125	60
Youth Pheasant Hunting Brochure	25	5	163	50	30	95	34
Massachusetts Outdoor Expo	80	99	40	0	76	100	0
Hatchery Brochure	50	90	17	50	0	0	0
Trout Stocked Water	107	55	32	133	202	188	0
Youth Turkey Hunting Brochure	30	40	22	38	87	213	13
Living With Wildlife Fact Sheets	723	373	37	225	0	0	1965
Total Number of Publications	**2266**	**1041**	**889**	**1953**	**2101**	**3022**	**4105**

In FY 14, the DFW exhibited at four fairs: the Marshfield, Spencer, Franklin County (Greenfield), and Topsfield fairs; and three trade shows: the New England Fishing and Outdoor Expo (Worcester), the Springfield Sportsmen's Show (West Springfield), and the Boston Flower Show. Field Headquarters I&E staff and 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 14 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 discussing 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 14, DFW staff participated in 141 public events, including informational talks to towns, conservation groups, sportsmen's clubs, and schools; habitat site walks; and conferences and public meetings. DFW staff also took part in 79 non-public events, such as advisory committee meetings, university guest lectures, and interagency planning groups. The I&E Chief and 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 14 outreach events include: Wildlife Habitat Site Walks in Hardwick, Bolton, Falmouth, and Southwick; Private Land Management Events in Tolland, Sandisfield, and Monterey; MA Congress of Lake and Pond Association; Merrimack River Eagle Festival; Women in Science Conference; MA Association of Conservation Commissions; along with numerous programs related to "Living With Wildlife" 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, at the Hamilton Rod and Gun Club grounds in Sturbridge. This free event is designed to introduce children and adults to a variety of traditional outdoor activities relating to hunting, fishing, trapping, water sports, nature observation, and shooting sports, with one-on-one and mentored instruction available. 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 11 years with DFW staff serving on the event committee as volunteers, including Wildlife Biologist Peter Mirick (who produces the newsprint event program and various promotional flyers for the event), and a number of agency staff volunteering at the event. I&E Specialist Zima is a key organizer of the Big MOE and some of his job responsibilities include his activities associated with the Big MOE. As the event organizer, he coordinates and chairs monthly planning meetings, maintains a database of approximately 320 Big MOE volunteers, and writes the necessary grants that offset some expenses associated with the event.

This fiscal year, 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 conservation organizations such as the National Wild Turkey Federation, Capen Hill Nature Sanctuary, and the Massachusetts 4-H Program.

Publications

Massachusetts Wildlife Magazine

Peter Mirick, *Editor*

Bill Byrne, *Senior Photographer*

The DFW's most visible publication is *Massachusetts Wildlife*, a 40-page, full-color, quarterly magazine with a 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, 2013 – Number 2, 2014) covering a wide variety of fisheries, wildlife, and outdoor-related subjects, including wildlife research, rare and endangered species, general nature interest, and "how-to" articles for the hunter, angler, and nature observer.

Continuing a long tradition of producing issues that remain useful as references on particular subjects for many years to come, this year's offerings included a definitive feature article on the 1995 discovery, history, conservation, and location of the exceptionally rare old growth forest habitat on Wachusett Mountain. Readers were provided with the information and photographic clues to identify old growth trees, an explanation of how professionals confirm the age of such trees, and also included a map to encourage them to visit this natural treasure and see it for themselves. As a complement to this subject, we also included a short feature on a Black Gum tree on Oakham WMA that is believed to be the oldest living tree in Massachusetts; and an educational article (with related editorial) promoting the many benefits of forest management to wildlife, hunters, and the public.

Other reference articles featured that will have a long shelf life include a piece on the ants of Massachusetts, another on secretive marsh birds, and a pair of complementary articles encouraging the study and enjoyment of moths. The ant article, written by the authors of a book on the subject, included magnified photos that allow readers to identify many of the common (and even some of the rare) species of ants found in the Commonwealth. The marshbird article was also exceptional in that it featured rare photos of species such as rails, soras, and bitterns that normally live in such thick cover they are almost impossible to photograph in the wild. The Senior photographer was able to take advantage of behavioral changes, associated with a very high water table in the spring, to get spectacular images, and other staff and volunteers also provided photos. The result was some of the best images of these species ever published anywhere. The moth articles encouraging citizen scientists to study moths also included striking images of many colorful or physiologically unusual species, both rare and common.

Other popular articles this year included a feature on the ongoing study of white sharks that visit our shores every summer to feed on a burgeoning seal population; an expanded version of an article on the Keystone Arches located on our Walnut Hill WMA in Chester, Middlefield, and Becket that first appeared in our 2014 *Guide to Fishing, Hunting, and Trapping*; and another on the New England Wildflower Society's seed bank and why we place the seeds of rare wild plant species there. We also included our usual assortment of how-to pieces on such subjects such as how to navigate with a compass and how to introduce novices to fishing. We also featured nostalgic articles that focused on pheasant hunting "in the old days", and boyhood memories of trapping muskrat along the Charles River. In addition, we also featured a short promotional piece on the Junior Duck Stamp Conservation and Design Program, and three of the four issues included our popular "correspondents" column with comments, questions, and photos from the public.

Waterfowl resources were a recurring subject this year: A feature article on the history of waterfowl management in the Commonwealth that also explained how the seasons and bag limits are set today under federal frameworks; and a first-person account of a fruitless but eminently satisfying duck hunt on a WMA.

Annual Guide to Hunting, Freshwater Fishing, and Trapping

The 2014 Guide to Hunting, Freshwater Fishing and Trapping was again produced in cooperation with J.F. Griffin Publishing Co., as part of a multi-year contract with this publisher. The full-color, glossy-stock, 60-page booklet includes a digest presentation of the fishing- and hunting-related laws and regulations and articles of interest to sportsmen; in FY 13, these included articles on the Keystone Arches of the Walnut Hill WMZ, how lumber harvested from our WMAs will be used in the new Cronin Field Headquarters Building in Westborough, and a sportsmen's guide to Massachusetts frogs. Publications Editor Peter Mirick and Senior Photographer Bill Byrne contributed much of their respective time to the production of the 2014 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.

Photography

Bill Byrne, *Senior Photographer*

Providing photographs for the annual Guide (Abstracts of Laws) and four issues of *Massachusetts Wildlife* magazine were two of the major photography efforts in FY 2014.

Some of the more intensive photography efforts were also extremely interesting projects. In *Massachusetts Wildlife* Issue No. 3 2013, there was an in-depth look at a family of Virginia Rails, tied to an overall article on uncommon marsh birds. There was an article on pheasant hunting, plus the history of waterfowl hunting. In Issue No. 4 2013, there was a major photo effort to capture the nature of two Old Growth forests in eastern MA, the Black Gum of Oakham WMA, and the multi-species old growth forest of Mount Wachusett. Also in that issue, early successional forest related images were provided from several trips afield with MassWildlife Foresters. In Issue No. 1 2014, we worked hard to get the right photos for a beginner's guide to fishing article, a Natural Heritage seed bank article, and supporting photos for an extensive ants of MA article. In Issue No. 2 2014,

photos were taken of historic keystone arch bridges on MassWildlife's Walnut Hill WMA for a major article, and extensive coverage of intensive native moth studies was accomplished. Also, supportive gray seal photographs accompanied the article on Great White Sharks.

Forest management practices were documented on the Montague Plains WMA. Extensive effort was put into documenting a timber harvest on Phillipston WMA with some of the harvested Red Oak logs going from a rough cut mill to a kiln drying mill, and then to a floor finishing mill to ultimately provide finished oak flooring for the library in the new Westborough Field Headquarters building. Black Cherry cut on our Stafford Hill WMA followed the same mill processes to become attractive cherry hand railings on the center stairways of the new FHQ as well.

Additional bobcat images were taken to support an upcoming major article in *Massachusetts Wildlife* magazine. Additionally, throughout the year, photo requests were fulfilled to MassWildlife biologists in need of specific images for public presentations.

Other Photography Projects

Additionally, several annual MassWildlife sponsored events were covered, including the Fisheries and Wildlife Board's Francis Sargent award ceremony, Conservation Camp graduation awards, the Massachusetts Outdoor Exposition (Big Moe), and the Junior Duck Stamp statewide art contest awards for students in kindergarten through high school.

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 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, the Section reachs 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

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 positive 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 strong focus this year on connecting Growing Up WILD to Science, Technology, Engineering, & Math (STEM).

Twenty Project WILD & Growing Up WILD facilitators, contributing 663 volunteer hours, offered 25 workshops that reached a total of 607 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 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 time period.

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 were directed to download resources at www.fishwildlife.org (focus area, conservation education).

Public Education Programs

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

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

Students in grades K-12 from across the Commonwealth submitted 466 pieces of artwork to this "Conservation through the Arts" program. Entries were received from public, private, and home schooled students; scouts; individuals; and private art studios. Participation rates have fluctuated greatly over the years due in large part to the discontinuation of art programs in public schools statewide. The judging, by a panel of five wildlife artists, took place at the USFWS Assabet River National Wildlife Refuge Visitor Center, Sudbury. Artwork depicting a Trumpeter Swan with cygnets in acrylic by Xiaomei Chen, Westford Academy was selected as Best of Show and represented Massachusetts at the National Competition. Nearly 200 people (student artists, families, judges, and teachers) attended the awards ceremony held at 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. In Massachusetts, the Junior Duck Stamp Program is

Artwork depicting a Trumpeter Swan with cygnets in acrylic by Xiaomei Chen, Westford Academy, was selected as Best of Show.

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 2014 Envirothon was held at Sholan Farm, Leominster.

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 (Sustainable Agriculture), 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.

Recruitment and Retention

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

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

Table 2. 2014 Youth Pheasant Hunt Participating Clubs

Club	Number of Youth Obtaining Permits*	Number of Birds Harvested
Barre	17	4
Carver	10	1
Cheshire	4	0
Conway	18	5
East Mtn.	1	0
Essex	2	0
Falmouth	12	1
Fitchburg	6	1
Lee	6	3
Norco	2	0
Stockbridge	4	3
Worthington	5	0
Total # New Students	**87**	**18**
Returning	155	36
TOTAL	**242**	**54**

Youth Skills and Recruitment Programs

National Archery in the Schools Program in Mass.

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 provides students with an opportunity to try archery, including many who may not otherwise show an interest in the sport. The NASP curriculum, aimed at grades 4-12, includes social studies, mathematics, and physical education.

The DFW provides a 1-day Basic Archery Instructor training for physical education teachers within schools/districts that plan to participate in NASP. In addition, DFW coordinates the ordering and delivery of program equipment for the schools. In order to receive training, schools must obtain the NASP equipment kit, which costs about $3,000 and includes 11 Matthew Genesis bows, 122 arrows, 5 targets, 1 arrow curtain, and 1 tool/repair kit. At the end of FY 14, there are 28 schools participating in the program; two more were added in FY 14. Some schools provided their own funding; others secured funding from sources including the Berkshire County League of Sportsmen and Essex County Sportsmen's Association.

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. Hunter safety is emphasized in all aspects of the program to help build the confidence of young adult hunters so they may feel comfortable hunting alone or with others in the field.

This program is 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.

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. Like the Youth Pheasant Hunt, it is a comprehensive, three-part outdoor education program designed to

Table 3. 2014 Youth Turkey Hunt Participating Clubs

Club	Number of Youth Obtaining Permits*	Number of Birds Harvested
Barre	17	4
Carver	10	1
Cheshire	4	0
Conway	18	5
East Mtn.	1	0
Essex	2	0
Falmouth	12	1
Fitchburg	6	1
Lee	6	3
Norco	2	0
Stockbridge	4	3
Worthington	5	0
Total # New Students	**87**	**18**
Returning	155	36
TOTAL	**242**	**54**

Note: * the number of youth that participated in all required pre-requests to hunt on the youth day, but not all the youth participated on the day of the hunt.

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 14, a 1-day mentored Youth Turkey Hunt was held on April 26, 2014, the Saturday preceding the opening of the spring season. A total of 87 new students (sponsored by 12 clubs) completed the pre-hunt training and participated in the field exercise and the hunt. Previous-year Youth Turkey Hunt Program participants (155) returned to obtain a youth turkey permit in the 2014 event but did not need to repeat the pre-hunt training and field exercise. Of the 243 participants that obtained the required permits for the youth turkey hunt, 218 participants hunted on the Youth Day. Of the participating hunters, 127 were 12-to-14-year-olds and 91 were 15-to-17-year-olds. A total of 54 (25%) of the 218 participating youngsters were successful in harvesting a turkey on the youth day.

Skills Programs

Angler Education Program

Jim Lagacy, *Angler Education Program Coordinator*

The Angler Education Program is an outreach/education program within the I&E Section of DFW. It 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 components designed to introduce people to fishing and the outdoors, including Family Fishing Festivals, Fishing Clinics, and a 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. Currently there are 131established volunteer instructors on the roster. Sixty-eight instructors or 52% were active during FY 14. Instructors come to the program via press release invitations, our many fishing programs, fairs, sportsmen's shows, positive publicity, and word of mouth.

Family Fishing Events

There were a total of 28, mostly weekend, family fishing events for FY 14, including family fishing festivals and other derbies and fishing events. In FY 14, events ranged in size from approximately 30 people to as many as 1,000. The fishing festivals are set up as an introduction to fishing, where we make available rod-and-reel combinations, terminal tackle, and bait at no charge, and when the manpower allows, instruction in casting, fish identification, knot tying, baiting, cleaning, and filleting. Also in this category are fishing derbies and special-needs events that are supported with volunteer instructors and equipment. Total estimated participation for Family Fishing Events for FY 14 was 4,675 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 60 fishing clinics during FY 14, in various parts of the state presented by the Coordinator and numerous volunteer instructors. Approximately 1,494 people (mostly children) participated.

Fishing Classes

A few fishing classes are conducted each year, typically specialty fishing classes like fly fishing and ice fishing. For FY 14, there were six classes: three fly tying classes, totaling 42 participants; one full-day Boy Scout fly fishing merit badge training class, totaling 19 participants; and two in-school (Auburn HS) Physical Education Fishing Program classes, totaling 100 students. In total, there were 161 class participants for FY 14.

Fishing Tackle Loaner Program

The Angler Education Program keeps and maintains fishing equipment onsite at FHQ for loan to various groups throughout the state. The program loaned equipment on 26 separate occasions during FY 14, with 688 pieces of equipment. Equipment includes basic spincasting combinations, occasionally spinning gear and salt water gear, as well as fly rods and fly tying equipment and even ice fishing gear. Equipment was loaned to various groups and agencies, including the Massachusetts Department of Conservation and Recreation, the U.S. Army Corp of Engineers, the U.S. Fish and Wildlife Service, various sportsmen's clubs, scout troops, 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 mostly performed in the spring with various school groups around the state; and are more promotional than educational. We have linked these events 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 students help stock the given waterbody. For FY 14, we did eight stocking programs, totaling 329 students.

BOW participant Kelly Dalbec and buck.

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, and fly fishing, as well as supported the program with equipment and manpower. For FY 14, we contributed to five BOW programs totaling 111 people.

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 14, we taught 12 sessions: 6 sessions of basic fishing and 6 sessions of fisheries management. One hundred and fifteen students 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 ecostation and help to format the tests for the various other ecostations (there are four ecostations – Forestry, Soils, Water, Wildlife) prior to the event. For FY 14, the Envirothon was held at Sholin Farms in Leominster, where 34 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. Because of continued I&E staff vacancies, the decision was made by the Coordinators to refrain from holding a weekend workshop in June of 2014. BOW did agree to partner with the Massachusetts state chapter of the NWTF to help financially with the Women in the Outdoors Event in July 2014. Planning efforts between BOW and DCR are in full swing at this time to expand the Family Camping Weekends offerings to two state parks in the upcoming summer camping season.

Table 4. BOW workshops held in FY 14.

Date	Title of Program and Location	Number of Participants
August, 2013	DCR/BOW Family Camping Weekend; Otter River State Park, Templeton	58
October, 2013	Deer Hunting Seminar, Devens	9
December, 2013	Deer Hunt, Devens	17
April, 2014	DCR/BOW Family Camping Weekend	7 families
April, 2014	Turkey Hunt Seminar, Devens	18
May, 2014	Turkey Hunt, Devens	10
Total Participation		**119**

Massachusetts Junior Conservation Camp

In August 2013, the Conservation Camp held its 2-week session for the 11th year at the Chesterfield Boy Scout Reservation. 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 began attending meetings of the Massachusetts Junior Conservation Camp Board serving as member of the Corporation and was elected as a Director in January of 2014.

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 resources, and encourage a greater appreciation of the environment through education. The Hunter Education Program is a public education effort that provides instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. Massachusetts offered its first hunter safety course in 1954. Courses are taught by certified volunteer instructors. All courses are offered free of charge to the participants.

Courses

Courses were offered in five disciplines across the state in with a total of 4,644 students participating in the Hunter Education Program in FY 14. The participation level is consistent with the 5-year average of 4,605 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 14.

Basic Hunter Education

This course provides information on the safe handling and storage of hunting arms and ammunition, hunting laws and ethics, wildlife identification, wildlife management, care and handling of game, basic survival skills, and first aid.

Seventy-seven courses were offered. Courses were 12-18 hours in length. A total of 3,645 students participated. Students are asked to volunteer information on age, gender, and ethnic background on their registration forms: 572 students were minors (under 14 years old), 514 were 15-17-year-old minors, and 214 were minorities. Six hundred ninety-five of the participants were female.

Bow Hunter Education

This course is designed for both the experienced and novice hunter. Course topics include the selection of equipment, safety, ethics, bow-hunting methods, and care and handling of game. Students may bring their own archery equipment to class to obtain advice on its use and care. This certificate is recognized in other states where Bow Hunter Education certificates are required.

Eighteen courses were conducted. Course length ranged from 8-12 hours. A total of 601 students participated; Sixty-five students were under 14 years of age and fifty-two were 15-17 years of age. Thirty-five minorities and 75 women participated.

Trapper Education

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

Four courses were offered, with a total of 224 participants. Courses were 11-12 hours in length. Two hundred and twenty four students participated. Eleven students were under 14 years old and ten students were 15-17-year-old minors. Seven minorities and 26 women participated.

* 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.

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 13 participants, including two women. Courses were 10 hours in length.

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.

Eight courses were conducted (one in Pittsfield and seven in Westminster). Courses range from 8-10 hours in length. A total of 161 students participated. Ten minorities, 20 minors (10-14 years old), 8 minors (15-17 years old), and 39 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 $40,000 was made available to clubs for Shooting Range Maintenance and Enhancement projects in FY 14. The Request for Proposals (RFP) and all associated documents were mailed to 99 interested prospective organizations. A total of six clubs responded with six project proposals. One project proposal was selected for funding. The club was notified of the award and began work on the project. A follow-up site visit was conducted by Hunter Education program staff.

Information and Education Staff

Marion Larson, *Chief*
Bill Byrne, *Senior Photographer*
Jill Durand, *Massachusetts Wildlife Circulation Manager*
Suzanne Fritze, *Receptionist*
Astrid Huseby, *Hunting and Angling Recruitment and Retention Specialist*
Jim Lagacy, *Coordinator, Aquatic Education Program*
Pam Landry, *Education Coordinator*
Peter Mirick, *Wildlife Biologist and Publications Editor*
Emily Stolarski, *Communications Specialist*
Gary Zima, *I&E Specialist*

Hunter Education Program Staff

Susan Langlois, *Program Administrator*
Kim Basso, *Administrative Assistant*
Steve Foster, *Program Logistics*
Eileen Garcia-Smith, *Receptionist*
Todd Olanyk, *Volunteer Coordinator*

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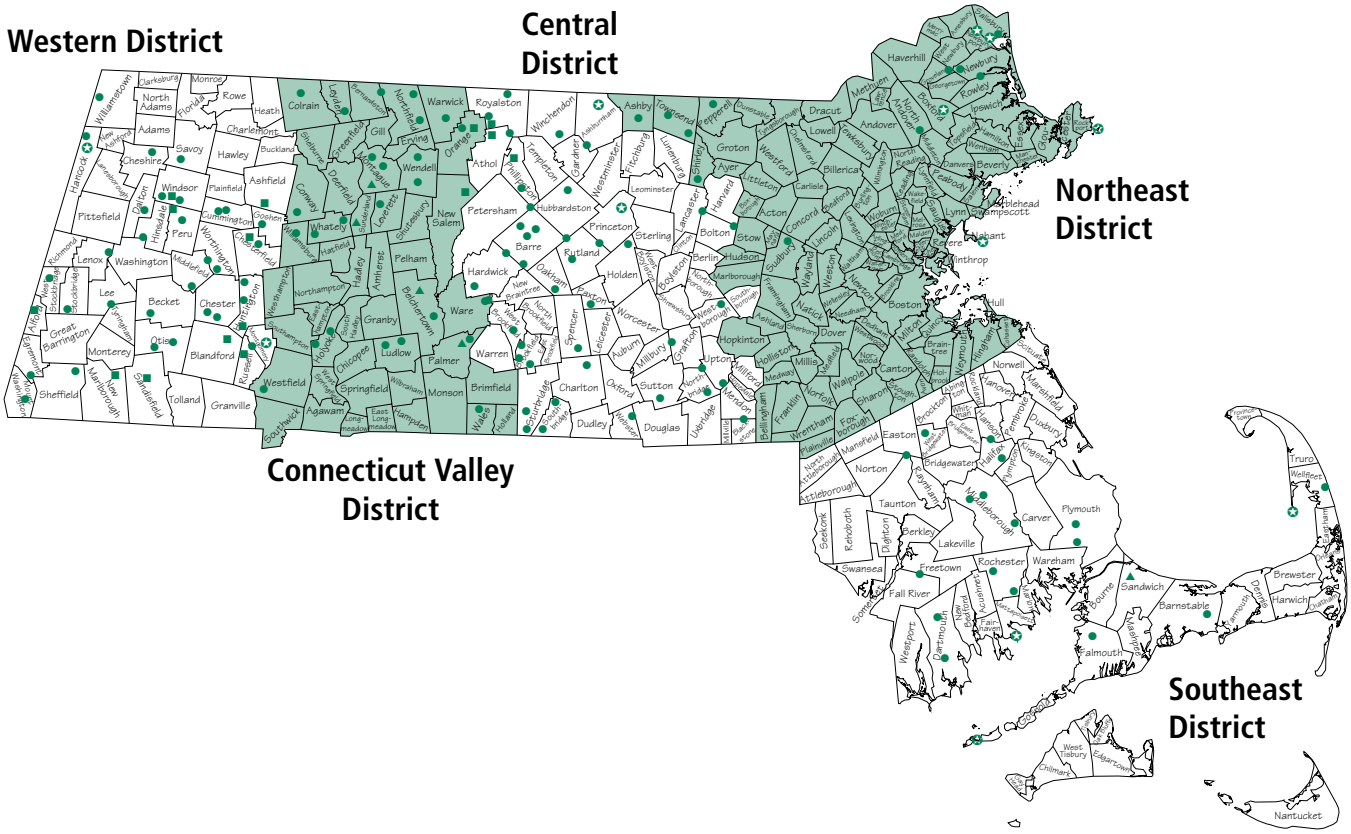
DISTRICT REPORTS

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 Westboroughugh Field Headquarters (FHQ; see the individual Section reports for the status of these projects). Among the survey projects conducted by District staff were the Bald Eagle Breeding Survey, a waterfowl inventory, banding/collaring of Geese, and stream surveys. District personnel also conduct census counts of Wild Turkey, Mourning Doves, Woodcock, Ruffed Grouse, and quail.

District staff members enhance recreational opportunities throughout the state by stocking Brown Trout, Eastern Brook Trout, Rainbow Trout, Tiger Trout, and Broodstock Salmon into waters scheduled to receive them. Prior to releasing trout, they monitor the water quality of the designated lakes and streams. They release pheasants on Wildlife Management Areas (WMAs) and in open covers (suitable habitat on public land). They monitor and maintain the WMAs in their region by cutting brush, mowing, trimming trails, assisting with forest cutting operations, planting shrubs, and maintaining roads and parking areas. They emplace gates, erect signs, and make other arrangements related to the protection and management of the agency's lands,

buildings, and vehicles. They also build and maintain nesting boxes for Wood Ducks, 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 District

Administration

The Northeast District had no staff changes this year. In the Ayer District office, staff repaired the front door and toilet in the main office, as well as power-washed the foundation to remove mold. Handrails were installed on the sidewalk at the main office.

Hundreds of hours were spent researching, analyzing, and developing a North American Wetlands Conservation Act grant application for the restoration, enhancement, and permanent protection of waterfowl, shorebird, and waterbird habitats in Great Marsh. The proposal, called Great Marsh II, requests $720,000 for conservation protection in Essex County. Major aspects of the proposal include restoration of salt marsh and creation of shrubland habitat at William Forward Wildlife Management Area; enhancement of shrubland and grassland at Choate Island in Ipswich, in coordination with The Trustees of Reservations; and acquisition of land through fee or easements on over 700 acres of land associated with Great Marsh.

District staff attended a Newbury Board of Selectmen meeting to address the matter of a house built on Crane Pond WMA. There were three trespass cases at Charles River WMA, which consist of lawn, garden, fencing, shed, and basketball encroachments. Trespass issues were handled at J.B. Little Road at Crane Pond WMA, where the town cleared trees on state land. Other trespass cases included Boudreau on Moody Street at Crane Pond WMA and grass clippings dumped at Delaney WMA. The Sheridan trespass in Shirley is in its final days of completion. The orange fencing was refreshed at the Willets' trespass in Pepperell. Two ATV access issues were addressed at Squannacook River WMA, where access was blocked from Pheasant Ridge Condominiums, and at Townsend Hill WMA, where a trail was blocked from an abutting property.

Wildlife Technician Critchlow coordinated boundary work, which lead to completing over 4.5 miles of boundaries at Squannacook River WMA (Meadow Road near McGovern), William Forward WMA (behind the town dump), Mulpus Brook WMA (Mass Development at Walker Road), and Crane Pond WMA (Crane Neck Road frontage; Orcut parcel). Nine Wildlife Conservation Easement monitoring reports were completed.

The District Supervisor attended meetings concerning Mt. Watatic Reservation management, Essex County and Norfolk County League business, and DFW Senior Staff and District Supervisors' matters. A USFWS Federal Aid Coordinator was given a tour of the Martin Burns WMA range and managed field habitats on Kent's Island. Northeast District staff assisted Central District with wetland delineation at a tire dump at Bolton Flats WMA.

DFW staff joined an engineer from MA Fishing & Boating Access (FBA) at Knop's Pond in Groton to meet with neighbors who are concerned about shoreline erosion at the boat ramp, as well as a portion of the concrete boat ramp possibly on their property. FBA also assisted with evaluating tractor access to fields at Hunting Hill WMA.

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, Key Site and Focus Area meetings. The District provided 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. The Wood Duck project, overseen by Wildlife Technician Drudi, required visits to 62 Wood Duck boxes. The District collected pellet samples as part of the New England cottontail status evaluation and assisted Connecticut Valley and Central District staff with the black bear reproduction and habitat use study.

The fifth year of Black Duck banding was highly successful with 192 Black Ducks banded (24 in FY 13) and 66 Mallards banded. The 100 bird quota was exceeded by the addition of a productive new site in Rockport. Other important banding sites are found in Gloucester and at Plum Island National Wildlife Sanctuary. There were 250 Canada Geese banded across three counties, meeting the Northeast District quota.

Twelve deer check stations operated within the District. Eight hunters (seven in FY 13) took part in the paraplegic hunt held at Fort Devens, at which one deer was taken (two in FY 13). 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 50 brooks and rivers (61 in FY 13) in seven major watersheds. There were no reports recorded for fish kills. Fisheries staff completed the GIS project to map directions to each site for use by staff to improve efficiency.

A meeting was held with Town of Sharon Selectmen, Conservation Commission, Police Department, Parks & Recreation Department, and the Lake Massapoag Association to resolve a dramatic increase in permit costs to anglers.

The Turner Dam removal project on the Nissitissit River in Pepperell is proceeding with staff attending Selectmen's and permitting meetings and reviewing monitoring protocols for fish and freshwater mussels.

Natural Heritage and Endangered Species

Bald Eagles nested in Tyngsborough, Amesbury, Methuen, Haverhill, and Framingham. Two chicks were banded from the Amesbury nest and both successfully fledged. Two chicks were documented from the Tyngsborough nest, of which one was banded and the other, weaker, sibling was left alone. 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. It was discovered that the Framingham pair built a new nest on the same island, after the other nest tree fell. One rehabilitated Bald Eagle from Tufts Wildlife Clinic was returned to the "wilds" of the Merrimack River. The District Supervisor participated once more in the Eagle Festival in Newburyport, where DFW covers a prime eagle-watching spot on Deer Island in the Merrimack River.

Northeast District Wildlife Technicians assisted with chick banding at the Lowell and Lawrence Peregrine Falcon nests. The Lowell pair of Peregrine Falcons was officially adopted as the "River Hawk" mascots by the University of Massachusetts/Lowell. Wildlife Technician Pecorelli assisted NHESP with Peregrine Falcon nests located in rock quarries.

Three Piping Plover nests were located through biweekly monitoring and roped off at Gloucester beaches until hatched. Hatching success was 100% with 12 fledglings. Wildlife Biologist Amati has established good relations with the landowners over the last several seasons of survey work. Neighbors are key to the success of the Piping Plovers at these beaches since the nests are located on private property where DFW places fencing and signs. It was noted that one female tolerated protective fencing within 20 yards of the nest. Dogs remain a problem for breeding Piping Plovers. However, once the importance of controlling dogs is explained, the amount of dog track within fenced nesting areas becomes less.

Staff worked with new NHESP Ecologist Peter Hazelton on the history and future of freshwater mussel conservation in the Commonwealth and mussel surveys on the Nissitissit River in Pepperell.

Enhancement of Outdoor Recreation

In the winter, staff released 40 Broodstock Salmon (70 in FY 13) from the Palmer Hatchery into four ponds throughout the District. Combined spring and fall trout numbered 113,937 (121,725 in FY 13). In the fall, anglers saw 12,900 14-inch Rainbow Trout released into 2 rivers and 18 lakes and ponds, followed in the spring by 101,037 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 10 youngsters participating (9 in FY 13) and 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.

The popular pheasant hunting areas at Kent's Island and Corn Island areas of William Forward WMA in Rowley and Newbury had a total of 680 birds released. MA Environmental Police officers assisted with stocking Kent's Island since the bridge is in poor condition and not accessible to stocking trucks.

Twelve sportsmen (5 in FY 13) applied for waterfowl permits at the Delaney WMA. Thirty-eight field-trial permits (45 in FY 13), eight horse-and-hound permits, no camping permits (6 in FY 13), and 488 range permits (400 in FY 13) were issued. 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.

The T-Rex PT100 was out of order due to mechanical failure, which severely impacted our ability to maintain shrublands.

Outreach and Education

People are very interested in black bears in the suburbs of the Northeast District. We are focusing our attention on providing town-level presentations, working with Animal Control Officers and making sure Conservation Commissions have our "Living with Black Bear" educational materials. Towards that end, a black bear talk was given at the Dunstable Public Library, where over

50 residents attended, including several families with children. On a snowy March evening, DFW conducted a black bear presentation at the Littleton Police Station. The general feeling is one of awe for bears, with some complaints about bears destroying bird feeders.

District and Forestry staff joined Town of Shirley conservation officials at Pumpkin Brook Conservation Area, adjoining Squannacook River WMA, for a site visit to provide guidance on the proposed Forest Management Plan.

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

Coordination, scheduling, and booth coverage for the Topsfield Fair were handled by District personnel with capable assistance from Westboroughugh staff. Staff also worked the Boston Flower Show, Worcester Sportsmen Show and contributed their services to the annual Massachusetts Outdoor Exhibition ("The Big MOE"). Seven talks were given by the District Supervisor, including Career Day at Nashoba Regional High School, "Living with Wildlife" at 4-H Winter Forum, a bat presentation at Stow Town Hall, a beaver forum in Danvers, and staff taught two Boy Scout clubs to better understand wildlife. Staff attended Parker River Clean Water Association and Nashua River Watershed Association Annual Meetings. DFW met with PIE Rivers about Kent's Island Creek restoration. Wording for DFW kiosks was reviewed.

Technical Assistance

District staff dedicates many hours patiently listening to and helping the public with questions about wildlife they see around their houses and in their yards. DFW provided technical assistance to MA Division of Marine Fisheries staff concerning control of beaver and herring passage issues at Crane Pond WMA and associated watersheds, as well as conducted site visits to understand the extent of the issue. We reviewed a MA Environmental Trust grant application from Nashua River Watershed Association for the removal of Turner's Dam on the Nissitissit River.

Southeast District

Administration

There was one significant personnel change in the Southeast District at the very end of FY 14. Richard "Dick" Turner retired from State service on July 29, 2014 after working for the agency for over 65 years! Dick started with the Division back in 1949, working out of the Phillips Wildlife Lab in Upton and some of his first work for the agency included mapping the habitat/cover types at the Birch Hill WMA. Dick received the Manuel Carballo Award, which is the State's top award for a public service employee. He has long been a fixture in the conservation community in southeastern

Richard "Dick" Turner, shown here inspecting a blue bird nesting box, retired after a 65 year career with DFW.

Massachusetts and his knowledge, skills, and experience are greatly appreciated and will be missed.

District staff attended and/or completed training programs in FY 14, including a boating safety course, a variety of wildland firefighter courses, and important, required personnel training from the DFG Human Resources Division.

The District Supervisor and Land Agent, as well as our Chief of Wildlife Lands, continued negotiations with the Town of Barnstable regarding a bike path desired across the Hyannis Ponds WMA. All parties reached a tentative agreement which would allow the bike path to be constructed across the northern edge of the WMA, while the Division received ample mitigation for both lost habitat and lost legal hunting area on the WMA, resulting in a net benefit to the agency, wildlife habitat, and the sporting community. This proposed deal was slated to go to the Fisheries and Wildlife Board for review and possible approval in FY 15.

Negotiations continued in FY 14 between the District Supervisor and the Buzzards Bay Water District regarding their desire to install a second water withdrawal well near the District HQ, with both parties reaching an agreement in principle that still required further review and approval by both MA DEP and the Fisheries and Wildlife Board. The District Supervisor also met with several energy companies and DCAMM representatives to identify energy efficiency improvements at Southeast District facilities, including the installation of new lighting fixtures in our main garage at the District HQ.

The District Supervisor met with officials from Joint Base Cape Cod (formerly referred to as Camp Edwards) and the Monument Beach Sportsman's Club to attempt to assist in resolving an issue relative to the club's expanded long rifle range. The club and DFW reached an agreement that the club would shut down their long rifle range during scheduled controlled hunting programs on JBCC to avoid negative impacts to the hunt by having to close areas within the safety zone of their range.

The annual surplus antlerless deer permit sales were once again held at the District HQ in Buzzards Bay. Due to significant changes in the format of sales (staggered zones) and increased capacity built into the online licensing system, the sales went extremely smoothly. Despite concerns raised by both sportsmen and some agency staff regarding the functionality of the fully online system, it has proven to be a success in making what was, in the not too distant past, a very big annual traffic problem in the Southeast District to a slightly busier than usual day at the office.

Research and Conservation

Wildlife

District staff completed breeding surveys for Ruffed Grouse, Mourning Dove, Woodcock, and various waterfowl species, as assigned by Wildlife Section biologists. District staff also conducted annual winter American Black Duck trapping and banding, successfully banding a total of 758 ducks (616 in FY 13) throughout Plymouth, Bristol, and Barnstable counties. The District also assisted Westboroug staff in completing duck banding at our West Meadows WMA and at New Bedford Reservoir using DFW's airboat. Nesting boxes for Wood Ducks and Eastern Bluebirds were monitored and maintained on DFW lands and other public and private lands.

The District responded to a variety of problem animal calls this fiscal year, noticing what appears to be a slight uptick in coyote complaints. 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. Nuisance calls about aggressive wild turkeys continued to be a hot topic in the District, with staff responding to several private properties, as well as schools, playgrounds, and commercial businesses to help the public deal with nuisance birds. One particular instance of note was a commercial vehicle business that focused on installing high end tool boxes and other accessories, many of which were chrome plated, to commercial trucks. The business was experiencing thousands of dollars in damage to customers' vehicles from wild turkeys pecking the shiny tool boxes and other accessories. The problem was abated by explaining the authority the business had under MGL Chapter 131, Section 37.

The Burrage Pond WMA restoration project was officially completed this fiscal year and resulted in the restoration and enhancement of over 260 acres of former cranberry bog into various stages of emergent wetlands. The Red Brook WMA restoration projects also continued to progress with several project milestones being reached. The permitting for the project was partially completed with Massachusetts Historical Commission sign-offs and a MEPA Certificate issued. Further, Princeton Hydro completed the 90% project design phase, which will enable the project team to move forward with additional required permitting (401/401, Notice of Intent, etc.) next fiscal year.

The District assisted with ongoing New England Cottontail (NEC) research and survey efforts, conducting pellet collection surveys throughout parts of southern Plymouth and Bristol Counties and on Cape Cod, including the Cape Cod National Seashore. Some NEC trapping efforts were also conducted, however trapping did not prove exceptionally successful.

The District completed a number of habitat management and improvement projects in FY 14, including summer mowing of early successional habitats at Frances A. Crane WMA, assisting with clearing of old field habitats at Noquochoke and Hockomock Swamp WMA (Erwin Wilder Section), winter mowing of field habitats at the Myles Standish Cooperative WMA, and field mowing at Dartmoor Farms WMA. The District assisted with the planning, permitting, and completion

of over 120 acres of prescribed fire on wildlife management areas. The District also built a new slip-on tank unit for our pickup trucks to be used on prescribed fires as a type 6 engine. The District was heavily involved in the planning, monitoring, and public education aspects of a major habitat restoration project at our Frances A. Crane WMA in Falmouth, including the creation of over 35 acres of new sandplain grassland habitat. The District worked very closely with local stakeholders, including the Crane Sporting Dog Association, Otis Model Aero Club, and other interested citizens to relocate the main parking area, dog trial pavilion, and model airplane flying field over 1200 feet to the south, getting those activities out of the heart of the main grassland, and hopefully providing a great benefit to grassland nesting birds.

Fisheries

Stream surveys, using electro-fishing and other techniques, were completed in a number of southeastern Massachusetts streams including Red Brook, Quashnet River, Mashpee River, Childs River, Palmer River, Hatche's Creek, Pamet River, Coonamesset River, Sam Tripp Brook, and several others. The Fisheries Biologist continued to evaluate trout habitat in the Coonamesset River and continued steps to restore a wild Brook Trout population. Passive integrated transponder tagging research on Brook Trout continued in Red Brook, Quashnet River, Childs River, and Coonamesset River. The continued installation of solar panels to power the PIT antennae continued in fiscal year 2014. Pond surveys and profiles were completed in several waterbodies including, but not limited to, Cliff pond, Big Sandy Pond, Peters Pond, Silver Lake, Sheep Pond, Little Pond, and Long Pond.

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, conducting inventories of trout, relocating trout to other raceways, and assisting with fall trout spawning.

The District Fisheries Biologist continued to provide technical support and advice to aid the planning of a major habitat restoration project at Tidmarsh Farm in Plymouth. He lead the effort to conduct a fish sampling survey through the bog complex and associated streams, monitored water temperatures in the system, and provided guidance on dam removals and stream restoration to the project team.

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

Under the guidance of the Fisheries Biologist and in close coordination and consultation with the Town of Duxbury Conservation Commission and a local group of interested conservationists, the District completed a significant coldwater stream restoration project at Phillips Brook in Duxbury. The brook, once home to a trout hatchery and small mill, is home to a vibrant, but restricted wild Brook Trout population. The site of the old mill represented a major barrier to fish passage/movement due to numerous large granite stones and boulders falling into the channel over the years. The District removed the boulders from the area, reconfigured some of them to establish a series of pools and riffles through the section, and redistributed many of the removed boulders upstream and downstream, coupled with woody debris collected from the local area, to restore fish passage and further improve trout habitat in the stream. Future surveys of the trout population are planned to monitor the health of the population and monitor project success.

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 focused a great deal of time and resources on assisting with the tern project, regularly moving and maintaining boats and equipment, conducting vegetation control on Ram Island, and rebuilding perch poles and nesting structures. District staff also spent a significant amount of time and effort planning for and completing a prescribed burn on nearly all of Penikese Island to assist in reducing non-native plant species and converting the habitat to native grasses and herbs through planting/seeding and other future management efforts to benefit terns, as well as grassland birds and invertebrates. Jeff Breton, District Wildlife Technician, also conducted significant repairs to one of the tern project boat trailers this fiscal year.

District staff participated in the annual spring Bald Eagle census, covering portions of Plymouth and Bristol County. District staff also monitored our four known eagle nest sites and investigated reports of potential new nesting locations in the District. Bald Eagles had a great year in the Southeast District, with staff successfully banding a total of eight healthy chicks from the Halfway Pond (3), North Watuppa (3) and Pocksha Pond (2) nests. Unfortunately, the Sampson's Cove nest failed once again as it blew out of the tree in late March, presumably with un-hatched eggs or young chicks in the nest.

District staff also monitored our five known Peregrine Falcon nesting sites in Fall River, New Bedford, Brockton, Taunton, and Sandwich. Chicks were banded at several of the sites, but not all of them due to access constraints. District staff worked with NHESP staff to gain permission and install a new nesting box at the Taunton site, which should both provide a safer/better location for the birds and allow us access to the site to safely monitor and band the chicks in the future.

District staff worked closely with the Massachusetts Environmental Police on a major enforcement case in New Bedford dealing with the illegal possession of Eastern box turtles and box turtle parts. The case also involved Federal agents from the US Fish & Wildlife Service, local animal control officers, and the office of the Massachusetts Attorney General.

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

District staff assisted with a new research effort initiated in FY 13 by Jon Regosin to evaluate the ongoing Northern red-bellied cooter headstart program. Deb Silva, District Clerk, continued to coordinate a team of volunteers to assist NHESP by routinely visiting both the Ocean Spray Cranberry and Decas Cranberry processing plants to take possession of, identify and catalog, and then release offsite the turtles and frogs rescued from the processing equipment, some of which were state-listed rare species.

Enhancement of Outdoor Recreation

District staff stocked its fall 2013 allocation of 12,900 trout into 25 ponds and stocked its spring 2014 allocation of 84,900 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 pheasants and 3,500 quail on six WMAs and over 12 open covers throughout the District. Eight-week-old pheasants were again delivered to the Samoset Rod and Gun Club and the Shawme Fish and Game Club as part of the DFW's Club Bird Program. The District also provided pheasants to the Carver Sportsmen's Club and the Falmouth Rod and Gun Club for use in the DFW's Young Adult Pheasant Hunt and assisted with the operation of the hunts at both clubs.

The District operated and managed controlled-access hunting opportunities for white-tailed deer, wild turkey, and 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 49 deer and 13 turkeys were taken during the regular 2013 deer seasons and 2014 spring turkey controlled hunts on the MMR, respectively. Further, the District worked closely with base personnel and many volunteers from the Barnstable County League of Sportsmen and the Otis Fish and Game Club to offer the Division's annual paraplegic deer hunt. The District also worked with MMR staff to again provide a very successful youth turkey hunting program at the MMR on April 26, 2014.

The District Supervisor issued permits for a total of 40 special winter game bird hunts, 12 at the Erwin Wilder WMA and 28 at the Frances A. Crane WMA. A total of 27 pheasants and 851 Bobwhite Quail were stocked during these hunts. A variety of field dog trials were reviewed and permitted by the District Supervisor, including one Labrador retriever trial at Burrage Pond WMA and six upland bird dog trials at Frances A. Crane WMA.

The District continued to maintain and improve roads, trails, and parking areas on our WMAs to provide for safe and effective access to our properties for all forms of passive outdoor recreation. Significant repairs or improvements made in FY 14 include road and trail repairs at Burrage Pond WMA, Frances A. Crane WMA, Hockomock Swamp WMA, Haskell Swamp WMA, and West Meadows WMA, as well as a brand new parking lot being constructed at our Mill Brook Bogs WMA in Freetown. Signage and gates were also installed or maintained at many WMAs this fiscal year.

Boundary marking is ongoing on many WMAs throughout the District, including some 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 including, but not limited to, the Mill Brook Bogs WMA, Poor Meadow Brook WCE, Frances A. Crane WMA, Hockomock Swamp WMA, Plymouth Pine Hills WCE, Sandwich State Fish Hatchery, Rocky Gutter WMA, Red Brook WMA, and Cooks Pond WMA.

District staff conducted routine monitoring visits and prepared monitoring reports for many of our Wildlife Conservation Easement properties to ensure public access, identify any management issues, and ensure that the underlying landowner is complying with the terms of the recorded Conservation Easement document.

Public safety was improved on our Burrage Pond WMA and Dennis Grassy Pond WMA by the contracted filling and decommissioning of old groundwater monitoring wells on the properties. Public safety was also enhanced at our Triangle Pond WMA by the removal of an illegal rope swing near the pond. Wildlife viewing and waterfowl hunting opportunities were enhanced at the Burrage Pond WMA by District staff seeding and seasonally flooding various portions of the habitat restoration area/former cranberry bog complex.

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 valuable

opportunity for the Division to interact with and educate members of the general public.

The Fisheries Manager gave presentations on coldwater fisheries resources and salter Brook Trout management to the Boy Scouts of America, a group of Swedish fisheries biologists, and students at the Lyman Reserve, the Canton Flyfishing Club (Orvis), Trout Unlimited, and Wellfleet Harbor. The District Supervisor gave a presentation on black bear population and management to the Wareham Land Trust, several coyote management presentations, and attended the Annual Fall Banquet of the Massachusetts Beach Buggy Association to discuss Piping Plover management. District staff attended and participated in the New England Chapter of The Wildlife Society's annual meetings and workshops. The District Supervisor attended the Town of Hingham's annual town meeting to answer questions regarding hunting and attended several conservation commission meetings in Hanover to provide general information on deer hunting rules and regulations.

Technical Assistance

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

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

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

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 not recreated during the fiscal year. Duties of the Biologist are being handled by the District Manager with assistance from the Fisheries Manager.

Central District Land Agent Brandon Kibbe left the Department of Fish and Game to take a position in the private sector. James McCarthy was hired to fill the position.

Research and Conservation

Wildlife

District personnel oversaw the operation of 14 deer checkstations, 15 Wild Turkey checkstations, 12 Eastern coyote checkstations and one black bear checkstation. 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; 140 geese were banded at 12 sites.

Beaver, otter, coyote, fisher, bobcat and fox pelts were tagged and recorded.

Wood Duck nesting boxes were checked and new boxes erected at various wetland sites. Donations of metal poles and Wood Duck boxes were accepted from sportsmen and the general public.

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

Radio telemetry studies were continued, focusing on tracking collared black bear. GPS collars have been deployed on one additional sow, which was captured in a barrel trap in Oakham. Two sows were immobilized at their winter den sites and each had three cubs. The third sow with a GPS collar could not be immobilized but was known to have one cub.

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

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 initiated at the Muddy Brook WMA in Hardwick.

Fisheries

Central District staff surveyed 51 sites on streams to assess fish populations and water conditions, focusing on the Millers, Blackstone, Nashua, Quinebaug, French, Chicopee, and Assabet river drainages. Baseline water quality data on acidity, alkalinity, conductivity, and temperature were recorded.

Pond surveys, using an electrofishing boat, were conducted at Spectacle Pond in Lancaster and Brigham Pond in Hubbardston.

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

Broodstock Salmon were stocked in Comet Pond and Webster Lake. The fish were provided by the Federal hatchery in Nashua, NH. Broodstock Salmon will no longer be available as the Atlantic Salmon restoration project was abandoned by the U.S. Fish and Wildlife Service.

Reported fish kills were investigated in Lancaster and Ashburnham.

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.

Sampling studies were conducted at Congamond Lake to determine species composition and growth rates. Largemouth Bass are the focus of the study.

A target study of Northern Pike and Chain Pickerel reproduction and growth continued at Quaboag Pond and in the Quaboag River.

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

Technical assistance was provided to the town of Lancaster for the removal of the Bartlett Pond Dam. Following removal, the newly connected reaches of stream were surveyed and found to have been colonized by native Eastern Brook Trout.

Natural Heritage and Endangered Species

District personnel assisted in the second 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, and Webster Lake. New nests were documented at Riverdale Pond in Northbridge and on a beaver impoundment in Royalston.

The Bald Eagle nesting territory at Wachusett Reservoir in Boylston was active and produced a single chick. The Quaboag Pond eagle pair produced two chicks. The Lake Shirley territory was reactivated and produced two chicks. The pair at Pine Hill Reservoir in Paxton failed. The second successful eagle nesting at Webster Lake was documented on Little Island and two chicks were banded. There was one successful eagle nest on the east side of Quabbin Reservoir in Petersham that produced one chick. Eagles were present on three other Quabbin territories but did not produce. A new nest in Royalston produced one chick, while a new nest in Northbridge failed. 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.

Peregrine Falcons were present in downtown Worcester but the traditional nest site was unoccupied. A fledgling falcon was picked up in the vicinity of City Hall but a nest site was not located.

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 High Ridge WMA. Kestrel boxes were installed at Wachusett Reservoir, Bolton Flats, and Moose Hill as part of a program coordinated by State Ornithologist Drew Vitz.

Enhancement of Outdoor Recreation

Scheduling and stocking of 12,870 Ring-necked Pheasants were completed and 6,000 seven-week old pheasants were distributed to 13 sportsmen's clubs and two correctional institutions for rearing. Pheasants were released on 17 WMAs, four town coverts, and participating club properties. Bolton Flats and Winimusset WMAs were available for the winter pheasant hunting opportunity in Central District. One application was received for Winimusset.

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

Road repairs at the Little Chauncy Pond Fisherman's access were completed in cooperation with the Northboro Town Engineer and Conservation Commission.

Permitting and preliminary work to repair the Burnshirt River Dam (Wine Brook) at Phillipston WMA commenced in cooperation with the town and consulting

engineers from the Office of Fishing and Boating Access and Tighe and Bond. The berm of the dam was cleared of vegetation and test borings conducted to determine the structural integrity of the dam.

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 Hunter Education building, barn, and bunker were demolished at High Ridge WMA under contract with Ramco Company.

New siding, windows, doors, and barn doors were installed at the Bolton Barn at Bolton Flats WMA.

License Agreements were maintained with 18 central Massachusetts farmers, primarily for hay and corn. Agricultural fields were put out to bid at High Ridge WMA and awarded.

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

MA DOT hosted planning meetings for bridge reconstruction over the Quaboag River at Quaboag WMA. Improvements to river access were discussed. Issues with an abutting landowner have been addressed and the project has begun.

A boundary encroachment was resolved at the Wolf Swamp WMA. An illegal snowmobile bridge was removed from Birch Hill WMA by the snowmobile club responsible for its construction.

The District participated in Lands Committee and Parcel Ranking meetings. A summary of lands protected by fee acquisition or Conservation Easement can be 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 Supervisor and staff interacted with other state and federal agencies, including NH Fish and Game; NGOs; and other groups, including DCR, DCR/DWSP, DEP, USFWS, USFWS Law Enforcement, Worcester County League of Sportsmen's Clubs, and multiple towns throughout Worcester County.

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

A surplus ATV was acquired from the Operational Services Division. Six ATVs, used for training by the Office of Law Enforcement, were serviced by District staff.

Two GPS Units were acquired using funds from the Off Highway Vehicle program to deter illegal motor vehicles on WMAs. Surveillance cameras were used on multiple WMAs and images showing illegal activity were forwarded to the OLE for investigation.

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

Connecticut Valley Wildlife District

Administration

Gary Galas, an employee of the Division for more than 37 years, retired in April of 2014. Gary worked at the Wilbraham Game Farm and then in the Connecticut Valley District.

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

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. The District Supervisor also became a member of the Mount Tom Partnership, along with The Trustees of Reservations, the Conte Refuge, the Holyoke Boys and Girls Club, and the DCR. Working with the DFW Chief of Wildlife Lands and the DFW Conservation Steward, the District Supervisor helped to create the public access plan for the newly acquired Paul C. Jones Working Forest Wildlife Conservation Easement (WCE) on 3,500 acres in Leverett/ Shutesbury.

Research and Conservation

Wildlife

Valley District staff completed ruffed grouse drumming routes and the wild turkey brood survey. Staff banded 100 Canada geese at eight sites. Ninety Wood duck nesting boxes were checked and maintained at 24 sites. Bird and kestrel nesting boxes were maintained at several WMAs as well. In addition, staff collected 25 samples of rabbit pellets at five sites and 10 carcasses throughout the district as part of the New England cottontail survey.

Staff monitored the survival and reproduction of 18 radio-collared female black bears during the reporting period. One adult collared female was hit by a vehicle. Two collared females were harvested during the hunt-

Pheasant hunters, Covey WMA, Belchertown.

ing 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 Wildlife Biologist trapped 15 bears (9 males, 6 females) during the spring and summer of 2014 to increase the sample of radio-collared female bears and to replace collars on bears missed during the den season.

The District office is staffed to check all required species. In addition, the Valley has eight deer, seven turkey, three bear, and three furbearer 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.

Staff removed eight cubic yards of waste from Montague Plains, including TVs/computer monitors, mattresses, and construction waste.

All WMAs were posted with rules and regulations. These signs are posted at public access entrance points at 35 WMAs throughout the District.

Approximately 90 acres of fields were mowed at six WMAs (Southwick, Southampton, Herm Covey, Poland Brook, Green River, and Leyden). A controlled burn was conducted on about 14 acres at Southwick WMA for the time. One and one quarter miles of access trails to four duck blinds were cleared for the annual Ludlow WMA controlled duck hunt.

Fisheries

Stream surveys were conducted throughout the District. Surveys of a variety of stream types were planned and completed, and included those streams that have not been sampled in the past.

There were no fish kills investigated during the 2013 Fiscal Year. The Valley District continues to be a weigh station for the Freshwater Sport Fishing Award Program, and several nice pin fish were recorded.

The Fisheries Biologist 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.

In conjunction with Westborough staff, the Fisheries crew worked to evaluate the fish community in the Mill River in Northampton in support of a permit by Smith College to mitigate sedimentation behind the Paradise Pond Dam.

Natural Heritage and Endangered Species

The Valley District is monitoring 21 breeding Bald Eagle territories and banded 15 eaglets in trees that could be safely climbed in the Valley District during FY 13. District staff assisted in the spring eagle nesting survey, throughout the District.

Staff banded three Peregrine Falcon chicks at the UMass/Amherst Library. Staff also constructed four

peregrine nesting boxes for NHESP staff to place at bridges throughout the District.

Enhancement of Outdoor Recreation

Staff stocked 10,000 pheasants on 33 town covers and 10 WMA covers during the 6-week pheasant hunting season.

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

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

In the fall of 2014, 13,750 trout were stocked into Valley District; over 98,263 Rainbow, Brook, Brown, and Tiger Trout were stocked for Valley District anglers over the course of spring 2014 stocking. Snowfall was not a delaying factor this year; the stocking season started in mid-March and ran through Memorial Day weekend. A significant stocking once again took place following the annual July 1 regulation change on the Swift River, capitalizing on the unique combination of coldwater and short transfer and handling time between the McLaughlin Hatchery and the Swift River to provide a unique fishing opportunity to anglers.

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). Staff stocked 10,000 pheasants on 33 town covers and 10 WMA covers during the 6-week pheasant hunting season.

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.

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

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

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

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

Technical Assistance

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

Western Wildlife District

Administration

Long-time Western District Clerk Elna Castonguay retired in May 2014 after more than 26 years of service to the Division. Elna was often the first point of contact for customers and constituents in the Western District. She gained and imparted considerable knowledge about wildlife resources and Division activities throughout her tenure.

The District office hosted two meetings of the Fisheries and Wildlife Board, including a site visit to a habitat management project on Stafford Hill WMA. 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.

Capital funding allowed the replacement of failing doors in the District office. The new doors improved security and energy efficiency.

Funds from the Off-Highway Vehicle Trust were allocated to the Western District for addressing illegal OHV activities. Two contracts were developed for

the furnishing and placement of boulders on WMAs. Boulders were placed to block illegal trails on the Tekoa Mountain, Three Mile Pond, Hinsdale Flats, Chalet, Fox Den, and Hiram Fox WMAs, totaling more than 600 linear feet. An additional contract was generated for the construction of gates to be installed by District staff to address ongoing and future OHV problem areas. The remaining funds were used for the purchase of remote camera equipment to identify patterns and specifics of illegal use on WMAs. In total, $37,000 was spent on the project in FY 14.

District staff participated in a number of trainings and professional development activities. Six staff members completed training and were certified in boater safety. The District Supervisor and District Game Biologist completed Large Animal Response Training. Five District staff members completed S-130/190 Basic Fire Training for wildland fires and prescribed burns.

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 kestrel.

Western District personnel provided support for Wildlife Project Leaders through game checkstations, 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 historical New England cottontail sites. Songbird surveys on WMAs were conducted by District personnel, in cooperation with the habitat management program.

District technicians maintained open-field habitat by mowing on ten 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 14 were fawns, hawks, owls, loons, bittern, 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.

Each winter, the District undertakes a habitat project on one or more WMAs to improve fruit bearing trees or shrubs during the dormant period. In FY 14, the District cleared and released hundreds of blueberry bushes on George Darey Housatonic River WMA and Hinsdale Flats WMA. These very old bushes were at risk of being lost to invasive species and overgrowth. Clearing the bushes will provide important food for wildlife.

Fisheries

Fish community surveys were conducted on seven ponds and 26 stream sites in FY 14. Pond survey efforts focused on unsampled waterbodies or those lacking recent information. Stream sites included small, previously unsampled headwaters and a few major rivers. In addition, staff surveyed fish communities at three dam removal projects throughout Berkshire County. The objective of this monitoring is to describe changes to fish communities, where connectivity has been re-established by barrier removal. The Fisheries Manager worked closely with MassDOT on a pilot case evaluating fluvial geomorphic components at a highway project site.

The District Fisheries Manager attended multiple meetings and conferences, including workshops on aquatic organism passage and fluvial geomorphology. The Fisheries Manager presented a paper at the Northeast Association of Fish and Wildlife Agencies Conference in April. She continued to act as agency representative to the Eastern Brook Trout Joint Venture, attending meetings and reviewing grant proposals. The District initiated an internship through the American Fisheries Society Hutton Student program at the end of FY 14. The program placed a high school senior in the District for the summer.

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

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. A total of four eagle chicks from three nests in the District were banded in FY 14.

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-Nosed Syndrome in the Commonwealth.

District Biologists and Wildlife Technicians partnered with 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 on to 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 14, we continued to install routered wooden signs and informational signage on District WMAs. Considerable time was spent marking boundaries of new acquisitions and replacing signage on older properties. The four river reaches designated as "Catch and Release" were reposted with informational signage so anglers would be aware of the regulations and locations.

Western District hosted two sites for paraplegic sportsmen to participate during the designated three-day deer 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, offering informational presentations to both middle and high school students and participating in the high school internship program.

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

The District hosted an event at Maple Hill WMA in West Stockbridge celebrating 200,000 acres of land protected and under the management of the Division.

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. Depredation instances were investigated. District personnel captured and relocated a young problem bear from the Town of Otis where it had been a persistent problem for home owners. In all instances, property owners were advised how to avoid bear conflicts and prevent encounters.

Large Animal Response cases included moose responses in Becket, Easthampton, Peru, and Goshen and bear cases in Cheshire, Pittsfield, and Richmond. Moose in Becket and Easthampton were relocated for public safety reasons. The District Supervisor and District Wildlife Manager assisted OLE in many response cases in FY 14.

The District Supervisor represented the agency at meetings involving resource conservation in the region. He attended public informational meetings as well as quarterly meetings of the Citizen's Coordinating Council addressing PCBs in the Housatonic River. He continued as the alternate state representative to the Westfield Wild and Scenic River Committee and attended many meetings in place of the primary representative. He worked closely with OLE, attending regional meetings to discuss regulations and enforcement issues.

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*
Sue Ostertag, *Clerk*
John Sheedy, *Fisheries Manager*

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

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

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

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

WILDLIFE LANDS: ADMINISTRATION, ACQUISITION & STEWARDSHIP

Craig A. MacDonnell
Chief of Wildlife Lands

Overview

The Realty Section had an eventful fiscal year 2014 (FY14) on administrative, acquisition, and stewardship fronts. As summarized below, staff implemented the revision of how DFW organizes and denominates its realty holdings, enjoyed another impressive year of significant land acquisition, and invigorated its stewardship efforts.

Administration

Realty Staff worked with District Staff to implement a revised system of categorizing DFW's real estate holdings and updating the nomenclature for these holdings. These efforts were designed to simplify management of DFW's lands inventory. The categories are now as follows:

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

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

Wildlife Conservation Restriction (WCR): CR without public access.

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

Wildlife Sanctuaries: Properties so designated by statute. Separate regulations apply.

Installations: District offices, hatcheries, etc.

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

Land Acquisition

FY2014 was another excellent year for land protection. Our land agents continued to experience an evolving real estate market showing signs of price recovery and inflated landowner expectations. Despite these changing market conditions, staff completed a remarkable 50 projects conserving 4,004 acres of valuable habitat at a cost of $5.7 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 $4,219,471. The other source of funding is the Wildlands Fund, which contributed $1,447,500 in FY14. Our objectives in pursuing land conservation include expanding existing WMAs and WCEs, protecting key habitats across the state, and enhancing public access to lands and waters open to sporting activity. All lands are 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 Commonwealth. State WMAs include river corridors, wetlands, various type of forested upland, 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 FY14. This year, the Central District amassed the greatest acreage total, with 1,659 acres conserved. The Western District also had a very good year, with 958 acres protected. All of the districts had successful years, however, with the Northeast District adding 486 acres, the Valley District conserving 390 acres, and the Southeast District protecting over 500 acres. Fourteen acquisitions were recorded in the Northeast District, eleven in the Western District, ten in the Southeast, seven in the Valley District, and six in the Central District. Most transactions involved additions to existing areas, although one new WMA and three new WCEs were added.

Acquisitions were configured and financed in a variety of ways. They were primarily in fee (2,848 acres), but also included important acreage in the form of CRs (1,155 acres). Staff also secured an impressive collection of donations (1,408 acres, of which just under 1,000 were CRs). There were ten projects over 100 acres, including

the 622-acre Town of Athol water Supply CR, the 545-acre addition to the Birch Hill WMA, and the 305-acre CR over land owned by the New England Forestry Foundation in Hardwick.

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 Trustees of Reservations, Valley Land Fund, Kestrel Trust, Buzzards Bay Coalition, Essex County Greenbelt Association, Franklin Land Trust, and Groton Conservation Trust.

The 4,004 acres conserved in FY14 bring the total acreage to over 204,163 acres, or approximately 319 square miles of permanently protected wildlife habitat across the Commonwealth.

Fiscal Year 2014 Acreage Cost, by District

Western Wildlife District	
Expended	$1,021,150.00
Acreage	958.22
Cost per acre	$1,065.67
Connecticut Valley Wildlife District	
Expended	$415,235.00
Acreage	393.27
Cost per acre	$1,055.85
Central Wildlife District	
Expended	$1,520,000.00
Acreage	1,659.69
Cost per acre	$915.83
Northeast Wildlife District	
Expended	$1,871,606.00
Acreage	486.84
Cost per acre	$3,844.40
Southeast Wildlife District	
Expended	$838,980.00
Acreage	506.32
Cost per acre	$1,657.01
Total Expended	**$5,666,971.00**
Total Acreage Conserved	**4,004.34**
Average Cost per Acre	**$1,415.21**

These acreage figures and costs are for properties acquired with FY 14 funds and recorded on or after July 1, 2013, and on or before June 30, 2014. Ancillary costs, such as appraisals, surveys, title examinations, and other related transaction expenses are not included.

Western Wildlife District

The Western District completed eleven acquisitions in FY14 and protected a total of 958 acres at a cost of $1,021,150. The hallmark of the Western District's work this past year was collaboration. We partnered with several conservation organizations on a number of key projects. In Great Barrington we worked closely with The Trustees of Reservations in converting the 282 Agawam Lake WCE into the Agawam Lake WMA by purchasing the underlying fee interest. We partnered again with the Trustees on the 43-acre Flag Rock WCE, also in Great Barrington. Another project in the Western District featured collaboration with Berkshire Natural Resources Council resulting in the 85-acre Widow White's Peak WCE in Lanesborough. In addition, we worked closely with Kestrel Trust in securing a 150-acre gift of land in Blandford, which will become the Stage Brook WMA.

Connecticut Valley Wildlife District

The Valley District completed seven projects in FY14 and protected just over 390 acres at a cost of $415,235. The largest project in the Valley District was the 138-acre addition to the Mt. Esther WMA in Whatley and Conway, which builds a bridge to additional conservation lands to the north. The other large project in the valley District was the 130-acre addition to the Mt. Toby WMA in Leverett. This acquisition features several vernal pools, expands on our investment in the large Jones Working Forest WCE, and precludes inappropriate development in an area of keen conservation interest and sporting opportunity.

Central Wildlife District

The Central District completed six strong acquisitions. Over 1,659 acres were protected at a cost of $1,520,000. Key projects included the long-sought 622-acre Newton Reservoir WCE in Athol, the massive 545-acre addition to the Birch Hill WMA in Winchendon and Royalston, and the epic 305-acre conservation restriction in Hardwick over land owned by the New England Forestry Foundation, which will be known as the Muddy Brook WCE.

Northeast Wildlife District

The Northeast District also had a very fine year of land conservation in FY14. Despite the challenge of high property values, the Northeast District completed 14 projects in seven municipalities and protected 486 acres of land at a cost of $1,871,606. The most notable projects in the Northeast District were the 96-acre addition to the Upper Parker River WMA in Georgetown and Groveland and an extraordinary assemblage of properties in the towns of Groton and Dunstable involving seven parcels and over 270 acres, which together substantially expanded the size and integrity of the Unkety Brook WMA.

Southeast Wildlife District

The Southeast District completed ten land conservation projects in FY14 involving a total of 506 acres in four towns at a cost of $838,980. Of particular note in this district is the assemblage of properties protecting and providing additional access to the Freetown Swamp WMA. These additions include a 185-acre parcel in Freetown protected in partnership with the federal Wetlands Reserve Program, an adjacent 29-acre parcel that had been permitted for a large development, and a

two-acre frontage lot providing excellent public access to the Freetown Swamp WMA. The Southeast District also added the 185-acre Southeast Pine Barrens WMA in Plymouth, which protects an incredible array of rare and endangered species.

Stewardship Activities

Boundaries

In FY14, DFW engaged the services of three experienced contractors 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. Deeds in the Northeast District typically are more vague and difficult to locate and were further complicated by a greater number of smaller parcels requiring relatively more research. 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. Altogether, over 60 miles of boundaries were addressed.

Surveys

DFW also hired several private survey contractors to help resolve a handful 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 a collection of properties in the Western, Valley, and Central Districts.

Conservation Restriction Baseline Documentation and Monitoring Efforts

In FY14, outside contractors completed an additional two Baseline Documentation Reports on new CRs. The CR monitoring form and process continues to be modified as we gain more experience in this effort. Monitoring training sessions for staff were held in each of the Districts, and monitoring visits were conducted by District and by Field Headquarters staff. In all, 19 individuals were involved in 57 CR monitoring visits resulting in reports filed. District personnel included District Managers, Biologists, Land Agents and Technicians.

A Stewardship Intern was recruited near the end of FY13 to visit and gather GPS boundary data on some of our older CRs in Royalston and Orange. He completed his work in FY14, and a second intern came on board near the end of FY14 to continue this important effort. These visits included contact with the landowner, boundary research, and GPS coordinates gathered around the entire perimeter. Maps were produced to refine the accuracy of the Open Space Data Layer, and also to begin to define public access opportunities on these WCEs.

Forest products harvesting continues to be the most common activity on WCEs that requires review and approval by agency staff. This review is provided by Forestry Project staff in the Wildlife Section, and offers opportunity to track and positively influence forestry activities with respect to agency goals. The Realty Section provides oversight and coordination of all monitoring efforts.

Land Agents

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

Land Inventory

Western Wildlife District	**Acres**
Wildlife Management Areas (52)	
Abbott Brook WMA	167.59
Agawam Lake WMA	779.8
Ashfield Hawley WMA	284
Barton's Ledge WMA	88.6
Becket WMA	234
Bullock Ledge WMA	15.5
Chalet WMA	7163.61
Cummington WMA	288.97
Day Mountain WMA	382.45
Dolomite Ledges WMA	319.85
Eugene D. Moran WMA	1669.92
Fairfield Brook WMA	164.9
Farmington River WMA	1848.6
Fisk Meadows WMA	620.17
Flat Brook WMA	270.56
Fox Den WMA	4915.94
George L. Darey Housatonic Valley WMA	590.83
Green River WMA	639.32
Hancock WMA	491.5
Hawks Brook WMA	509.83
Hinsdale Flats WMA	1694.47
Hiram H. Fox WMA	4013.69
Hop Brook WMA	424.8
Housatonic River East Branch WMA	27.5
Hubbard Brook WMA	195.92
John J. Kelly WMA	267
Jug End Fen WMA	53.54
Jug End State Reservation and WMA	1169.8
Jug End WMA	20
Kampoosa Fen WMA	72
Knightville Dam WMA	0
Lilly Pond WMA	192.7
Long Mountain WMA	906
Maple Hill WMA	578.05
Maxwell Brook WMA	36.4
North Egremont WMA	2.56
Oak Hill WMA	674.8
Peru WMA	4820.62
Powell Brook WMA	404.58
Ram Hill WMA	230.25

Richmond Fen WMA	22.9
Savoy WMA	1883.34
Shaw Brook WMA	153.33
Stafford Hill WMA	1042.6
Stage Brook WMA	150
Taconic Mountain WMA	157.34
Tekoa Mountain WMA	1383.3
Three Mile Pond WMA	1141.82
Tracy Pond WMA	225.07
Upper Westfield River WMA	310.32
Walnut Hill WMA	983.5
Williams River WMA	35
	44719.14
Wildlife Conservation Easements (31)	
Abbott Brook WCE	1782
Alford Spring WCE	854.82
Allen Mountain WCE	208
Barre Falls WMA (by agreement)	0
Boulders WCE	634.4
Cold Brook WCE	405
Cole Meadow WCE	101
Flag Rock WCE	43
Hawks Brook WCE	23.19
Housatonic River East Branch WCE	102
Jug End Fen WCE	81.57
Jug End WCE	262.48
Knightville WCE	676
Lilly Pond WCE	157
Mt. Darby WCE	319.29
Mt. Plantain WCE	1337.44
North Egremont WCE	21.5
Ram Hill WCE	190.35
Rockhouse Mountain WCE	78
Scout Pond WCE	505
Shales Brook WCE	5.6
Silver Brook WCE	162
Stage Brook WCE	581
Steadman Pond WCE	1170.95
Thorpe Brook WCE	322
Tower Brook WCE	300
Umpachene River WCE	239
Upper Westfield River WCE	12.5
Westfield Watershed WCE	2300
Widow White's Peak WCE	85
Windsor Brook WCE	3284.43
	16244.52
Wildlife Conservation Restriction (1)	
Windsor Brook WCR	69.4
	69.4
Access Areas (3)	
Hoosic River Access	5.9
Housatonic River Access	17
Konkapot River Access	8.8
	31.7
Wildlife Sanctuaries (2)	
E. Howe Forbush Sanctuary	365.5
Grace A. Robson Sanctuary	69.5
	435
Installation (1)	
Western District - Old HQ	2.35
	2.35
Total Western Wildlife District	**61502.11**

Connecticut Valley Wildlife District	**Acres**
Wildlife Management Areas (35)	
Bennett Meadows WMA (by agreement)	0
Brewer Brook WMA	213.99
Catamount WMA	413
Darwin Scott WMA	27.3
East Mountain WMA	454.86
Facing Rock WMA	1366.1
Flagg Mountain WMA	160.48
Great Swamp WMA	705.73
Green River WMA	231.75
Herman Covey WMA	1492.98
Honey Pot WMA	178.42
Lake Warner WMA	98
Leyden WMA	759
Montague Plains WMA	1504.8
Montague WMA	1805.07
Mt. Esther WMA	736.45
Mt. Toby WMA	682.1
Mt. Tom WMA	79.9
Orange WMA	889.9
Palmer WMA	1260.48
Pauchaug Brook WMA	161.3
Poland Brook WMA	608.45
Satan's Kingdom WMA	1798.28
Shattuck Brook WMA	178.8
Shepherd's Island WMA	45.9
Southampton WMA	170.6
Southwick WMA	265.24
Sunderland Islands WMA	15
Tully Mountain WMA	645
Wales WMA	207.15
Warwick WMA	379
Wendell WMA	601.48
Westfield WMA	232.67
Whately WMA	340.97
Williamsburg WMA	88
	18798.15
Wildlife Conservation Easements (12)	
Amythyst Brook WCE	36.9
Chestnut Hill WCE	146
Facing Rock WCE	190
Great Swamp WCE	0.94
Honey Pot WCE	52.74
Lake Rohunta WCE	59
Little Tully Mountain WCE	466.38
Ludlow Reservoir WCE	1750
Orange WCE	472.2
Paul C. Jones Working Forest WCE	3486
Satan's Kingdom WCE	404
Tully Mountain WCE	692.87
	7757.03
Access Areas (11)	
Connecticut River Access	94.8
Deerfield River Access	21

Lake Lorraine Access	0.26
Lake Rohunta Access	2.49
Little Alum Pond Access	0.5
Mill River Access	14.15
Millers River Access	52.8
Packard Pond Access	0.54
Sawmill River Access	52
Ware River Access	39
Westfield River Access	79.4
	356.94
Installations (3)	
Bitzer Fish Hatchery	150.64
Reed Fish Hatchery	316
Sunderland Fish Hatchery	45.58
	512.22
Other (1)	
Wilbraham Nature and Cultural Center	143.09
	143.09
Total Connecticut Valley Wildlife District	**27567.43**

Central Wildlife District	**Acres**
Wildlife Management Areas (48)	
Bennett WMA	281.2
Birch Hill WMA	4,210.75
Bolton Flats WMA	1,329.88
Breakneck Brook WMA	707
Chockalog Swamp WMA	52.5
Clinton Bluff WMA	42
Coy Hill WMA	865.8
E. Kent Swift WMA	157
Fish Brook WMA	142.5
Four Chimneys WMA	200
High Ridge WMA	2,232.47
Hitchcock Mountain WMA	268.41
Hubbardston WMA (by agreement)	0
Lackey Pond WMA	174.54
Lawrence Brook WMA	405.5
Leadmine WMA	826
Long Pond WMA	220.48
Martha Deering WMA	180.6
McKinstry Brook WMA	65
Merrill Pond WMA	984.47
Millers River WMA	3,227.43
Mine Brook WMA	1,062.15
Moose Brook WMA	452.94
Moose Hill WMA	640.1
Mt. Pisgah WMA	88.8
Muddy Brook WMA	1,936.92
Oakham WMA	742.2
Phillipston WMA	3475.65
Popple Camp WMA	1,459.91
Poutwater Pond WMA	391.74
Prince River WMA	897.59
Quaboag WMA	965.62
Quacumquasit WMA	179.82
Quisset WMA	388
Raccoon Hill WMA	645.5
Richardson WMA	467.22
Savage Hill WMA	930.96
Scripture Hill WMA	121
Stone Bridge WMA	129.82
Sucker Brook WMA	102.6
Thayer Pond WMA	131
Ware River WMA	185.36
West Hill WMA (by agreement)	0
Westborough WMA	979.58
Whortleberry Hill WMA	324.4
Winchendon Springs WMA	674.8
Winimusset WMA	670.17
Wolf Swamp WMA	1,184.01
	35,801.39
Wildlife Conservation Easements (26)	
Benjamin Hill WCE	223
Breakneck Brook WCE	526
Burnshirt River WCE	100
Carter Pond WCE	425.5
Fish Brook WCE	75
Fitchburg Watershed WCE	1875
Hitchcock Mountain WCE	610
Lawrence Brook WCE	719.7
Leadmine Mountain WCE	825
Long Pond WCE	8.85
McKinstry Brook WCE	31
Millers River WCE	204.72
Mt. Pisgah WCE	19.12
Muddy Brook WCE	305.7
Newton Reservoir WCE	622
Nineteenth Hill WCE	623.75
Potter Hill WCE	90.8
Quisset WCE	247
Savage Hill WCE	234
Secret Lake WCE	212
Slater Woods WCE	73.9
Stuart Pond WCE	28.7
Taft Hill WCE	266.8
Wekepeke WCE	564
Whitmanville WCE	116.5
Winchendon Springs WCE	87.5
	9,115.54
Wildlife Conservation Restrictions (5)	
Breakneck Brook WCR	176
Five Mile River WCR	17.27
McKinstry Brook WCR	26
Raccoon Hill WCR	121.3
Williamsville Pond WCR	5.64
	346.21
Access Areas (18)	
Bare Hill Pond Access	1.45
Blackstone / West River Access	28
Cusky Pond Access	23
Fisherville Pond Access	1.6
Five Mile River Access	178.52
Glen Echo Lake Access	1
Leadmine Pond Access	0.05
Moose Brook Access	400.31
Mossy Pond Access	17
Natty Brook Access	95.17
Quag Pond Bog Access	31
Quinapoxet River Access	32
Quinsigamond Marsh Access	59

Sevenmile River Access	77
South Meadow Pond Access	0.25
Sputtermill Pond Access	58.5
Ware River Access - Barre	40
Webster Lake Access	1.7
	1,045.55
Wildlife Sanctuaries (2)	
Mount Watatic Sanctuary	228
Susan B. Minns Sanctuary	139.91
	367.91
Total Central Wildlife District	**46,676.60**

Northeast Wildlife District	**Acres**
Wildlife Management Areas (25)	
Ashby WMA	849.76
Boxborough Station WMA	124.1
Crane Pond WMA	2,168.15
Delaney WMA (by agreement)	0
Dunstable Brook WMA	131.6
Eagle Island WMA	5
Elbow Meadow WMA	210.33
Fessenden Hill WMA	21
Flagg Swamp WMA	54
Harold Parker WMA (by agreement)	0
Hauk Swamp WMA	61
Hunting Hills WMA	430.02
Martin H. Burns WMA	1,958.60
Mulpus Brook WMA	472.13
Nissitissit River WMA	383.22
North Shore Salt Marsh WMA	341.12
Pantry Brook WMA	449.95
Salisbury Salt Marsh WMA	770.07
Squannacook River WMA	1,359.62
Townsend Hill WMA	521.27
Trapfall Brook WMA	45.38
Unkety Brook WMA	277.54
Upper Parker River WMA	112
Whittier WMA	36
William Forward WMA	2,161.45
	12,943.31
Wildlife Conservation Easements (14)	
Concord River WCE	18.9
Cow Pond Brook WCE	127
Great Meadows WCE	16
Great Swamp Brook WCE	157
Groton Town Forest WCE	513
Hunting Hills WCE	84.59
Martin H. Burns WCE	99.44
Meadow Pond WCE	58
Pepperell Springs WCE	255
Squannacook River WCE	181.7
Sucker Brook WCE	12
Surrenden Farm West WCE	169.7
Throne Hill WCE	177.5
Wright Pond WCE	148
	2,017.83
Wildlife Conservation Restrictions (2)	
Mill Creek WCR	59
Squannacook River WCR	68
	127
Access Areas (14)	
Baddacook Pond Access	0.16
Concord River Access	0.25
Flint Pond Access	89
Ipswich River Access	1.79
Knops Pond Access	0.6
Lake Attitash Access	6.03
Long Sought For Pond Access	1
Mascuppic Lake Access	0.25
Nashua River Access - Dunstable	15
Nashua River Access - Groton	10.1
Nashua River Access - Pepperell	11.2
Nashua River Access - Shirley	30.7
Sudbury River Access	51.86
Weymouth Back River Access	16.5
	234.44
Wildlife Sanctuaries (5)	
Carr Island Sanctuary	110.5
Henry Cabot Lodge Bird Sanctuary (Egg Rock)	2
J. C. Phillips Sanctuary	390.98
Milk Island Sanctuary	29
Ram Island Sanctuary	20
	552.48
Installations (3)	
Acton Installation	1.4
Ayer Game Farm	90.72
Northeast District HQ	15.7
	107.82
Other (3)	
Gov. Thos. Dudley Park	4.5
King Phillip Woods	87.2
Mount Watatic Reservation	280
	371.7
Total Northeast Wildlife District	**16,354.58**

Southeast Wildlife District	**Acres**
Wildlife Management Areas (61)	
Bearse Pond WMA	5.8
Black Brook WMA	411.32
Blueberry Pond WMA	1.5
Brayton Point WMA	2.2
Burrage Pond WMA	1904.1
Camp Edwards WMA	15,013.16
Canoe River WMA	116.6
Chase Garden Creek WMA	56.4
Church Homestead WMA	163
Clapps Pond WMA	68.35
Cooks Pond WMA	69.18
Copicut WMA	3992.56
Dartmoor Farm WMA	473
Dennis Grassy Pond WMA	7.24
Eastham Salt Marsh WMA	7.44
English Salt Marsh WMA	288.5
Erwin S. Wilder WMA	933.53
Fisk Forestdale WMA	235
Fall River/Freetown WMA (by agreement)	0
Fox Island WMA	71.1
Frances A. Crane WMA	2,165.31
Freetown Swamp WMA	570.26
Gosnold WMA	3.45

Halfway Pond WMA	122.64
Haskell Swamp WMA	3,083.96
Head of the Plains WMA	2
Hockomock Swamp WMA	4,146.86
Hog Ponds WMA	24.5
Hyannis Ponds WMA	365
Katama Plains WMA	18.57
Maple Springs WMA	129.2
Marconi WMA (by agreement)	0
Mashpee Pine Barrens WMA	184.35
Mashpee River WMA	41.6
Meetinghouse Swamp WMA	123
Miacomet Heath WMA	3.83
Muddy Pond WMA	72
Myles Standish State Forest WMA (by agreement)	0
Noquochoke WMA	204.5
North Attleborough WMA	36.46
Old Sandwich Game Farm WMA	93.13
Olivers Pond WMA	12
Peterson Swamp WMA	250
Pickerel Cove WMA	15.9
Plymouth Grassy Pond WMA	25.5
Poor Meadow Brook WMA	117.21
Provincetown Corridor WMA	122
Purchade Brook WMA	106
Quashnet River WMA	463.04
Red Brook WMA	683.2
Rochester WMA	70
Rocky Gutter WMA	3,143.89
Sandwich Hollows WMA	224.2
Sly Pond WMA	192
Southeast Pine Barrens WMA	185
South Shore Marshes WMA	22.4
South Triangle Pond WMA	47.5
Taunton River WMA	349.17
Triangle Pond WMA	92.16
Wasque Point WMA	99.5
West Meadows WMA	231.82
	41,663.09
Wildlife Conservation Easements (24)	
Acushnet River WCE	30.2
Agawam Mill Pond Access WCE	0.5
Agawam River WCE	3.98
Angeline Brook WCE	50.7
Assawompsett Pond Complex WCE	3065
Bettys Neck WCE	329.22
Billington Sea WCE	69.74
Brandt Island Cove WCE	109.52
Bread and Cheese Brook WCE	5.52
Camp Cachelot WCE	789
Halfway Pond WCE	28
Lake Nippenicket WCE	8.35
Pickerel Cove WCE	78.3
Pilgrim Springs WCE	16.05
Plymouth Pine Hill WCE	240.7
Plymouth Town Forest WCE	296
Poor Meadow Brook WCE	101
Quashnet River WCE	14.1
Santuit Pond WCE	293
Sippican Woods WCE	390.14
Stump Brook Reservoir WCE	174
Taunton River WCE	125.07
Watuppa Reservation WCE	4300
Weweantic River WCE	10.08
	10,528.17
Wildlife Conservation Restrictions (2)	
Plymouth Grassy Pond WCR	33.9
Taunton River WCR	4
	37.9
Access Areas (18)	
Agawam Mill Pond Access	1.4
Bakers Pond Access	1.75
Barnstable Harbor Access	2.78
Big Sandy Pond Access	0.2
Childs River Access	0.25
Cook Pond Access	3
Dogfish Bar Beach Access	2.4
Great Herring Pond Access	1.06
Johns Pond Access	0.52
Mashpee-Wakeby Pond Access	25
Nemasket River Access	0.46
Popponesset Beach Access	1.5
Robbins Pond Access	1
Scorton Creek Access	5.48
Shubael Pond Access	0.35
Snipatuit Pond Access	0.5
Spectacle Pond Access	0.5
Tispaquin Pond Access	6
	54.15
Wildlife Sanctuaries (4)	
Billingsgate Island Sanctuary	6.5
Penikese Island Sanctuary	60
Ram Island Sanctuary	2
Tarpaulin Cove Sanctuary	4.5
	73
Installations (3)	
Lobster Hatchery	14.8
Sandwich Fish Hatchery	69.76
Southeast District HQ	29.8
	114.36
Total Southeast Wildlife District	**52,470.67**

Total Massachusetts Wildlife Lands Acreage, by Area Type

Type	Acres
Access	1,722.78
Installation	736.75
Other	514.79
Sanctuary	1,428.39
WCE	45,663.09
WCR	580.51
WMA	153,925.08
TOTAL	**204,571.39**

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, $7,258,798, 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 $3,257,403 represents a decrease from 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 $488,610 (15%); and the balance of $2,768,792 was equally divided between the Division of Marine Fisheries and the DFW ($1,384,396 each).

Seven projects were obligated with the OFBA and DFW shares of the FY 14 Dingell-Johnson and Wallop-Breaux funds. The OFBA, in cooperation with the DFW, had nine boat accommodation grants active in FY 14. 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 14 State Wildlife Grant apportionment of $685,028 was a decrease from the previous year. The SWG funds were obligated toward five projects. Activities reimbursed under those projects include fish community research, anadromous fish restoration, biodiversity impact review, biodiversity inventory and research, biodiversity conservation mapping and planning, habitat evaluation, regional conservation needs, and in the development and implementation of our Comprehensive Wildlife Conservation Strategy (CWCS), also referred to as the State Wildlife Action Plan (SWAP).

Through a multi-state regional effort, the states of New Hampshire, Connecticut, New York, Maine, and Massachusetts were successfully awarded a total of $3,000,000 through the FY 10, FY 11, and FY 13 national State Wildlife Grant competitive programs to implement the Rangewide New England Cottontail (NEC) Initiative. Massachusetts' share of the funds ($625,400) will be used to restore NEC habitat in Massachusetts. Implementation of the NEC Initiative 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 the states of New Hampshire, Connecticut, Vermont, New Jersey, Tennessee, Minnesota, Wisconsin, and Illinois to address this conservation issue of national importance. This cooperative project will continue through FY 15.

The DFW was also awarded $58,000 through the 2011 national State Wildlife Grant competitive program to fund the Northeast Blanding's Turtle Initiative. The DFW is partnering with the states of Maine, New Hampshire, Pennsylvania, and New York. This cooperative project will continue through FY 16.

The Endangered Species Act (Section 6)

DFW's apportionment of $31,000 was a decrease from 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.

Landowner Incentive Program (LIP)

The federal government did not fund the LIP in FY 14; as a result the DFW could not apply for federal funding for its state program. The DFW is actively pursuing 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. Our FY 07 Tier I apportionment of $180,000 was used for project coordination. Our Tier II award, $849,510.00, was used for program implementation. For more detailed information relating to the DFW's activities under the Landowner Incentive Program, please see page 48.

Audits

The office of the State Auditor conducts a state audit of the DFW Federal Aid Program once every two years and the U.S. Department of Interior, Office of Inspector General, conducts a federal audit of the program once every 5 years. No audits were active in FY 14.

Other Matters

Additional Federal Aid Coordinator's duties included responding to requests for information, public inquiries, DFW inventory management, overview of projects performance and financial reporting, project assistance (both field and office), field visits, and serving as the liaison between all Federal Aid personnel and the DFW.

Federal Aid Program Personnel

Michael Sawyers, *Federal Aid Coordinator*
Lori Cookman, *Fiscal Program Coordinator*
Vacant, *Assistant to the Federal Aid Coordinator*
Debbie McGrath, *Federal Aid Bookkeeper*

MAINTENANCE & DEVELOPMENT

Mark S. Tisa, Ph.D.
Project Manager

Overview

The new 45,000 gross square foot Field Headquarters is nearly complete and should open on schedule in early September 2014. Staff have already begun preparing for moving operations, which will commence the last week in August.

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 will produce all of its annual energy needs through a highly efficient 290-kilowatt rooftop solar panel array. The energy needs of the building have been driven down to levels approximately 60% below typical buildings of this type through the design of a high-performance exterior building envelope and the use of energy efficient heating and cooling systems, including a closed-loop geothermal well system, radiant ceilings, and outside-air ventilation with heat recovery. The building includes a number of other sustainable design elements, including orientation on the site to minimize heating and cooling energy use, use of natural light, on-site stormwater recharge, and the use of low maintenance native plantings. The building is designed to achieve either a LEED Gold or Platinum certification.

The new Massachusetts Division of Fisheries and Wildlife Field Headquarters will be a public destination offering new spaces for teaching and outreach, educational displays, and unprecedented access to the many wildlife and habitat resources and publications offered by DFW.

The building will accommodate approximately 120 total employees, including about 90 Division of Fisheries and Wildlife employees that worked at the former Field Headquarters Building. In addition, DFW will close its office in Ayer and relocate 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, will also be relocated into the new facility in September. This is a dynamic, state-of-the art office building with ample meeting, support, and storage space. 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.

Fleet Maintenance

Throughout FY 2014, 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 be able to upgrade 11 Division fleet vehicles during FY 2014, with 10 new pickup trucks and 1 Ford Escape. The corresponding trade-in vehicles were then delivered to the state auction lot.

LEGISLATIVE REPORT

Jack Buckley
Deputy Director and Legislative Liaison

During FY 14, there were no legislative actions that had an impact on fish and wildlife in the Commonwealth.

Close to completion; the new Richard Cronin Building in May 2014.

PERSONNEL REPORT

Johanna Zabriskie
DFG Human Resources Officer

New Hires - Employee

Name	Title	Action	Date of Action
Emily Stolarski	Game Biologist II	New Hire	9/8/13
Burnham, James	Office Specialist II	New Hire	7/28/13

New Hires - Contractors

Name	Title	Action	Date of Action
Cardoza, James	Researcher	Re-Hire	11/1/13

Seasonals & Interns

McDermott, Derek	Fish Tech	Contracted Seasonal Hire	4/7/14
Johnson, Jason	Fish Tech	Contracted Seasonal Hire	4/7/14
Ferry, Nicholas	Fish Tech	Contracted Seasonal Hire	4/21/14
McMahon, Nicholas	Fish Tech	Contracted Seasonal Hire	4/7/14
Pszybysz, Tara	Fish Tech	Contracted Seasonal Hire	4/21/14
Toong, Mandy	Fish Tech	Contracted Seasonal Hire	4/21/14
Andersson, Annika	Tern Colony Project	Contracted Seasonal Hire	5/4/14
Gensler, Megan	Tern Colony Project	Contracted Seasonal Hire	5/4/14
LaFlamme, Derek	Tern Colony Project	Contracted Seasonal Hire	5/4/14
LaPlante, Ethan	Tern Colony Project	Contracted Seasonal Hire	5/18/14
Wiitala, Dacia	Tern Colony Project	Contracted Seasonal Hire	5/4/14
Mitchell, Allegra	Stewardship Intern	Contracted Intern	6/17/14
DesMeules, Stewart	Fish Tech	Contracted Seasonal Hire	6/2/14
Mathews, Timothy	Seasonal Hatchery Tech	Seasonal Employee	5/4/14

Terminations - Employee

Name	Title	Action	Date
Galas, Gary	Technician	Retired	4/26/14
Castonguay, Elna	Clerk	Retired	5/17/14
Turner, Richard	Wildlife Biologist	Retired	6/28/14
Lane, Jessica	Clerk IV	Retired	10/16/14
O'Shea, Thomas	Asst. Director of Wildlife Research	Resigned	7/10/13

Terminations - Contractors

Name	Title	Action	Date
Erb, Lori	Turtle Conservation Biologist	Resigned	10/13/13

Promotions

Name	Title	Action	Date
O'Leary, John	Assistant Director of Wildlife Research	Promotion	10/20/14

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, 2013 to June 30, 2014

PROGRAMS/ASSESSMENTS	TOTAL	PERCENTAGES
Administration:		
Administration	$1,906,104	
Information-Education	$771,213	
Rent	$325,400	
Total	**$3,002,717**	**19%**
Fisheries and Wildlife Programs:		
Hatcheries	$2,503,779	
Game Bird Program	$570,198	
Seasonals	$54,692	
Cooperative Units	$127,795	
Fisheries and Wildlife Management	$5,083,062	
Total	**$8,339,526**	**54%**
Other Programs:		
Land Acquisitions	$1,470,981	
Waterfowl Management Program	$55,209	
Hunter Safety Program	$401,578	
Total	**$1,927,767**	**12%**
Other Assessments:		
Payroll Taxes	$110,448	
GI and Other Fringe Benefits	$2,054,614	
Total	**$2,165,062**	**14%**
TOTAL EXPENDITURES	**$15,435,071**	**100%**

Summary
Revenues, Expenditures and Fund Equity
Natural Heritage & Endangered Species Fund
July 1, 2013 to June 30, 2014

REVENUES:	
Natural Heritage and Endangered Species Tax Checkoff Donations	$171,060
Sales	$8,615
State Wildlife Grant (SWG)	$894,184
NRCS Wildlife Habitat Incentives Program (WHIP)	$68,691
North American Wetlands Act (NAWCA)	$75,000
Massachusetts Endangered Species Act Fees	$381,241
Contracts	$53,667
Direct Donations	$2,369
Interest	$179
TOTAL REVENUES:	***$1,655,006***
EXPENDITURES:	
Natural Heritage and Endangered Species Program	$1,356,243
Tern Restoration	$110,605
Wildlife Habitat Incentive Program	$26,499
State Wildlife Grant	$225,449
North American Wildlife Conservation Act	$58,081
TOTAL EXPENDITURES:	***$1,776,877***
FUND EQUITY AS OF JUNE 30, 2014	***$1,430,553***

Other Funds and Programs Expenditures Division-wide
July 1, 2013 to June 30, 2014

CAPITAL OUTLAY FUNDS:	
Land Protection - Habitat Management- CR Stewardship	$133,700
Staffing for Land and Infrastructure Programs	$477,291
Hatchery/District/Westborough Field Headquarters Repairs	$446,536
TOTAL CAPITAL EXPENDITURES	***$1,057,527***
INTERDEPARTMENTAL SERVICE AGREEMENTS:	
Massachusetts Highway Department	
Accelerated Bridge Program	$122,492
Executive Office of Energy and Environmental Affairs	
Off Highway Vehicle Trust ISA	$36,955
Dept of Environmental Protection ISA	$15,409
Division of Capital Asset Management and Maintenance	$1,500
TOTAL ISA EXPENDITURES	***$176,356***
Natural Heritage and Endangered Species Line Item	**$149,273**
FEDERAL GRANT ACCOUNTS:	
Landowner Incentive Program Tier 2	$97,446
TOTAL FEDERAL EXPENDITURES	***$97,446***
OTHER TRUST ACCOUNTS:	
Upland Sandpiper	**$72,188**
TOTAL OTHER TRUST EXPENDITURES	***$1,552,790***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2013 to June 30, 2014

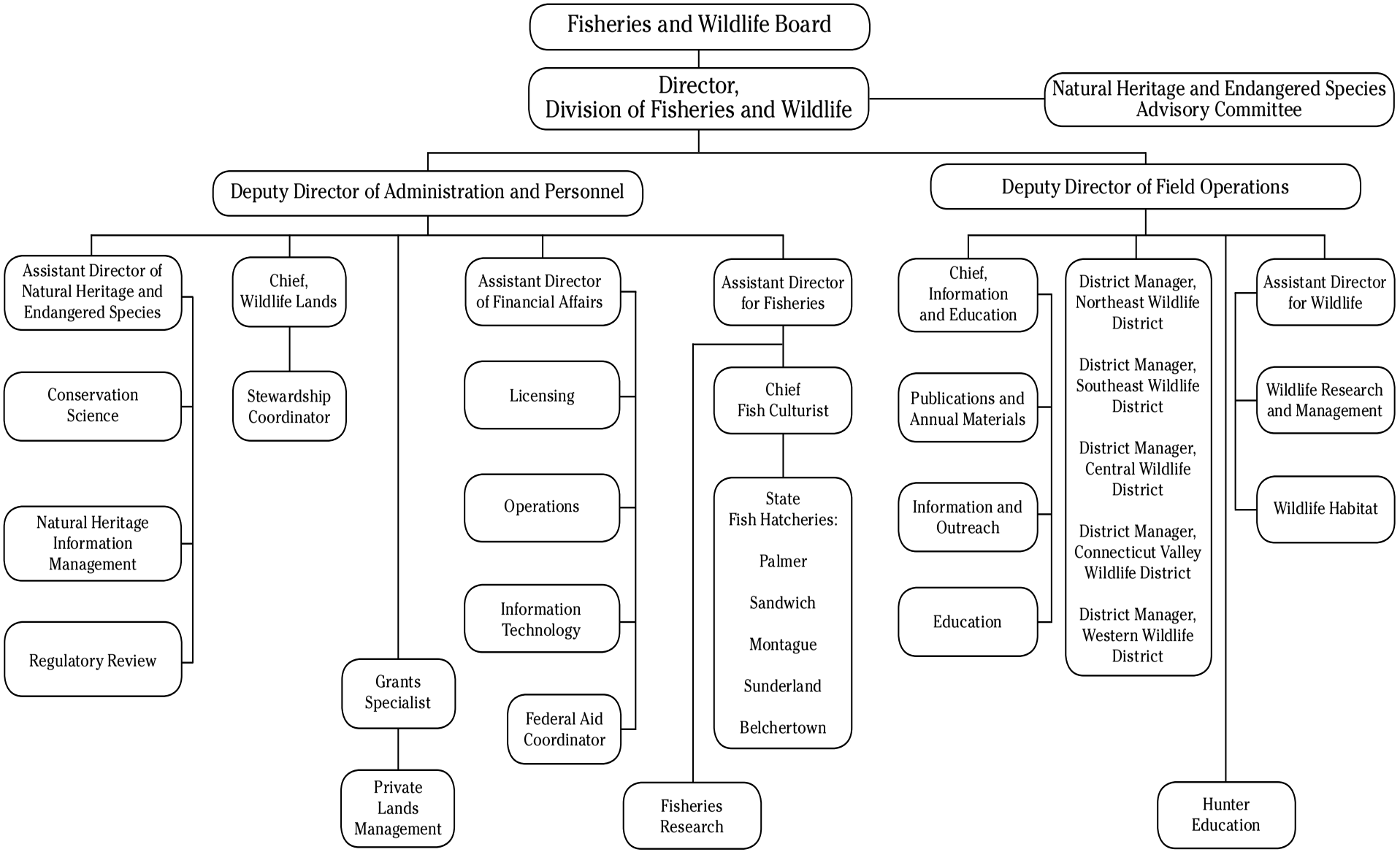
DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$5,139,899
Archery Stamps	$174,687
Primitive Firearm Stamps	$189,251
Waterfowl Stamps	$64,034
Wildlands Stamps	$957,750
Trap Registrations	$2,310
Antlerless Deer Permits	$166,750
Bear Permits	$51,415
Turkey Permits	$125,445
Special Licenses,Tags and Posters	$44,051
Magazine Subscriptions	$87,040
Fines and Penalties	$1,300
Rents	$45,826
Donations	$33,136
Miscellaneous Income	$4,768
PAC	$28,761
NSF Charge/Debt Collection	$420
TOTAL REVENUES	***$7,116,842***
FEDERAL AID REIMBURSEMENTS:	
Dingell-Johnson (Fisheries)	$1,796,843
Pittman-Robertson (Wildlife)	$4,208,165
TOTAL REIMBURSEMENTS	***$6,005,008***
TAXES:	
Gasoline Tax Apportionment	$962,496
OTHER FINANCIAL SOURCES:	
Reimbursement for Half-Price Licenses	$178,546
Investment Earnings	$1,998
TOTAL	***$180,544***
TOTAL REVENUE:	***$14,264,890***
FUND EQUITY AS OF JUNE 30, 2014	***$17,432,751***

License and Stamp Sales

July 1, 2013 to June 30, 2014

Code	Type of License	Unit Cost	Quantity	Amount
F1	Resident Citizen Fishing	22.50	109,758	$2,469,555
F2	Resident Citizen Minor Fishing	0.00	7,885	$0
F3	Resident Citizen Fishing (Age 65-69)	11.25	7,983	$89,809
F4	Resident Cit. Fishing (Over 70)	FREE	11,154	$0
F4	Resident Cit. Fishing (Disabled)	FREE	255	$0
F6	Non-Res. Citizen/Alien Fishing	32.50	9,459	$307,418
F7	Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,759	$51,042
F8	Resident Fishing (3 day)	7.50	2,085	$15,638
F9	Non-Resident (Citizen) Minor Fishing	6.50	321	$2,087
	Quabbin 1-Day Fishing	5.00	3,272	$16,360
T1	Resident Citizen Trapping	30.50	628	$19,154
T2	Resident Citizen Minor Trapping	6.50	8	$52
T3	Resident Citizen Trapping (Age 65-69)	15.25	38	$580
H1	Resident Citizen Hunting	22.50	17,717	$398,633
H2	Resident Citizen Hunting (Age 65-69)	11.25	990	$11,138
H3	Resident Citizen Hunting (Paraplegics)	FREE	17	$0
H4	Resident Alien Hunting	22.50	126	$2,835
H5	Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,664	$251,748
H6	Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	1,065	$64,433
H8	Resident (Citizen) Minor Hunting	6.50	1,399	$9,094
S1	Resident Citizen Sporting	40.00	33,942	$1,357,680
S2	Resident Citizen Sporting (Age 65-69)	20.00	3,851	$77,020
S3	Resident Citizen Sporting (Over 70)	FREE	9,853	$0
S3	Resident Citizen Sporting (Disabled)	FREE	25	$0
S4	Resident Minor Sporting, Paraplegic	0.00	113	$0
	TOTAL LICENSE SALES (GROSS)		***227,367***	***$5,144,271***
	Type of Stamp			
M1	Archery Stamps	5.10	34,264	$174,746
M2	Waterfowl Stamps	5.00	12,805	$64,025
M3	Primitive Firearm Stamps	5.10	37,119	$189,307
W1	Wildlands Stamps	5.00	175,282	$876,410
W2	Non-Resident Wildlands Stamps	5.00	16,268	$81,340
	TOTAL STAMP SALES (GROSS)		***275,738***	$***1,385,828***
	Previous Years Stamp Sales			
M1	Archery Stamps	5.10	0	$0
M2	Waterfowl Stamps	5.00	4	$20
M3	Primitive Firearm Stamps	5.10	0	$0
	TOTAL STAMP SALES (GROSS)		***4***	***$20***
	Fees Retained and Adjustments by Clerks			-$321
	Refunds			-$4,178
	TOTAL			**-$4,499**
	TOTAL LICENSE/STAMP SALES (NET)			***$6,525,620***

Commonwealth of Massachusetts
Division of Fisheries and Wildlife Organizational Chart



June 2014