Annual Report 2011

Massachusetts Division of Fisheries & Wildlife

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About The Cover:

Over 200 people participated in the Northern Red-bellied Cooter release event at the DFW's Burrage Pond Wildlife Management Area in May, including many children and their families and home-schooler groups and representatives of some of the cooperating institutions in the year-long headstarting program.

THE BOARD REPORTS

George Darey
Chairman

Introduction

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

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

Proposals for Regulatory Changes

Youth Turkey Permit Review

Last year the Board received a request from the Barre Sportsmen's Club to look at possible changes to the Youth Turkey Hunt program that would make the tag(s) that are issued for the special permit hunt valid not only for the Youth Hunt Day, but also the entire regular turkey season. The Board voted to have staff conduct a review regarding the Youth Turkey Hunt Program and report back to the Board with their findings, and in December Upland Game Bird Biologist Dave Scarpitti gave a review of the Youth Turkey Hunt permit to the Board.

Mr. Scarpitti reviewed the program's development, described the existing youth permits, and explained permit review requests and existing youth opportunities. He stated that young people are losing their connection to the outdoors and there is less open space and more competing interests than ever before. The Youth Turkey Hunt Program was initiated in 2009 to provide additional opportunities to youths, ages 12-17, regardless of experience or access to outdoor activities. With a structured curriculum and safety emphasized, mentors were to key to the program's success. Along with the Division's Youth Turkey Hunt Program and the National Wild Turkey Federation, a number of sportsmen's clubs have been involved. Mr. Scarpitti also reviewed the youth hunt program elements, such as training; safety; instruction on hunting ethics and regulations; turkey-hunting safety and behavior; and safe, supervised hunts with experienced adult mentors. Mr. Scarpitti reported that staff had made the following recommendations: Modify the 12-14-year-old Youth Turkey Hunt Program permit to (1) allow permit/tag to be used throughout the spring turkey season, (2) provide two tags with 12-14-year-old youth permit; and (3) make the required regulatory changes to 321 CMR 3.02 (9)(e) (youth bag limit) to incorporate the first two recommendations. In summary, the expanded Youth turkey permit would enhance youth opportunity for 12-14-year-old youths, facilitate mentorship of youths, be consistent with all spring turkey permits, consistent with youth opportunities in New England, and there would be no biological impact on the turkey resource. Mr. Scarpitti summarized these recommendations to the Board again in June, when a public hearing was held to accept comment on the proposed regulations. The results will be acted upon early in the next fiscal year.

Break-open Breech Vote

Assistant Director Tom O'Shea provided the Board with a brief summary of the results of the break-open breech public hearing. He reported that 10 comments were received from various Massachusetts hunting and sporting organizations and individuals, and one comment from a firearms industry representative. All were in favor of the proposed regulatory change to allow break-open breech muzzleloaders during the primitive firearms portion of the deer hunting season; there were no comments opposed. Following a brief discussion, the Board voted unanimously to accept the regulatory change to allow break-open breech muzzleloaders during the primitive firearms portion of the deer hunting season, starting this year.

Massachusetts Endangered Species Act Review

The agency has been working on proposed Massachusetts Endangered Species Act (MESA) regulatory changes for quite some time with its own staff and several partners, including The Nature Conservancy, MACC, NAIOP, the Mass. Homebuilders Association, and Mass Audubon. The proposed regulations are far too voluminous to relate here, but, in summary, there are two major categories: Priority Habitat maps and permitting. The

regulatory changes proposed would provide: 1) a more transparent process for mapping Priority Habitat that would give the public an opportunity to comment on proposed updates to the map; 2) a more holistic planning approach to conserving selected Species of Special Concern on a statewide basis, providing a more streamlined approach to permitting takes of those species that occur outside of designated Conservation Protection Zones; and 3) more regulatory flexibility to project proponents (through grandfathering, exemptions, and performance standards) particularly when proposed projects relate to Species of Special Concern. A public hearing was held to solicit comments relative to the proposed regulations in July, and, following consideration of all comments received, the Board voted unanimously in August to accept the proposed changes. The Board still retains some reservations about these regulations, however, particularly in regard to the conservation of small but potentially genetically-important populations of Special Concern species, but it is reassured by the fact that this is a regulatory change rather than a legislative one; a regulatory change is a dynamic process that allows us to try this solution, monitor its success, and make changes if necessary.

On a related issue, Assistant Director Tom French provided the Board with a PowerPoint presentation on the recommended changes to the Massachusetts List of Endangered, Threatened, and Special Concern Species. (Species are listed under MESA as Endangered, Threatened, or Species of Special Concern.) There are 435 species currently listed under MESA. Habitat Protection Specialist Lynn Harper reviewed the delisting of dragonflies and damselflies, and State Botanist Bryan Connolly reviewed the delisting of plant species, then Dr. French provided a summary of the proposed status changes. There were a total of 13 species either being down-listed from Endangered to Special Concern or being up-listed from Special Concern to Endangered. All of the proposed changes were brought to the Natural Heritage & Endangered Species Advisory Committee in May of 2010, and each proposed change was reviewed and recommended by the Committee. In summary, there were a total of 12 recommended deletions, 9 additions, and 15 changes in status to the MESA list for 2011.

Falconry Regulations

Wildlife Biologist Mike Huguenin provided the Board with a PowerPoint presentation on falconry regulations this year. The Board heard the history of falconry in Massachusetts, the federal regulation changes, and recommendations by staff to change the existing state regulations. It is clear that the state regulations involving this sport cannot be more liberal than the federal regulations, therefore we must establish possession and species limits, establish trapping seasons and restrictions, set facility and equipment requirements, set examination requirements (falconry, biology, regulations, husbandry) and require possession of a joint federal/state permit. Permit regulations require that all falconers must be Massachusetts residents, possess a sporting or hunting license, receive a grade of 80% or higher on a falconry exam, meet facility and equipment requirements, and train their bird(s) to hunt. There are currently 52 permitted Falconers in Massachusetts. Mr. Huguenin addressed federal compliance and the need to clarify and liberalize specific regulations, and offered the following staff-recommended changes to 321 CMR 3.04:

1. Remove requirement for federal permit
2. Address permit lapse requirements
3. Add definitions
4. Clarify MESA requirements
5. Address new Massachusetts resident requirements
6. Allow utilization of falconry birds for education
7. Increase possession limit
8. Allow non-resident take of raptors
9. Extend raptor trapping season

After a brief discussion, the Board voted to bring these recommendations to a public hearing as soon as possible.

Habitat Management Review

Assistant Director for Wildlife Research Tom O'Shea provided the Board with a PowerPoint presentation on habitat management on DFW Wildlife Management Areas and other lands; a review that was initiated at the request of Secretary of Energy and Environmental Affairs Ian Bowles. This was the same presentation Assistant Director O'Shea gave at three public-information meetings this year, with the dates (July, August, September) and locations (Lenox, Ludlow, and Westborough) selected by the Board. The Board was very pleased with the presentation, which offered handouts that included a list of reptiles, amphibians, and invertebrates that have life-history requirements for early-successional and grassland habitats. The presentation provided a useful dialogue between the public and staff, and the Board is very interested in the valuable thoughts and comments the public provided in regards to this subject. All public comments received (approximately 80) have been in favor of current habitat management goals and practices, and some actually call for expansion and more personnel to be devoted to the project. Clearly these well-attended presentations have helped the public to better understand the wildlife conservation goals of the habitat management the agency conducts on Wildlife Management Areas, and the Board commends Assistant Director O'Shea and agency staff for the successful outcome. The Board will make a formal report to the Secretary using Assistant Director O'Shea's report, the public comments received, and input from other staff members. It voted to establish a working group of three Board members to work with Assistant Director O'Shea and other staff to draft the report.

Waterfowl Regulations

The Board heard Waterfowl Project Leader H Heusmann's annual presentation on the framework and proposed season dates and bag and possession limits for the 2010-2011 waterfowl seasons. Following a public hearing on the proposed dates and limits, the Board voted unanimously to accept them.

Fisher Review

Furbearer Biologist Laura Hajduk provided the Board with a presentation on the fisher season in Massachusetts. She stated that a request was made by the Massachusetts Trappers Association to move the fisher season to the 2nd Sunday in December until December 31. The Massachusetts Trappers Association believes that the pelts would be more prime and display less tick damage, and therefore the pelts would be of higher value from that period. Ms. Hajduk presented the history, harvest, and harvest distribution for fisher to date, and also covered its regulatory history and the methods of trapping. She talked about the consistency with other seasons that open on the same day, considerations of pelt primeness, and prices of pelts across New England. Furbearer Biologist Hajduk stated that the staff recommended the following:

No change to current fisher trapping season

Monitor pelt prices

Improve CPUE reporting from trapper surveys

Ensure that electronic reporting will not result in loss of data

Calculate another fisher index that is not dependent on trapper harvest

Use sightability data from hunter survey

After a brief discussion the Board decided that the fisher season should remain as it is, and therefore no changes to fisher regulations will be made this year.

Review of Agency Programs

Ducks Unlimited / North American Wetlands Projects

Director Wayne MacCallum presented the Board with reports on projects the agency is engaged in with Ducks Unlimited (DU), and provided several documents for the Board to review. These were: 1) Revised 5-year Proposal, 2009-2014, that includes funding for both the Challenge Grant and Sponsor Program; 2) Final Report for the Maritime Land Securement Project Challenge Grant ($30,000) from 2008; and 3) a Final Report on the Nashwaakis Nature Park Restoration. The revised proposal calls for $210,000 in Massachusetts state funding both through the Sponsor and Challenge grants over a 5-year period, to secure through acquisition 649 acres of wetland and 963 acres of associated upland and to restore 80 acres of wetland with 160 acres of associated upland habitat. DU, as in the past, will match Massachusetts' contributions for both projects, dollar for dollar, and have the amount matched by the Federal and Canadian governments and the non-governmental organizations. This is a major factor in the protection, restoration, and enhancement of habitat, particularly for the Black Duck. The Director asked the Board to review the information on the various DU projects and possibly take an action to endorse or approve the specific projects he provided and take an action. The Board voted unanimously to accept the DU project plans as proposed by Director MacCallum.

Civil Air Patrol Monument Location Request at the Frances A. Crane WMA

Chief of Wildlife Lands Craig MacDonnell reported to the Board that the Civil Air Patrol wished to place a plaque at the Crane WMA in Falmouth. He further reported that the plaque would be maintained by the Civil Air Patrol, not the agency. It was also noted that District Manager Jason Zimmer had stated that the plaque would not be a problem. A vote by the Board is required for a plaque (or any other permanent object) to be placed on any WMA, and the Board voted unanimously to approve the plaque by the Civil Air Patrol.

Congratulations

The Board was very pleased to present the 2011 Governor Francis W. Sargent Conservation Award to former Secretary of Environmental Affairs Bob Durand. He is the eighth recipient of this prestigious award, presented by the Fisheries & Wildlife Board to honor an individual or organization for their contribution to the conservation of natural resources in the Commonwealth.

Presentations

The Board heard a large number of informative presentations from staff and members of the public this year that are not listed under the previous headings. One was on the North American Wetlands Conservation Act (NAWCA) presented by Deputy Director of Field Operations Rob Deblinger. Dr. Deblinger reported the mission statement of NAWCA is to provide funding to support partnerships that deliver national and international management actions that conserve habitat for wetland-associated migratory birds. NAWCA's goals have expanded to support Partners in Flight, the U.S. Shorebird Management Plan, and the North American Waterbird Conservation Plan, and it has become one of the most successful international conservation initiatives in history, serving as a model for new initiatives like the Neo-tropical Migratory Conservation Act. He spoke about the NAWCA grant selection process, how NAWCA Council selects projects, and its accomplishments. The final approval for all NAWCA funding comes from the Migratory Bird Conservation Commission, and Dr. Deblinger provided an informational handout on all the Massachusetts projects.

Natural Heritage & Endangered Species Program Coordinator Henry Woolsey and BioMap2 Project Leader James DeNormandie provided the Board with a summary of BioMap 2, addressing land development and

land use changes as well as a decade of significant land conservation, the significant number of new species and natural community observations and data in NHESP's database, and the integration of BioMap (2001) with Living Waters (2003) that resulted in BioMap2.

Also included in the presentation was the discussion of funding, partners, and the goal of the project to guide biodiversity conservation in Massachusetts by focusing protection and stewardship on the full spectrum of the state's terrestrial and freshwater biodiversity, selecting sites most critical for ensuring the long-term persistence, viability, and functioning of rare and other native species, exemplary natural communities, and diverse ecosystems. Mr. DeNormandie also addressed conserving biodiversity in the face of climate change, and its effects and impacts on species. Forestry Program Leader John Scanlon formally recognized James DeNormandie for his work and presented him with a Certificate of Appreciation signed by Commissioner Griffin and Director MacCallum, and the Board joins these officials in congratulating Mr. DeNormandie for his award and thanking him for his great service to the agency.

Another very enlightening presentation of great interest to the Board came from Fisheries Biologist Todd Richards, who provided a program on the "The Use of Fisheries Information in Agency and Statewide Decision-making Processes." Mr. Richards provided information on the histories of stream flow and aquatic habitat that included the Mass. Water Resources Commission, the Mass. Drought Management Task Force, Target Fish Communities, the Water Management Act (WMA) Blue Ribbon Panel, Coldwater Fisheries Protection, and the Sustainable Water Management Initiative. He talked about the current stream flow and aquatic habitat study, which uses the best available science, and described the current condition of aquatic resources at the statewide scale, as well as the use of biology to influence statewide stream flow (and habitat) management. Mr. Richards addressed the preliminary assessment of factors influencing Riverine Fish Communities in Massachusetts. He further reported on how the aquatic communities respond to environmental variables and human alterations of fish populations and habitats. Mr. Richards also described the fish communities and the fish data within the statewide fisheries database. Other issues he addressed were seasonal stream flow criteria, the tiered permit review (addressing four levels of permit review), larger withdrawal requests (which require increased scrutiny), biological and flow categories used to determine tier, alteration limits, and the process by which cumulative impacts can be addressed. In summary, Mr. Richards stated that it is important that the use of biological information be recognized as an important decision-making tool, and that it be supported by best available science and stakeholder input. Products would include: statewide maps of current condition (categories), now that biology is relevant in the permitting process. The Board is very pleased that the agency has taken the lead in this important and appropriate work and will continue to follow the process. It is especially gratifying to note that a good working relationship has been established with all parties involved.

The Board also enjoyed an excellent presentation by General Counsel Rich Lehan, who provided a summary of the new Off-Highway Vehicle Law that was signed by Governor Patrick on July 31, 2010. Mr. Lehan briefly summarized the new act regulating the use of off-highway and recreation vehicles. The changes to the law – primarily amendments and additions to M.G.L. Ch. 90B – strengthen the regulation of OHVs in a number of areas, including enforcement against the unauthorized use of OHVs on public property like the DFW's WMAs. The key provisions are as follows:

1. Prohibits unauthorized use of OHVs on public and private property. The law prohibits the use of snow or recreational vehicles in a manner that harasses or harms wildlife, or in a reforested or planted area in a manner that causes damage to the growing stock.
2. Establishes a dedicated OHV Program Fund, which will be administered by EEA. Includes a $250 non-criminal fine; 25% of the remaining funds collected will be distributed equally among the Massachusetts Environmental Police (MEP), the DCR, the DFG, and the DEP.
3. Establishes or amends OHV-relevant definitions.
4. Establishes a 13-member OHV Advisory Committee.
5. Requires a Recreation Vehicle Safety and Responsibility Course.
6. Requires registration of all snow and recreational vehicles.
7. Prohibits snow and recreational vehicles from emitting noxious fumes and excessive noise.
8. Imposes new operator-age restrictions.
9. The MEP may by regulation increase the age for operating all-terrain vehicles.
10. Operators of snow and recreation vehicles are required to wear protective headgear.
11. Establishes the penalties and the process associated with operating under the influence and reckless or negligent operation.
12. Prohibits carrying a firearm, rifle, or shotgun while operating a snow or recreational vehicle unless it is unloaded and in an enclosed case.

The Board feels this new law is a step in the right direction, but work still needs to be done relative to fines, seizing of vehicles, getting information or brochures out to dealers, safety courses, and the responsibility of landowners.

On a somewhat related note, Dr. Rob Deblinger provided an informational presentation to the Board on snowmobiles on Wildlife Management Areas. He stated that the DFW is charged, by law, with the stewardship of all wild animals and non-commercial plants in the Commonwealth. This mandates the Division to conserve, restore, and manage all species subject to our jurisdiction, including conserving all habitats composing the ecosystems in which these species are found. He reported on a license agreement renewal between the Division and the Mill Valley Snowmobile Club. Dr. Deblinger addressed various issues such as compliance, environmental impacts of snowmobiles, safety issues, wetlands protection, erosion/habitat, wildlife harassment, unauthorized activities, signage, and the grooming of trails and liability issues.

Wild Turkey and Upland Game Project Leader David Scarpitti provided the Board with an excellent presentation on the New England Cottontail Initiative (NEC) in Massachusetts. He reported on the conservation and management of New England Cottontail, species identification, current population status, habitat requirements/decline, the NEC, and additional survey and population monitoring. Mr. Scarpitti stated that the USFWS has petitioned to list the New England Cottontail and has determined that such a listing is "warranted." This means the New England Cottontail is now classified as a "candidate" species for Endangered species listing, and it is currently the highest-ranking candidate species in the region. The New England Cottontail is an early-successional-habitat specialist that tends to like young forests, pitch pine/scrub oak with high stem density, old/idle agriculture fields, pastures, dense thickets of native shrubs, utility rights-of-way, and shrub swamps. Most of these habitats require frequent disturbance to maintain suitability and shrub density over time. Mr. Scarpitti further reported on NEC site-specific parcel rankings and range-wide NEC projects, as well as private-land habitat-management activities. Additional NEC efforts include a winter fecal pellet collection survey, tissue sampling/additional trapping, radio-telemetry, captive rearing/translocation, and a head collection survey.

One of the most disconcerting presentations the Board heard this year was from Assistant Director Tom French, who gave an excellent PowerPoint presentation on the sudden and unexpected decline of Massachusetts' bat populations. He explained all that is currently known about White-nose Syndrome (WNS), the mysterious illness that is killing our hibernating bats, and also spoke at length about emerging wildlife diseases, bat conservation, and bat houses. Assistant Director French further reported that WNS has spread rapidly and has caused the catastrophic mortality of bats that spend their winters in New England caves and mines. By 2010, nearly a million bats are believed to have died from WNS and no one can predict just how far it will eventually go or how many bats will die in the process. The Board is very concerned about this grave crisis and has requested further updates as more is learned about the disease and any possible ways to combat its effects.

The Board greatly enjoyed a PowerPoint presentation by Bear Project Leader Laura Hadjuk reviewing black bear field projects from 1980 to the present. She talked about bear reproductive success, cub survival, home range, movements, habitat, population dynamics, effects of food supply and nutrition on reproductive success, productivity and female survival, human-bear interactions, and habitat use. She also provided an overview of the current bear study with GPS collars. This study is conducted along with the UMASS Cooperative Unit. Ms. Hadjuk reported that 15 adult sows are currently collared, an additional 2 yearling females were collared in their winter dens, and the researchers are trying to collar new bears for the study. With the resulting GPS data, we can continue to monitor and assess female black bear habitat. Collared bears are existing in suburban, rural, and agriculture areas, and they are crossing major highways. Ms. Hadjuk said that she wanted to publicly thank the MEP and the Massachusetts State Police for their help with a bear that was attempting to den right in the loop of a ramp to Interstate 91. With their help, it was possible to briefly close the area and relocate the bear.

The Board also heard a report from Outreach Coordinator Marion Larson on the agency's involvement in "The Year of the Turtle." Ms. Larson stated that the Division had joined in a national effort with Partners in Reptile and Amphibian Conservation (PARC) to raise awareness of the issues surrounding turtles and to inspire citizens, natural resource managers, scientists, and other turtle enthusiasts to address turtle conservation issues and to help ensure long-term survival of turtle species and populations. She further reported that the Division made an appeal to conservation organizations and other conservation groups to provide information on any turtle-related programs scheduled to be held during the year. All the listings received would be posted on a special Year of the Turtle calendar on the front page of the Division's website. There were currently two "turtle appreciation" events the agency was conducting, one in Westborough, and the other at the Burrage Pond WMA in Hanson/Halifax. Turtle enthusiasts, families, youth groups, and other conservationists were invited to attend these events to celebrate Massachusetts turtles, learn about threats to native turtle populations, see how state agencies and other organizations help turtles, and discover ways that we can all help turtles in our neighborhoods and communities. The event at Burrage Pond included the release of head-started Endangered Northern Red-bellied Cooters. The Board applauds these attempts to inform and engage the public in turtle conservation.

The Board was pleased to hear reports from most of the agency's District Managers throughout the year, which keeps the body apprised of regional issues and successes.

The Board was also pleased to hear a presentation in April from Tern Project Manager Carolyn Mostello on tern habitat restoration at Ram Island and other Buzzards Bay sites. Ms. Mostello reported that, since 1998, intensive management has been coordinated by the DFW at Ram Island, Bird Island. and Penikese Island relative to Roseate Terns and Common Terns. The Common Tern is a state listed Species of Special Concern of which there are approximately 16,000 pairs in Massachusetts. She noted further that right now the population for the Common Tern is stable. On the other hand, the Roseate Tern is federally-listed as Endangered and there are 1,300 pairs in Massachusetts. Since 2000, the population has been declining region-wide. She further reported on restoration actions for terns, such as the protection of colonies from disturbance and management of sites to enhance reproduction and reduce mortality. In addition, because tern habitat has been lost to erosion and succession, there are three tern habitat restoration projects in various stages at Penikese, Ram, and Bird islands. A project was completed this April on Ram: sand was added to low areas and these areas were replanted to provide increased nesting habitat for terns. At Penikese, a project to restore the uplands to suitable tern nesting habitat through a burning and herbicide program is underway, although all funding has not been secured. At Bird, DFG-DFW is partnering with the Army Corps to rebuild the revetment and add fill to the island to increase tern nesting habitat; this project is about to enter the plans and specifications phase.

Turtle Conservation Biologist Lori Erb presented a PowerPoint presentation to the Board on the Eastern Box Turtle Conservation Plan for Massachusetts. Ms. Erb gave an overview of the MESA revisions, the benefits of a Box Turtle Conservation Plan, threats, the science behind the habitat protection component of the plan. and the MESA implementation. She addressed the benefits of the revised MESA regulations of October 15, 2010. Ms. Erb further talked about the benefits of a Conservation Plan that is better protection for the box turtle, a framework for relaxing regulation on a regional level, stability in Priority Habitat mapping for the box turtle, and the General Permit Areas to be identified for box turtles. An informational meeting was held in May to receive public comment. The comment period ends on July 18, hence the results will not be available for publication until next year.

Electronic Licensing

Few issues have engaged the Board in recent years like the transition to electronic licensing. The Board heard an excellent presentation from Fiscal Officer Jessica Patalano on the Internet licensing program in late 2010. While Massachusetts has offered electronic licensing for several years, Ms. Patalano introduced the application system and provided a demonstration on how Internet users would be able to purchase licenses through the Internet once full electronic licensing is available. The vendor, Active Outdoors, contracts with the Department of Fish & Game, which also funded the development of the application, to provide this service to Massachusetts license buyers. Ms. Patalano explained that, due to staffing resource issues at Active Outdoors, full automation would be delayed. This presented the agency with a very serious problem, as it had been anticipated that the new fully-electronic system would allow all license buyers to print out their own licenses, stamps, and permits at home (this system also allows buyers to reprint lost or destroyed licenses) or through a participating license vendor, hence no hard-copy licenses, stamps, or permits had been produced for calendar year 2011. As a result of the new system's failure to launch, the I&E Section had to rush through several purchase contracts to get traditional license materials (including stamps) produced and distributed under extremely tight deadlines. The Board is very disappointed that once again electronic licensing, originally set to begin in calendar year 2010, has failed to materialize for 2011. The Board commends the I&E staff for its rapid and successful rescue of the situation, and trusts that the fully-electronic system and all of its benefits to buyers and the agency will be effectively implemented for calendar year 2012.

Later in the fiscal year, the Board was provided with a presentation on the status of electronic licensing by Assistant Director Tom O'Shea, who focused on game-harvest reporting, tagging of game, the antlerless deer permit system, and outreach and information. Assistant Director O'Shea reviewed the current antlerless deer permit application and drawing process, then presented the permit system options with the electronic licensing system and noted that the system will make game harvest reporting easier, resulting in the following benefits: 1) convenience for hunters, (2) quick and efficient data collection, (3) reduction in data-entry burden to staff, (4) reduction of data errors, (5) real-time law enforcement check on hunter status, (6) earlier availability of hunting season data, and (7) additional data-analysis capabilities.

To enter the antlerless deer permit lottery a deer hunter would select the zone for which he or she hopes to get a permit at the time they purchase their license, or at any subsequent time up to the cut-off date, which is currently July 16. As always, the probability of getting a permit is based on the total number of applicants and the number of antlerless deer permits allocated for that particular zone. A randomized computer selection of applicants for permits would then take place. There are two ways to do this drawing: (1) the standard draw, where the successful applicants are all selected at one time, or (2) an "instant-award draw," where the applicants access the system during a to-be-determined time period after July 16 and the computer conducts the draw for each individual applicant.

Staff did not have a consensus on which draw option to choose. The standard draw is the current system, while the instant draw is more efficient and would provide the flexibility to eventually go to a type of instantaneous

award system. The Board discussed various options pertaining to the current antlerless deer permit and the transition to an entirely electronic process of drawing all permits at once or having an instant draw that occurs when the applicant accesses the system, and eventually voted unanimously to accept the Instant Award option as presented, with the deadline for submitting antlerless deer permit applications being on or close to July 16.

Miscellaneous Items

The Board heard a brief update from Deputy Director of Field Operations Rob Deblinger on the Springfield Water & Sewer Commission (SWSC) agreement with the Division concerning a Conservation Restriction (CR) that has been in effect for 10 years. The Division paid approximately $1 million for this CR on 800 acres of land surrounding the Ludlow Reservoir and entered into an agreement and wrote a management plan along with staff of SWSC that set rules and regulations for the public to enjoy the property. The Office of Fishing and Boating Safety also spent approximately $500,000 for improvements to the property, which encompassed a fishing pier as well as infrastructure improvements. Given this history, 2 years ago it was a surprise that the SWSC had unilaterally changed the hours of operation, which reduced the hours of fishing for all public access. The original hours were 7:00 A.M. to 8:00 P.M. in the summertime, but the SWSC changed the hours for fishing to 8:00 A.M. to 6:00 P.M. As this involved changes to the agreed-upon management plan, the Division was required to become involved, and Deputy Director Deblinger and Director MacCallum met with the Administrators and the Board of the SWSC. The Ludlow Selectmen held a public meeting, which several Fisheries & Wildlife Board members attended, along with the MEP, to try to apply pressure to get the hours back to those in the original agreement. The SWSC would not agree, claiming they were promised MEP patrol coverage at the reservoir.

The Division worked with the Town of Ludlow to devise a plan to use a local volunteer network comprised mostly of retirees to basically open the property at new hours similar to the original hours and close the gate on the property. The SWSC agreed to work with the Division to train volunteers. The idea worked extremely well this summer and without incident. Dr. Deblinger stated that he was pleased to report that the SWSC voted to agree to change the winter hours from dawn to dusk, and beginning this spring the hours will be from 6:00 A.M. to 7:30 P.M.

The Board would be remiss not to make note of the newly-acquired, 278-acre Ashfield-Hawley Wildlife Management Area, a well-managed tract of woodland that includes significant wetlands and frontage along the Swift River. This land came into public ownership thanks to a very generous bequest from Calvin and Annette Farrell of South Easton. Mr. Farrell, a Massachusetts resident who passed away 2 years ago, left a gift of approximately $375,000 to the Wildlands Conservation Fund. Although Mr. Farrell was from the southeastern part of the state, he requested that the agency use the donation to purchase an appropriate parcel of land west of East Brookfield and acknowledge his and Annette Farrell's contribution by erecting a plaque at the most suitable location on site. This is by far the largest cash donation the agency has ever received, and the people of Massachusetts should be aware of and grateful for it. The dedication ceremony for the new WMA was held in October, and the Board was very pleased that family members and friends of the Farrells were in attendance.

Finally, the Board would like to make note of the retirement of Chief of Information & Education Ellie Horwitz. Ms. Horwitz has received many awards for her outstanding service to the public, the agency, and many conservation and conservation education organizations, both local and national, and the Board and the citizens of Massachusetts are forever in her debt for heading up such diverse projects and programs as the Massachusetts Waterfowl, Archery, and Primitive Firearms stamps, Project WILD, and Becoming an Outdoors-Woman. The Board and staff will miss her unflagging enthusiasm and her dedication to instituting wildlife education programs in our schools, and we wish her all the best as she leaves the agency to enjoy a well-deserved retirement.

FISHERIES

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

Introduction

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 Survey and Inventory Project

Todd Richards, Project Leader

FY 11 Stream Survey project involved participation in the following segments:

- Statewide Fisheries Survey and Inventory
- USGS Fish and Habitat Study
- Sustainable Water Management Initiative (SWMI) and Categorization of Streams and Rivers
- Stream Habitat Restoration Project – Hamant Brook, Sturbridge
- Instream Flow Council activities
- Statewide Fisheries Survey and Inventory

Stream Survey and Inventory efforts continued in FY 11, sampling 327 sites in 21 watersheds (below) and capturing nearly 49,500 individual fish.

Watersheds and number of samples in each watershed sampled in FY 11.

Blackstone	11
Buzzards Bay	6
Cape Cod	3
Charles	6
Chicopee	25
Concord	5
Connecticut	2
Deerfield	45
French	3
Hoosic	23
Housatonic	16
Merrimack	3
Millers	4
Mt.Hope/Narragansett	3
Mystic	9
Nashua	30
Neponset	8
Quinebaug	6
South Coastal	3
Westfield	72
Weymouth & Weir	17

USGS Fish and Habitat Study

The report entitled Factors Influencing Riverine Fish Communities in Massachusetts was drafted and submitted for peer review. This report follows the "Preliminary Report" published last fiscal year and improves upon that report in variable selection and statistical analyses. While the "Preliminary Report" was an Open File Report format only available on line, the full report, when published in September of 2011, will be a Scientific Investigations Report available both on line and in hard copy.

Categorization of Massachusetts Streams and Rivers

As part of the statewide Sustainable Management Initiative (SWMI), the DFW took an active role in describing the level of alteration in streams and rivers statewide. Multiple presentations were given during this process, focusing on results of the "Preliminary Assessment"

report indicated in Item 2. Presentations are available at the Sustainable Water Management Initiative (SWMI) website at ***http://www.mass.gov/eea/swm***.

In particular, the DFW led the effort of categorizing the condition of streams and rivers statewide by applying regression equations from the "Preliminary Report" to the 1400 sub-basins described by USGS in Massachusetts. The categorization process was endorsed by the SWMI Advisory Committee and presented to the Fisheries and Wildlife Board. A narrative was written and reviewed by the interagency staff (DEP. DCR, DFW) that described the categorization process and is as follows:

Purpose of Categorization

As an outcome of several Sustainable Water Management Initiative (SWMI) meetings, both the Technical Subcommittee and Advisory Committee agreed that categorizing existing conditions of Massachusetts flowing water habitats, using fish communities as a surrogate for aquatic habitat integrity, is a necessary first step on the way to development of stream flow criteria. The goal of categorization is to use the best available science to describe the current condition of flowing water habitats in Massachusetts. The categorization framework proposed by the interagency workgroup (EOEEA, DFG, DCR, and DEP) and described herein, is informed by the results of the USGS Preliminary Assessment of Factors Influencing Riverine Fish Communities in Massachusetts (USGS Report), along with input from both SWMI committees and best professional judgment of state agency staff.

Categorization Framework

The USGS Report conducted statistical analysis of an extensive statewide fisheries database to investigate the relationship between both human stressors (such as flow alteration and impervious cover) and natural variables (such as drainage area and basin slope), and fluvial fish communities (i.e., river fish communities). Quantitative analyses included Quantile Regression and Generalized Linear Modeling (GLM). Several models and variables were found to be statistically significant. The proposed categorization framework relies on statistically significant model results, along with best professional judgment-based concepts supported in the scientific literature (e.g. Biological Conditions Gradient, Davies and Jackson, 2006) to describe the current condition of fisheries resources, as representative of flowing water habitat in Massachusetts. This type of categorization, which looks at alteration-ecological response relationships, is a key element of the Ecological Limits of Hydrological Alteration (ELOHA) framework (Poff et al., 2009)

Fish Metric and Biological Alteration Measure

The fish metric proposed as the foundation for categorization is the relative abundance of fluvial fish, which can be predicted from the statistically significant GLM equation developed in the USGS Report. Relative abundance, catch per unit effort (CPUE), is a widely recognized and accepted fisheries statistic which is an index of fish population density. Generally, for two similar habitats (e.g. gradient, geology, watershed size) the one with the higher CPUE, is considered to be of higher quality. Estimation of relative abundance assumes that the CPUE is proportional to the fish stock density. This assumption was met by standardizing gear, methods and sampling design for all fish surveys. A measure of biological alteration can then be calculated by measuring the loss in the range of the fish metric (relative abundance of fluvial fish) with changes in flow and impervious cover. The fluvial fish relative abundance model was selected because it showed a statistically significant relationship and was the best model that incorporated flow, impervious cover, natural basin characteristics, and was appropriate for use statewide.

Category Development

Because the fluvial relative abundance model produces smooth curves that do not contain inflection or "break" points (Figure 1) it was necessary to delineate categories for management purposes using a combination of analytical techniques, best available science and best professional judgment. The process to establish category breakpoints relies on two primary concepts illustrated by results from the GLM and quantile regressions. First, there are sensitive fisheries resources that decline immediately and sharply to human alteration (i.e., decreasing flow and/or increasing impervious cover). To illustrate this concept, brook trout and blacknose dace will be used as the example sensitive species, but the concept of "most sensitive" applies to other sensitive species and life stages as well. Second, with increasing human alteration the incremental decline (i.e., the biological response) in the relative abundance of the remaining fluvial fish species diminishes. Quantile regression is illustrated using the 90^{th} quantile line in the USGS "Preliminary Assessment" report as it represents a point at which alterations to the fish community characteristics (Y-axis) are heavily influenced by the alteration characteristics (X-axis) (i.e. flow alteration or impervious cover). Impervious cover and flow alteration were both highly significant variables that can work independently or synergistically to cause significant fish community decline.

This results in a series of categories with breaks that correspond to the decline in fluvial fish relative abundance with changes in flow and/or impervious surface. The categories are delineated from the data derived from the GLMs and quantile regression analyses and reflect the variability and limitations of the Preliminary Fish and Flow Study findings. It is intended that this model be used as a statewide-screening tool.

Category Narratives

Category 1 *(0% to 5% Alteration of the Range of Fluvial Relative Abundance)*

Category 1 represents high quality aquatic habitat in the Commonwealth, relatively un-impacted by human alteration (as expressed by impervious cover and flow alteration). The quantile regression curves from

the USGS/DFW research for blacknose dace and brook trout drop approximately 30% at 5% August alteration (Figures 1 & 2) and 2% impervious cover (Figure 3). Trigger points 1 and 2 correspond to one-third and two-thirds reduction, respectively of the relative abundance of brook trout and blacknose dace; trigger point 3 corresponds to a an approximate 90% loss of brook trout and blacknose dace relative abundance. The same pattern is found for impervious cover, but at lower impervious cover percentages (Figure 3). This illustrates that some species are more sensitive to alteration than the fluvial fish community considered collectively, a concept well supported by the literature (Davies and Jackson, 2006; Baker and King, 2010). Therefore, based on the change within detectable limits for fluvial relative abundance and rapid changes in sensitive taxa, a 5% loss of the biological metric (i.e. range of fluvial fish relative abundance) was used as the boundary for Category 1.

Figure 1.

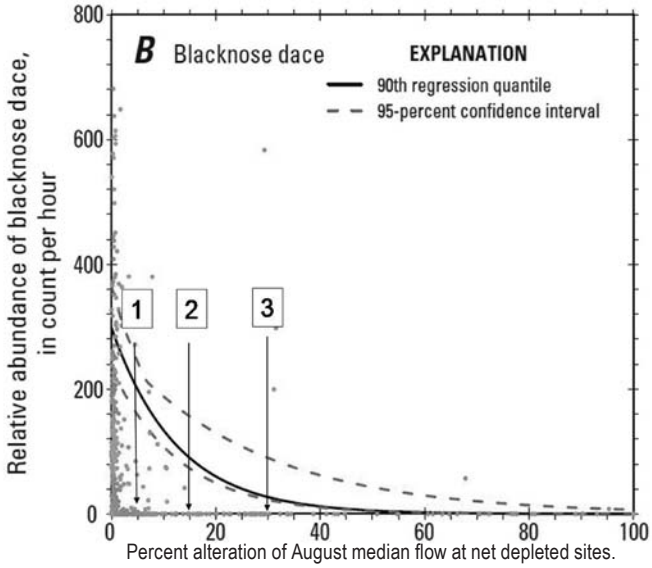
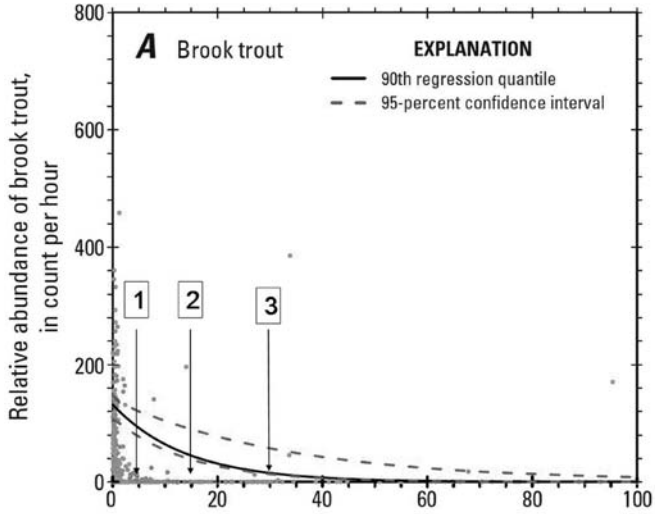
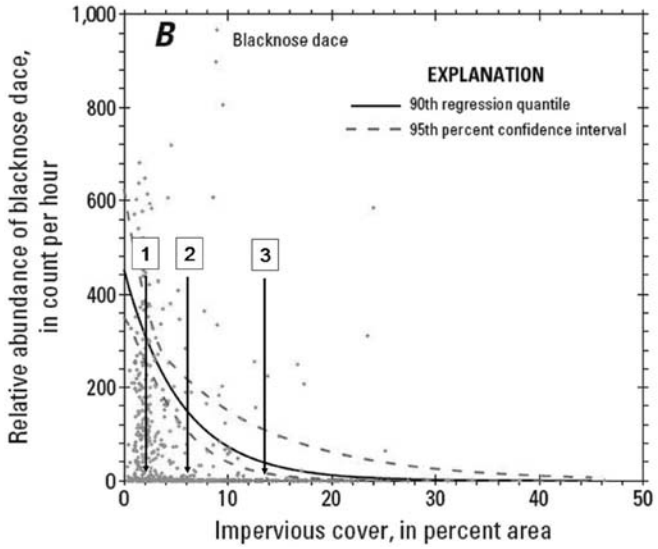


Figure 2.



Figures 1 and 2. Decreases in the 90th quantile for relative abundance of blacknose dace and brook trout in relation to increasing percent alteration of the August median flow (graphs modified from USGS 2010).

Figure 3.

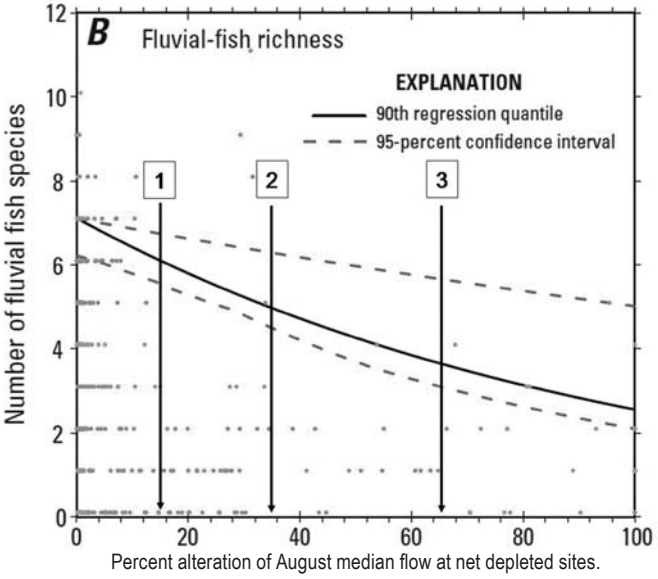


Category 2 *(5% to 15% Alteration of the Range of Fluvial Relative Abundance)*

Category 2 represents quality fisheries resources with good species diversity and balanced, adaptive fish communities. While the most sensitive resources will likely have exhibited some response at this level of alteration (as illustrated by the approximate 1/3 reduction in the relative abundance for both blacknose dace and brook trout with respect to flow alteration; (Figures 1 & 2), the diversity of the community is still intact. The likelihood of species loss increases through this category (Figures 4 & 5).

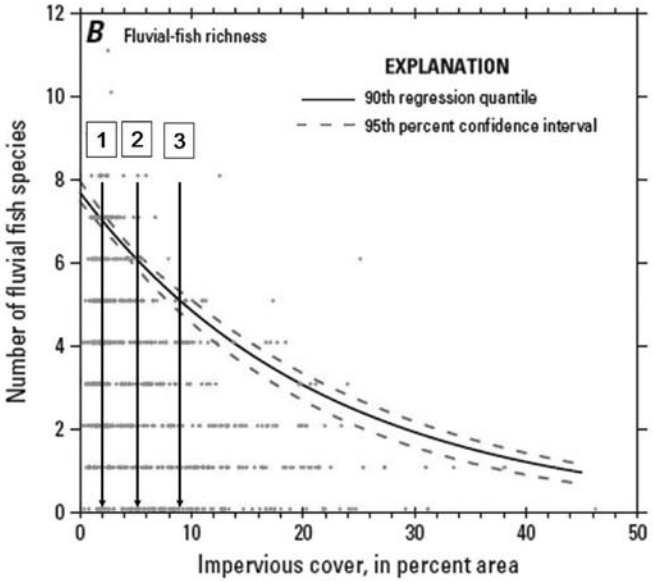
Therefore, a 15% loss of the range of fluvial relative abundance was used to delineate the lower boundary for Category 2 because it incorporates both large scale changes to sensitive taxa as well as the increased probability of fluvial species loss.

Figure 4.



Figures 4 and 5. Sequential loss in species diversity with increasing alteration of a) flow; and b) impervious cover. Each vertical line represents a reduction of one species (graphs modified from USGS, 2010).

Figure 5.



Category 3 *(15% to 35% Alteration of the Range of Fluvial Relative Abundance)*

Category 3 represents fish communities that have exhibited considerable change in the structure of the fish community. Sensitive species may still be maintaining populations but at considerably reduced abundances. More tolerant individuals are likely to dominate fish community structure. Approximately two-thirds of the sensitive taxa have been depleted (Figures 1 & 2) and additional fish species have probably been lost. (Figures 4 & 5). Therefore, a 35% loss of the range of fluvial relative abundance was used to delineate the lower boundary for Category 3 because it incorporates significant loss of relative abundance of sensitive species, and increased probability of the loss of more than one fluvial fish species.

Category 4 *(35% to 65% Alteration of the Range of Fluvial Relative Abundance)*

Category 4 represents fish communities that have undergone reductions in sensitive taxa, fluvial species diversity, and substantive reductions to relative abundance. Sensitive species such as the brook trout and blacknose dace (Figures 1 & 2) would be expected to be seriously impaired or eliminated from aquatic systems with this degree of alteration. In addition, the number of fluvial fish species would be expected to decline even further, (see Figures 4 & 5) approaching half the expected diversity and a loss of 65% of the overall relative fluvial abundance at trigger point 3 (Figures 4 & 5). Therefore, 65% loss in the biological metric was used to delineate the lower boundary for Category 4 to reflect these large scale reductions to fluvial diversity and relative abundance.

Category 5 *(Greater than 65% Alteration of the Range of Fluvial Relative Abundance)*

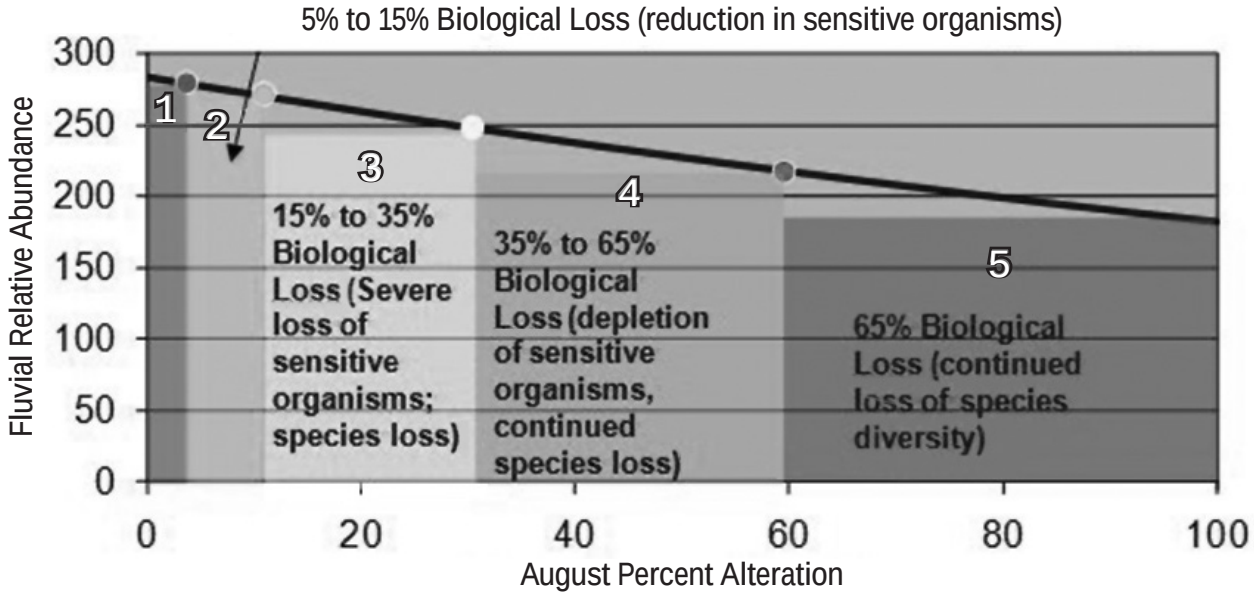
The final category, Category 5, represents fish communities that have undergone severe changes to their structure and function. Fluvial species diversity is minimal or has been eliminated and relative abundance is approaching the bottom of the biological metric range. Consequently, Category 5 corresponds to greater than 65% loss in the biological metric and considerable loss in overall species diversity (Figures 4 & 5).

These categories are illustrated on the GLM curve in Figure 6.

References

Armstrong, D.S., Richards, T.A., and Brandt, S. L., 2010, Preliminary Assessment of factors influencing riverine fish communities in Massachusetts: U.S. Geological Survey Open-File Report 2010-1139, 43 p.

Figure 6. Fluvial Relative Abundance



Baker, M.E., and King, R.S., 2010, A new method for detecting and interpreting biodiversity and ecological community thresholds: Methods in Ecology and Evolution, v. 1, no. 1, p. 25–37.

Poff, N.L., Richter, B.D. et al., 2009, The ecological limits of hydrologic alteration (ELOHA): a new framework for developing regional environmental flow standards: Freshwater Biology

Davies, S.P. and Jackson, S.J., 2006, The Biological Condition Gradient: A Descriptive Model For Interpreting Change in Aquatic Ecosystems: Ecological Applications 16(4),pp.1251-1266.

In addition to the categorization of streams and rivers, other topics (Safe Yield, Mitigation Measures, Permitting Tiers) were discussed by agency staff, and presented at technical subcommittee and advisory committee meetings. Technical staff was involved in meetings at a rate of one or two each week through the entire fiscal year.

Stream Habitat Restoration Project: Hamant Brook, Sturbridge

The DFW 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.

In FY 11, the Millenium Management Team approved the use of the requested funding by the DFW ($778,000) for use in the Hamant Brook Restoration Project. We received the approval letter from the Management Team and are currently working on developing an MOA with American Rivers to provide assistance with project management and fund management. The Town also provided an updated letter of support for the restoration project.

Instream Flow Council Activities

Todd Richards continued his role as President-elect for the Instream Flow Council (IFC). The IFC hosted its second open conference. The conference focused on stream flow valuation and took place in Nashville Tennessee.

Anadromous Fish Investigations

Caleb Slater, Ph.D., Project Leader

General

In FY 11, the DFW hired three 6-month seasonal workers to stock Atlantic salmon fry, conduct the Atlantic salmon smolt production assessment work in Connecticut River tributaries, and staff the West Springfield fishway on the Westfield River. An additional three 3-month seasonal workers were hired to staff the Essex fishway on the Merrimack River. Holyoke Gas & Electric, as directed by the conditions of their FERC hydroelectric license, hired seasonal employees to staff the Holyoke fishway and Firstlight Power and USGS employees from the Conte Lab monitored fish passage at the Turners Falls fishways. The Project Leader supervised these activities.

A total of 1,472,874 unfed Atlantic salmon fry from the Roger Reed State Fish Hatchery and the White River National Fish Hatchery were scatter-planted from shore into 49 tributaries of the Connecticut River in spring 2011. Stocking took place on 22 days between April 9 and May 5.

During FY 11, the Project Leader was actively involved in the FERC relicensing of the Woronoco Hydroelectric project on the Westfield River in Russell; FERC relicensing of the Glendale Hydroelectric and Willow Mill Hydroelectric Projects on the Housatonic River; continuing consultation with Holyoke Gas and Electric as they prepare to install downstream fish passage protection at the Holyoke Hydroelectric Project on the Connecticut River in Holyoke; with applications for FERC exemptions at the Westfield Paper dam on the Westfield River in Russell; the Ice House dam on the Nashua River in Ayer; the Pepperell Paper dam on the Nashua River in Pepperell; the Alternatives project on the Mumford River in Northbridge; the Byron Weston No. 2 Project on the Housatonic River in Dalton; the Dexter Russell Hydroelectric Project on the Quinebaug River in Southbridge; the Dodgeville Hydroelectric Project on the Ten Mile River in Attleboro; the Shaker Mill Dam Hydroelectric Project on the Williams River in West Stockbridge; Crocker Pond Hydroelectric Project on the Whitman River on the North Nashua River in Westminster; an application for amendment of FERC exemption at Riverdale Mills on the Blackstone River in Northbridge; and application for a preliminary permit of the Moody Street Dam Hydroelectric Project, to be located on the Charles River in Waltham.

The Project Leader worked with DFG and DOER, commenting on the applications of numerous hydroelectric projects seeking to qualify for “Low Impact Hydroelectric Certification”: and/or “Green energy” credits in Massachusetts.

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 and the CRASC Shad Studies Group. The Project Leader also participated in the Connecticut River/Long Island Sound Eco-team (CTR/LIS ET) and as a member of the CTR/LIS ET fish passage sub-committee. Many telephone, electronic, and written requests for infor-

mation were also answered by the Project Leader. The Atlantic salmon egg rearing program (ASERP) continued in 30 schools in the Connecticut River watershed.

Holyoke

The City of Holyoke (Holyoke Gas and Electric Co. HG&E) bought the Holyoke Hydroelectric project from Northeast Utilities in 2002. The Project Leader has been involved in ongoing negations 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 2010. The Project Leader supervised their activities. The Holyoke Fishway was rebuilt between the 2004 and 2005 fish passage seasons. Improvements included:

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

Because 2011 fish passage operations are ongoing at this time, this report summarizes the 2010 fish passage activities. No major malfunctions were experienced any of the fishways on the Connecticut or Westfield rivers in 2010.

The Holyoke fish passage facility operated for 92 from April 12 through July 13, 2010, except during periods of high water on April 10, 11, 17 and 18 passing a total of 205,007 anadromous fish and 902 fish of 18 resident species (including adult American eel). No shortnose sturgeon were collected during the spring season. No Atlantic salmon or 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 92. The number of days that passage is greater than 1% of the seasonal total, and the percentage of the total run that these days comprise, is a measure the temporal distribution of the run. The "over-1%-daily-passage" totals were: American shad, 89% of 164,439 in 27 days; blueback herring, 100% of 76 in 20 days; sea lamprey, 95% of 39,782 in 15 days; striped bass, 86% of 298 in 19 days; gizzard shad, 83% of 371 in 26 days; Atlantic salmon, 100% of 41 in 25 days.

Atlantic Salmon

Forty one (41) Atlantic salmon were counted during the spring/summer fish passage season at the Holyoke fishlift. 2010 passage was 11% of the record passage of 1992, 41% of the previous 5-year mean, and 61% of the previous 10-year mean. A total of 10 Atlantic salmon were trapped at Holyoke during the spring/summer season. Ten Atlantic salmon were radio-tagged and released

American Shad.

at Holyoke as per agreement with TransCanada. Two entered the Deerfield River. Eight passed Turners Falls and Vernon. Of these, three entered the West River, Vermont; and one entered the Cold River, N.H. One of the West River fish was trapped and transported above Townshend Dam. Four passed Bellows Falls. Of these, one entered the Williams River, VT, one entered the Black River, Vermont, and two passed Wilder, Vermont. One of these entered the Ammonoosuc River, N.H., passing up and down over a dam with no fishway at least twice.

American Shad

The total number of shad lifted in 2010 (164,439) was 23% of the record-high passage of 1992. The 2010 passage was 110% of the previous 5-year mean, and 78% of the previous 10-year mean. Examining the cumulative percent of shad passed at Holyoke, 50% of fish passed this project on the 40th day of passage, May 18. A total of 436 American shad were sampled for biological data on 24 days from 3 May through 1 June. Fork length, weight, sex, and scale samples were collected from all individuals. This represents 0.3% of the total American shad passed for the year and between 0.14% and 2.3% 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 72%. The weighted sex ratio of American shad lifted at the Holyoke facility in 2010 was 69% males and 31% females.

Fishlift personnel trapped a total of 2,773 shad for restoration efforts. 1,591 were transferred to the Vernon pool on the Connecticut River, 157 to the Turners falls pool, 160 to the Ashuelot River, 160 to the Farmington River, the balance were transferred out of basin.

Other Anadromous Fish

Blueback herring passage in 2010 was 76. This was .01% of the maximum passage of 1985, 50% of the previous five-year mean and 3% of the previous ten year mean.

Sea lamprey passage in 2010 (39,782) was 41% of the record passage of in 1998 and was 123% of the previous five-year mean and 95% of the previous ten year mean.

Gizzard shad passage in 2010 was 371. This was 351% of the previous five-year mean and 8% of the previous 10 year mean.

American Eel

Study of American eel passage at the Holyoke project continued in 2010. The 2010 study plan included:

1. Monitoring upstream eel passage with three interim eel passage devices on the Holyoke side of the Project, including eel ramps in the tailrace and spillway fish lift structures and just downstream of the spillway fish lift entrance in the bypass reach;
2. Monitoring upstream eel passage with by a permanent eel ramp on the South Hadley side of the Project in the bypass reach;
3. Visual surveys within the Holyoke fish lift structures for eel aggregations and behavior in coordination with simulation of sheet-flow from the fish lift attraction water system, and temporary installation of a portable eel ramp in the upper stilling basin; and
4. Tabulation of hydraulic, atmospheric, and other variables during the eel migration season. These included total river discharge, nighttime fish lift attraction flow, water temperature, local rainfall, moon illumination, and hourly rubber dam spilling status.

On the Holyoke side of the Project, Eel ramps were deployed June 23 in the spillway fish lift entrance channel and tailrace fish lift hopper basin area, and July 21 in the bypass reach. Fish lift attraction flow was set to deliver approximately 10 cfs periodically beginning in July after the end of the anadromous fish passage season (overnight only during the fall fish passage season).

Visual monitoring surveys were conducted on 16 dates from June 28 – October 26 by roving observations with the aid of red filtered spotlights for 3-5+ minutes in each of six regions: tailrace fish lift entrance gallery, tailrace fish lift transport channel, lower (tailrace) stilling basin, spillway entrance channel, spillway stilling basin / attraction water distribution, and upper stilling basin.

During 2010, 991 eels, the most ever from the Holyoke side of the project, were collected: 563 from the spillway eel ramp, 121 from the tailrace eel ramp, 138 from the bypass reach eel ramp, and 169 using a portable eel ramp opportunistically in the upper stilling basin. Although an order of magnitude lower than collections and catch-per-unit-effort from the South Hadley eel ramp, collections from the Holyoke eel ramps trended similarly. By October 5, 98% of eels had been collected on the Holyoke side of the Project.

Visual surveys did not result in determination of dense aggregation areas, but an estimated 995 eels were observed throughout the study. Approximately half of the eels observed were yellow phase or adult eels and half were elvers. The majority of elvers were observed in the upper stilling basin, spillway fish lift stilling basin, and spillway fish lift entrance channel.

Collection results and visual surveys combined suggested that moderate to high overnight fish lift attraction flows used in previous years may have prevented eels from navigating the fish lift structures or from effectively locating eel ramps.

The South Hadley eel ramp was operated from May 31 – November 8 and 3,262 eels were collected with 98% of the season total collected by October 2. Peak passage occurred in one large peak, August 5-8 when 41% of the season total was collected, and two smaller peaks September 6 and October 2.

Turners Falls

The fish ladders at Turners Falls were operated for a total of 69 days from April 30 through July 7, 2010. Operational problems were reviewed as needed on an ongoing basis by agency personnel (DFW and USFWS), and by the dam owner (Firstlight Power).

Upstream fish passage counts were made at the Spillway, Gatehouse, and Cabot fish ladders by review of recorded passage. Digital recordings were reviewed by employees of Firstlight Power. All ladders were monitored 24 hours each day unless technical problems occurred. All fish ladders remained open for passage 24 hours each day.

Anadromous Fish Passage

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

Atlantic Salmon

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

American Shad

The number of shad passing the Gatehouse fish ladder in 2010 (16,768) was 28% of the maximum passage of 1992, 623% of the previous 5-year mean and 741% of the previous 10-year mean.

The number of shad passing the Spillway fish ladder in 2010 (2,735) was 23% of the maximum passage of 1992, 181% of the previous 5-year mean and 126% of the previous 10-year mean.

The number of shad passing the Cabot fish ladder in 2010 (30,232) was 32% of the maximum passage of 1992, 265% of the previous 5-year mean and 262% of the previous 10-year mean.

Examining the cumulative percent of shad passed at Gatehouse, 50% of fish passed this ladder on the 50th day of operation, May 28, 2010.

Examining the cumulative percent of shad passed at Spillway, 50% of fish passed this ladder on the 50th day of operation, May 28, 2010.

Examining the cumulative percent of shad passed at Cabot, 50% of fish passed this ladder on the 49th day of operation, May 27, 2010.

Only 10% of the shad lifted at Holyoke (164,439) passed the Gatehouse observation window, well below the restoration goal of 50%.

Other Anadromous Fish Species

A total of 6,352 Sea lamprey passed the Gatehouse fishway in 2010. This represents 41% of the maximum passage of 2007, 43% of the previous 5 year mean and 63% of the previous 10 year mean.

Westfield River

In 2010 a fish ladder was operated for the 14th 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.

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 operated for upstream elver passage from June through September 2010.

Anadromous Fish

The West Springfield fish passage facility operated for 88 days in the spring of 2010. The number of days that passage was greater than 1% of the seasonal total was considerably less than 88. The number of days that passage is greater than 1% of the seasonal total, and the percentage of the total run that these days comprise, is a measure the temporal distribution of the run. The "over-1%-daily-passage" totals were: American shad, 91 % of 3,444 in 25 days; sea lamprey, 96% of 477 in 20 days; Atlantic salmon, 100% of 3 in 3 days.

During the spring/summer season, 3 Atlantic salmon were trapped. All salmon were transported by personnel of the United States Fish & Wildlife Service to the Richard Cronin National Salmon Station, Sunderland, MA.

A total of 3,444 American shad; 477 sea lamprey; 0 striped bass; 4 Blueback herring; 377 American eel; and 0 gizzard shad were passed upstream in spring/summer 2010. The shad passage represents 73% of the record high of 4,720 in 2001.

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 2010.

Merrimack River

In FY 11 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/summer of 2010. Because 2011 fish passage operations are ongoing at this time, this report summarizes the 2010 fish passage activities. No major malfunctions were experienced any of the fishways on the Merrimack River in 2010.

Essex Dam

The Essex Dam fish elevator in Lawrence operated for 83 days between April 24 and July 15, 2010. 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 7 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.

Anadromous Fish Passage

Atlantic salmon

85 adult Atlantic salmon were captured at the Essex fishlift during spring 2010. This was 26% of the record passage of 1991. Salmon returns were 121% of the previous 5 year mean, and 103% of the previous 10 year mean. No salmon were captured in the fall. All were trapped for broodstock purposes. The captured salmon were transported to the USFWS National Fish Hatchery at Nashua, New Hampshire to be spawned.

American Shad

The total number of shad lifted in 2010 (10,442) was 14% of the record high passage of 2001. 2010 shad passage was 73% of the previous five year mean and 28% of the previous ten year mean. 386 shad were trapped and trucked the USFWS Nashua Fish Hatchery for spawning where 1.99 million fry were produced of which 0.99 million were stocked in the Charles River and 1.0 million stocked in the Merrimack River. 171 shad were trapped and trucked the USFWS North Attleboro Fish Hatchery for spawning where 1,004,000 fry were produced all of which were stocked in the Charles. 679 shad were transplanted within the Merrimack River Watershed for restoration purposes.

River Herring

2010 passage was 518, this was 0.1% of the record high passage of 1991 (Table 2). 2010 herring passage was 65% of the previous five year mean (Table 2) and 10% of the previous ten year mean.

Other Anadromous Fish

Total number of sea lamprey, striped bass, and gizzard shad passing through the Lawrence fishlift were 3,433; 61; and 0 respectively.

American eel

During the 2010 fish passage season Enel completed the replacement of the traditional wooden flashboards on the Essex dam with an inflatable crest gate system. This system eliminates most water leakage over the dam when the project has control of the river. The lack of leakage at the dam seemed to redirect American eel elvers to the tailrace and for the first time large numbers were seen using the fish lift. Because elvers cannot be counted at the viewing window- numbers passing were estimated by viewing the lift hopper during the lift cycle. An estimated 78,000 elvers were passed upstream via the lift in 2010.

Pawtucket Dam

Operation of the Pawtucket Dam fish elevator (Lowell) began on April 27, one week after lifting operations began at the Lawrence fishway, approximately 12 miles downstream, and concluded on July 17. 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 2010 was 479; this represents 4.6% of the shad passing through the Lawrence fishway this season.

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

River herring: 43

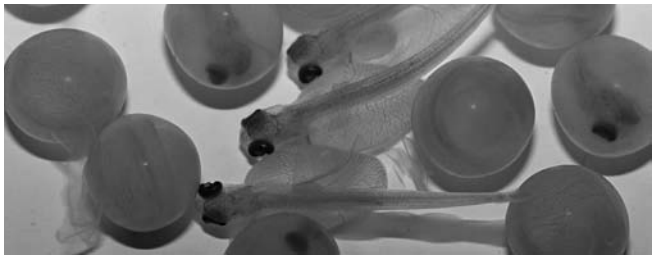
Lamprey: 507

Shad: 479

Assorted riverine species have been noted but not counted.

Atlantic Salmon Fry Stocking

Atlantic salmon fry from the Roger Reed Hatchery and the White River National Salmon Hatchery were stocked on 22 days from April 9 through May 5, 2011. All fry stocked in 2011 were bulk transported from the hatchery of origin. Water was oxygenated or both oxygenated and aerated. Fry from the Roger Reed Hatchery were transported by DFW personnel. Fry from the White River National Fish Hatchery were transported by either DFW personnel or USFWS personnel. Fry were enumerated by weight and transferred to 19-liter plastic pails filled with river water and stocked using the standard scatter-plant method.



Salmon fry and eggs.

Hatchery water temperature was generally similar to stream temperatures so no acclimation time was necessary prior to release. Stocking density was between 25 and 55 fry per habitat unit (100 square meters of stream area). Stocking density was converted to the number of fry to be released per 100 feet of stream length to aid the stockers in distributing the fry evenly throughout the section. Fry were scatter-planted from shore throughout stocked sections of all streams.

The Deerfield (583,662 fry) and the Westfield (604,893 fry) river basins were stocked with Atlantic salmon fry for the twenty-fourth and twenty-third consecutive years, respectively. Mill Brook (11,628 fry), Northfield, were stocked for the fifteenth time. The Manhan River Basin (44,189 fry) was stocked for the nineteenth time since 1989 and the Fall River Basin (51,441 fry) was stocked for the eighteenth time since 1988. The Mill River (42,044 fry) in Williamsburg was stocked for the fourteenth time. The Sawmill River Basin (65,085 fry) was stocked for the seventeenth time. The Millers River (69,932 fry) was stocked for the fourteenth time.

Atlantic Salmon Fry Survival

Selected salmon stocked streams were sampled for juvenile Atlantic salmon in 2010. 73 sites on 51 streams were sampled by personnel from the DFW.

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 workup, 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 underestimation due to disproportionate stocking, index sites were selected, whenever possible, near the middle of a stocking section. The area of stream sampled was obtained by measuring the length of the sampled section and multiplying by the mean width for that section.

Population estimates for each age class were obtained by expanding the number of salmon captured by the historical sample efficiency at each site (calculated in past multi-pass depletion samples). Survival was calculated by dividing the population estimate for that year class by the number of units surveyed multiplied by the stocking density of that year class. An estimate of spring 2011smolt production (46,000) was produced by multiplying the population estimate of 1+ salmon by the estimated overwinter survival (0.6).

Warmwater Fisheries Investigations

Richard Hartley, Project Leader

Esocid Stocking Program

The DFW relies entirely on surpluses from other states for esocid stocking (northern pike and tiger muskellunge). In recent years, these other states have cut production or discontinued their esocid programs, thus the DFW has not had esocids for the past several years. However, anglers are still catching trophy northern pike because there are several bodies of water in the Commonwealth have self-sustaining populations of these fish.

Freshwater Sport Fishing Awards Program

For over 45 years, the Freshwater Sport Fishing Awards Program has been awarding pins to anglers who catch trophy size fish from the waters of the Commonwealth. Minimum qualifying weights are currently in place for 22 different species of fish. Beginning in 2005, lower minimum weights for Youth Anglers (age 17 and under) were established. This addition has resulted in a near doubling of the number of pins awarded annually. Upon weighing a fish on a state-certified scale, the angler receives a bronze pin depicting the species of fish with the weight and year of catch stamped on the back. In addition to the bronze pin, the lucky adult and youth anglers who weigh in the largest fish of the year for each of the categories is awarded a plaque and gold pin at the annual Eastern Fishing & Outdoor Exposition held in February at the DCU Center in Worcester. Affidavits are still being received for 2011, so results from 2010 are presented here. A record-setting 1,131 pins were awarded. Pins were awarded in all 22 categories for adult anglers and 21 categories for youth anglers (627 for adult and 504 for youth) for calendar year 2010. For 2011, we are currently on a pace to award even more pins than the new record set in 2010. Since the youth minimum weights were established, the only category that has had no entries is the state's most elusive: youth tiger muskellunge.

For the third consecutive year, landlocked salmon were ranked number one overall with adult anglers, while yellow perch were ranked number one among youth anglers. The ninth annual Angler of the Year Award (presented to the angler who submits the highest number of eligible species) was presented for the first time to a youth angler, Danny Grafton, Jr., of Weymouth, who weighed in 14 different species.

Bass Tournament Creel Analysis

For the past 15 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

Freshwater Sport Fishing Gold Pin Awards for 2010

Species	Number of Adult Pins	Number of Youth Pins	Weight of Gold Pin Adult	Weight of Gold Pin Youth
Broodstock salmon	28	12	18 lb. 6 oz.	16 lb. 8 oz
Brook trout	11	13	3 lb. 6 oz.	2 lb. 2 oz.
Brown trout	18	14	13 lb. 1 oz.	4 lb. 6 oz.
Bullhead	13	33	3 lb. 14 oz.	4 lb. 10 oz.
Carp	31	20	31 lb. 3 oz.	23 lb. 8 oz.
Chain pickerel	46	67	6 lb. 14 oz.	6 lb. 6 oz.
Channel catfish	36	9	18 lb. 3 oz.	14 lb. 10 oz.
Crappie	57	34	3 lb. 5 oz.	3 lb. 5 oz.
Lake trout	18	5	17 lb. 5 oz.	12 lb. 0 oz.
Landlocked salmon	146	25	8 lb. 4 oz.	7 lb. 3 oz.
Largemouth bass	24	70	8 lb. 10 oz.	6 lb. 4 oz.
Northern pike	21	4	29 lb. 8 oz.	15 lb. 14 oz.
Rainbow trout	14	16	4 lb. 12 oz.	3 lb. 8 oz.
Shad	1	6	5 lb. 3 oz.	4 lb. 8 oz.
Smallmouth bass	41	34	6 lb. 11 oz.	5 lb. 8 oz.
Sunfish	17	31	1 lb. 7 oz.	1 lb. 5 oz.
Tiger muskie	1	0	16 lb. 5 oz.	N/A
Tiger trout	14	12	3 lb. 12 oz.	3 lb. 4 oz.
Walleye	6	1	7 lb. 7 oz.	6 lb. 10 oz.
White catfish	6	5	6 lb. 11 oz.	3 lb. 13 oz.
White perch	41	19	3 lb. 0 oz.	3 lb. 1 oz.
Yellow perch	37	74	2 lb. 8 oz.	1 lb. 12 oz.

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 DFW's website. The completed creel sheets are mailed to the Warm/Coolwater Project Leader at the Field Headquarters. The creel survey seeks the following information: club name, date of event, location of event, start and end times, number of anglers, number of anglers weighing bass, number of anglers with limits of bass, total number of bass weighed in by species, total bass over 5 pounds, number of bass returned alive by species, total weight, winning weight, and the weight of the biggest bass of the event. There is also a space for the club to include comments. This information is entered into a database to allow the DFW to detect long-term trends in the bass populations in some of the Commonwealths most heavily-fished waters. Creel sheets are still being received for the 2011 tournament season, so results from the 2010 season are presented here.

In 2010, a total of 212 usable creel sheets were sent in to the Field Headquarters. This represents a voluntary reporting rate of 35%, based on the number of Special Use Permits issued by the OFBA (down from 42% in 2008). These 212 tournaments represented 63 different bass organizations fishing on 47 different waters. A total of 6,209 largemouth bass and 1,456 smallmouth bass were weighed in for a catch rate of approximately 1 bass per 3 1/2 angler-hours. The average weight of a bass weighed in was 1 lb 14 oz.; 81% of all anglers weighed at least one bass, while 33% caught a limit (5 bass total of either species); and 99% of all bass were returned to the waterbody alive at the close of the tournaments. These indices have not changed significantly since tracking began in 1996. For waters with more than four tournaments, Congamond Lake, Southwick, yielded the highest number of bass over 5 pounds, at 17, over 26 tournaments, while Whitehall Reservoir, Hopkinton, had the highest catch rate for bass 5 pounds and over. East Brimfield Reservoir, Brimfield, produced the highest percentage of anglers weighing bass (95%) as well as the highest percentage of anglers who caught the limit (66%). A breakdown of the number of tournaments by waterbody revealed that most host only a few a year, while the highest number continue to take place on Congamond Lake, Southwick, and the Connecticut River, which hosted 26 and 24 tournaments, respectively (24% of all tournaments). Over time, this data will aid in detecting possible changes to these important bass fisheries.

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

Fish Kill Investigations

Pursuant to the 1999 Fish Kill Memorandum of Understanding between the DFW, the Department of Environmental Protection (DEP), the Massachusetts Environmental Police (MEP), and the Department of Agricultural Resources (DAR). The DFW is the lead agency to coordinate fish kill response. In 2010, DFW received 39 calls relative to incidents that involved dead fish. Of these 39 reports, 14 (36%) required field investigations by DFW or DEP personnel to determine the cause of the kill. The final disposition of the 39 calls was 29 natural kills, 2 chemical kills (WWTP chlorine overdose), 3 construction impacts, 1 hooking mortality, and 4 human-induced low-water conditions.

Environmental Review

In 2010, the DFW reviewed and provided comments on all major projects affecting fisheries resources published in the *Environmental Monitor*. The DFW also provided technical information to a wide variety of consultants, town and state officials on local projects. Eighty-one project proposals were reviewed that involved 100 different waters (73 rivers, streams and unnamed tributaries and 27 lakes and ponds) statewide. Seventy three 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. The remainders of the requests were from state agencies such as DEP, MassDOT, the Division of Ecological Restoration, and MEPA (17%); federal agencies, such as the US Army Corp of Engineers (4%); and local associations such as lake and river watershed associations (6%). Fisheries resources were partitioned as follows: warmwater (24%), coldwater (21%), trout stocked waters (24%, of which 3% were hold-over waters), anadromous (8%), rare, threatened or endangered (6%), unknown (8%), marine (<1%) and no fisheries resources (8%). The majority of the projects were bridge replacements/rehabilitations over rivers and streams and road reconstruction (53%). The remaining reviews involved new construction (11%); lake management issues, such as drawdowns for aquatic vegetation management, dredging, phosphorus inactivation, and mechanical harvesting (13%); in-stream work such as maintenance, bank stabilization, habitat restoration and culvert replacements (7%); proposed new well sites and/or increased production of existing wells (5%); issues concerning dams including maintenance and removals (11%).

Fish Culture Program

Ken Simmons, Ph.D., Project Leader

The DFW met its annual trout production goal of 400,000 to 450,000 pounds in FY 11. This production goal is based on the rearing capacity of each hatchery (determined by a combination of the quantity and quality of the water supply and rearing space) and the limits imposed by the National Pollution Discharge Elimination System permit that each hatchery is issued by the Massachusetts Department of Environmental

2011 Fish Production

Table 1. Summary of the number trout produced and stocked from each of the Division's four trout hatcheries in FY 11.

(Fall stocking 2010 and Spring stocking 2011)

Species	Size Cat. (inches)	Number of fish				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	9+	9,000	0	0	0	9,000
	12+	31,000	40,310	51,029	0	122,339
	14+	4,000	174,468	0	63,063	241,531
	Sub-total	**44,000**	**214,778**	**51,029**	**63,063**	**372,870**
Brook Trout	6 - 9	1,800	0	0	0	1,800
	9+	0	0	48,475	0	48,474
	12+	14,200	0	1,982	10,127	26,309
	18+	0	0	0	434	434
	Sub-total	**16,000**	**0**	**50,457**	**10,561**	**77,018**
Brown Trout	6 - 9	19,500	0	0	0	19,500
	9+	0	33,535	26,705	0	60,240
	12+	21,700	0	21,840	8,257	51,797
	18+	0	0	0	400	400
	Sub-total	**41,200**	**33,535**	**48,545**	**8,657**	**131,937**
Tiger Trout	14+	0	0	0	6,363	6,226
	Sub-total	**0**	**0**	**0**	**6,363**	**6,226**
Total		**101,200**	**248,313**	**150,031**	**88,507**	**588,051**

Protection and the Federal Environmental Protection Agency. The DFW's four trout hatcheries produced a total of 439,813 pounds of trout, comprising a total of 588,051 brook, brown, rainbow and tiger trout in FY 11, which includes both the fall 2010 and spring 2011 stocking seasons (Tables 1 and 2). The production goals were met despite severe drought conditions that persisted from April through August 2011.

A total of 55,884 pounds of rainbow trout, comprising 65,649 fish, were stocked in the fall 2010. The fall rainbow trout averaged more than 12 inches long. In spring 2011, a total of 383,929 pounds of trout were stocked, which included 295,935 rainbow trout that ranged between 12 and 14+ inches long. More than 229,000 of these rainbow trout averaged 14 inches or longer. The spring stocking also included 66,044 brook trout that ranged between 6 and 18+ inches long, 125,754 brown trout that ranged between 6 and 18+ inches long and 6,363 tiger trout that were more than 14 inches long (Tables 1 and 2). 2011 was the best production year for 12+ brook trout since 2004 with more than 26,000 of these beautiful two-and-half year old fish stocked. The tiger trout averaged 1.1 pounds apiece. Tiger trout are a cross between a brook trout male and a brown trout female. They are called tiger trout because of their striking tiger-like stripes.

The Roger Reed Hatchery in Palmer continued its important role in both the Atlantic salmon restoration program and the landlocked salmon program for Quabbin Reservoir in FY 11. Ten thousand fifty landlocked salmon smolts were produced, of which 8,650 were stocked into Quabbin Reservoir in late April 2011 and the balance given to the state of New Jersey in return for 300,000 brown trout eggs for the DFW's trout program. 1.6 million Atlantic salmon eggs were produced from brood stock held at the station and 1.34 million Atlantic salmon fry were reared from these eggs and stocked into rivers and streams in the Connecticut River drainage basin within Massachusetts during spring 2011. In addition, 315 adult brood stock salmon produced at Roger Reed Hatchery were stocked in selected waters across the Commonwealth to provide recreational angling opportunities for these large and beautiful fish. A summary of the numbers of each of the fish species produced by the Roger Reed Hatchery is in Table 3. Roger Reed staff also continued its participation in the Atlantic Salmon Egg Rearing Program by distributing salmon eggs to 42 schools in the Connecticut River basin in Massachusetts. Students in participating schools raise the salmon eggs to fry and then stock them in tributaries of the Connecticut River basin.

Table 2. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY 11.

(Fall stocking 2010 and Spring stocking 2011)

Species	Size Cat. (inches)	Weight of fish (lbs) Bitzer	McLaughlin	Sunderland	Sandwich	Total Wgt. of Fish (lbs)
Rainbow Trout	9+	4,801	0	0	0	4,801
	12+	27,530	34,520	31,836	0	93,886
	14+	5,511	183,020	0	41,199	229,728
	Sub-total	**37,842**	**217,540**	**31,836**	**41,197**	**328,415**
Brook Trout	6 – 9	285	0	0	0	285
	9+	0	0	11,107	0	11,107
	12+	10,895	0	1,578	7,156	19,629
	18+	0	0	0	1,032	1,032
	Sub-total	**11,180**	**0**	**12,685**	**8,188**	**32,053**
Brown Trout	6 – 9	4,812	0	0	0	4,812
	9+	0	11,442	8,805	0	20,247
	12+	20,877	0	20,138	5,737	46,752
	18+	0	0	0	1,050	1,050
	Sub-total	**25,689**	**11,442**	**28,943**	**6,787**	**72,861**
Tiger Trout	14+	0	0	0	6,484	6,484
	Sub-total	**0**	**0**	**0**	**6,484**	**6,484**
Total		**74711**	**228,982**	**73,464**	**62,656**	**439,813**

Table 3. Summary of Landlocked salmon and Atlantic salmon produced at the Roger Reed Hatchery in FY 11.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked Salmon	smolts (8+)	10,050	1,785
	Sub-total	**10,050**	**1,785**
Atlantic salmon	green eggs	160,1700	-
	unfed fry (1+)	1,342,955	471
	adults (15+)	315	2,994
	Sub-total	**2,944,970**	**3,465**

One infrastructure improvement project was completed in 2011. Well number one at Sunderland Hatchery was cleaned and a new vertical turbine pump and motor was installed to replace the pump and turbine that was originally installed in 1960.

Four new employees were hired to fill Wildlife Technician I vacancies created by the retirements in 2009 and 2010 of four long-term hatchery employees. Timothy Nye and Shasta Slade were hired to fill two vacancies at Sunderland Hatchery, Joe Kendall was hired to fill the one vacancy at Montague Hatchery and Chris Kielbasa was hired to fill the one vacancy at McLaughlin Hatchery.

Salmon spawning at Roger Reed Hatchery in Palmer.

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Shasta Slade, *Wildlife Technician*

WILDLIFE

Thomas K. O'Shea
Assistant Director, Wildlife

Overview

The Wildlife Section is responsible for 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 (WMAs), responding to human-wildlife conflicts, guiding and supporting the agency's large animal response team, and supporting wildlife-dependent recreational opportunities.

Toward these ends, there are over 10 professional biologists and foresters engaged in the following programs: forestry; upland habitat management; deer; moose; furbearer; upland game; black bear; wild turkey; waterfowl; commercial game preserves; testing and licensing of problem animal control (PAC) agents, wildlife rehabilitators, and falconers; the inspection of commercial deer farm and other wildlife propagators' facilities; the issuance and processing of antlerless deer, turkey, and black bear permits; and a statewide pheasant stocking program.

The Wildlife Section develops science-based regulatory, policy, and programmatic recommendations for the Fisheries & Wildlife Board; serves as the wildlife representative on agency's land acquisition committee; directs and coordinates with the University of Massachusetts and USGS Cooperative 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

Forestry Program
John Scanlon, Forestry Program Leader

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

The Forestry Program's objectives are to:

1) Build and maintain a forest inventory and property boundary geo-database with GIS land cover maps, and establish property boundary lines in the field for each wildlife management area (WMA).
2) Use inventory data to design and carry out both forest harvesting operations and other habitat management activities to meet landscape composition goals for successional forest habitats that maintain biological diversity using ecological regions (ecoregions) as the fundamental planning units for management.
3) Conduct pre- and post-treatment biological monitoring to determine the response of wildlife populations to forest cutting operations.

The DFW's Forestry Program's landscape composition goals for the state's WMAs are to achieve 15-20% young forest habitat less than 30 years old, 10-15% biologically mature forest habitat more than 150 years old, and 65-75% mid-successional forest habitat between 30-150 years old. The Forestry Program Leader and one Management Forester conduct commercial forest harvesting operations, through a public, competitive bidding process in compliance with Division forest management guidelines, to create young forest habitat.

The guidelines provide a sequential checklist of steps for each sale, to ensure that landscape conditions are assessed and that management activities reflect landscape conditions. Intensity of cutting varies from moderate (Group Shelterwoods) to high (Aggregate Retention Cuts), but groups of mature trees are retained on all sites. Planned harvests are typically designed to regenerate mixed stands of white pine, red and white oak, and high-quality northern hardwoods including black cherry and white ash. Prior to any cutting operation, Division foresters consult with District staff to address local access and aesthetic issues, and with personnel from the DFW's Natural Heritage & Endangered Species Program, to conserve state-listed species and priority natural communities on WMAs. All forest management activities receive permits from the Department of Conservation and Recreation under the Massachusetts Forest Cutting Practices Act (Chapter 132).

Biological Monitoring

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 FY 11, biological monitoring of vegetation occurred at the Montague Plains WMA in Montague and the Peru WMA in Peru, monitoring of breeding songbirds occurred at the Hiram Fox WMA in Cheshire, and monitoring of native pollinator insects occurred at the Muddy Brook WMA in Hardwick. Monitoring results are available at: ***http://www.mass.gov/dfwele/dfw/habitat/management/bdi/forest_mgt/plant_surveys.htm.***

Boundary Marking

DFW Foresters conducted boundary research, field reconnaissance, and/or marking at multiple properties in FY 11, including the Becket WMA in Becket, Breakneck WMA in Sturbridge, Chalet WMA in Windsor, Hinsdale Flats WMA in Hinsdale, J.J. Kelly WMA in Cummington, Phillipston WMA in Phillipston, Satan's Kingdom WMA in Bernardston, Savoy WMA in Savoy, and the Townsend WMA in Townsend.

Boundary research includes review of deed and survey records; boundary reconnaissance includes field work to locate and assess potential physical boundary markings (e.g., iron pins, stone piles, Virginia rail fence, barbed wire, stone wall segments, old blaze lines or paint lines); and boundary marking includes the physical scribing of tree bark and subsequent application of yellow boundary marking paint and posting of DFW boundary signs.

Forest Harvesting Operations and Management Activities

Pre-harvest field assessments were conducted at the Phillipston WMA and post-harvest assessments were conducted at the Stafford Hill WMA in Cheshire (aspen regeneration); Pre- and post-harvest assessment involves checking condition of access roads, stream crossings, and wetland crossings, and occurrence of ATV trespass activity. Access road construction occurred on a new parcel on the Martin Burns WMA in Newbury.

Invasive plant control efforts were conducted on former timber sale sites including the Peru, Phillipston, and Montague Plains WMAs. Prescribed burning was conducted at the Montague Plains WMA and the Frances Crane WMA in Falmouth.

Public site visits to describe wildlife habitat benefits at previously-completed timber sale operations were conducted at the DCR Federated Women's State Forest in Petersham, the DCR Quabbin Watershed Reservation in Hardwick, and the DFW Phillipston WMA. DFW Foresters also attended mandatory Continuing Forestry Education (CFE) classes to maintain Forester licenses in Massachusetts.

Timber sale preparations continued at the Patrill Hollow portion of the Muddy Brook WMA in Hardwick (pitch pine/scrub oak restoration), and were initiated on the Queen Lake portion of the Phillipston WMA (old-field white pine regeneration). Timber sale preparations include marking of trees to be cut; marking of trees to be retained (including mast-producing trees such as black cherry, American beech, and red oak to enhance wildlife habitat after the cut); location(s) of wetland resource areas, rare species habitat, and priority natural communities; layout of temporary access roads; placement of water bars and other erosion control structures; and preparation of Chapter 132 Forest Cutting Plans.

Following sale preparation, DFW Foresters supervise logging activities (e.g., to ensure that small-diameter, unmerchantable stems are cut to facilitate regeneration of quality hardwoods, that retained trees are protected from damage by logging machinery, that logging slash is reduced throughout the cut to facilitate public access, and that erosion-control measures are maintained). A portion of the monetary value for all sales is realized in the form of 'In-kind' services on the WMAs. Services often include grading, liming, fertilizing, and seeding of landing areas; improvement and subsequent stabilization of existing woods roads using Massachusetts Best Management Practices (BMPs); and felling and slash reduction of non-merchantable trees to encourage regeneration of desired tree species and enhance early-successional wildlife habitat. All income from a timber sale is generally not received in the same fiscal year the sale was marked. When a sale is awarded through the public bid process, the qualified vendor submitting the highest bid is awarded the contract. Ten percent of the high bid is due at the time the contract is awarded, and the balance (90%) is due prior to the start of cutting, or within 1 year of the contract award, whichever comes first. Vendors are given up to 2 years to complete cutting, so that they can take advantage of variable market conditions.

Conservation Restriction and Fee Ownership Compliance Monitoring

Compliance monitoring for Conservation Restrictions (CRs) involves site visits to timber sales and other forest cutting operations on private lands where DFW owns development and public access rights. In FY 11, CR monitoring occurred at the Leadmine Mountain CR in Sturbridge; the Sturbridge Conservation Commission CR in Sturbridge; the Carter Pond CR in Barre; the Hull Forestlands CR in Southbridge; the LaValley CR in Bernardston; the Dalton Fire District CR in Dalton; the Betty's Neck Farm CR in Lakeville; the Corser CR in Warwick; the Heyes CR in Orange; and the New Bedford Watershed Lands CR in Freetown, Lakeville, Rochester, and Middleborough.

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, as well as addressing timber trespass onto WMAs by adjacent landowners. In FY 11, License Agreement monitoring occurred at the Muddy Brook WMA in Hardwick, and the Millers River WMA in Winchendon. One timber trespass was addressed at the Quabog WMA in Brookfield.

Forest Inventory and Analysis

Inventories on lands acquired in the past few fiscal years have been limited by a vacancy in a Management Forester position. The current status of the DFW Forestry Program's inventory and analysis is available at: ***http://www.mass.gov/dfwele/dfw/habitat/management/bdi/forest_mgt/forest_inventory.htm***.

Forest Certification

The DFW discontinued Forest Stewardship Council (FSC) certification in FY 11 after the cost increased dramatically and the agency could no longer afford to maintain this independent, third-party certification.

Upland Program

Ben Mazzei, Upland Program Coordinator

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

The goals of the Upland Program are to:

1) Use the best available science, data, and tools to identify appropriate sites for management of declining early-successional habitats (e.g., abandoned agricultural fields, aspen forest stands, abandoned orchards) while maintaining extensive, unfragmented forest lands.
2) Implement strategies and techniques to manage and restore declining early-successional habitats to ensure they continue to support native flora and fauna.
3) Systematically monitor the effects of habitat management on plant and animal communities to ensure that managed habitats continue to support the native biodiversity of Massachusetts.
4) Identify habitats where Upland Program objectives are complementary with Ecological Restoration Program objectives and pursue joint endeavors with that program.

Abandoned Field Reclamation

State funding was not available during FY 11, so all but one of the scheduled habitat management projects were postponed or cancelled. Abandoned field reclamation did occur on about 38 acres at the Eugene Moran WMA because this work was entirely funded by the Federal Natural Resource Conservation Service's (NRCS) Wildlife Habitat Incentive Program (WHIP). This project included both field and abandoned orchard reclamation and was carried out using a combination of private machinery operators through a competitive bid process. Scattered mast-producing trees, den/cavity trees, wild apple trees, and vigorous native shrubs were retained.

Invasive Plant Control

Funding for invasive plant control was not available during FY 11.

Biological Monitoring

To determine the success of habitat treatments over time, a long-term monitoring program of birds, butterflies, and vegetation was implemented during the summer of 1999 on Upland Program sites across the state. While funding for biological monitoring was not available during FY 11, DFW staff was able to complete a limited number of monitoring surveys. During summer 2011 (May 20-June 25), breeding bird surveys occurred on about 450 acres across eight different sites on nine different properties using a combination of trained volunteers and DFW field staff time.

Breeding Bird Surveys

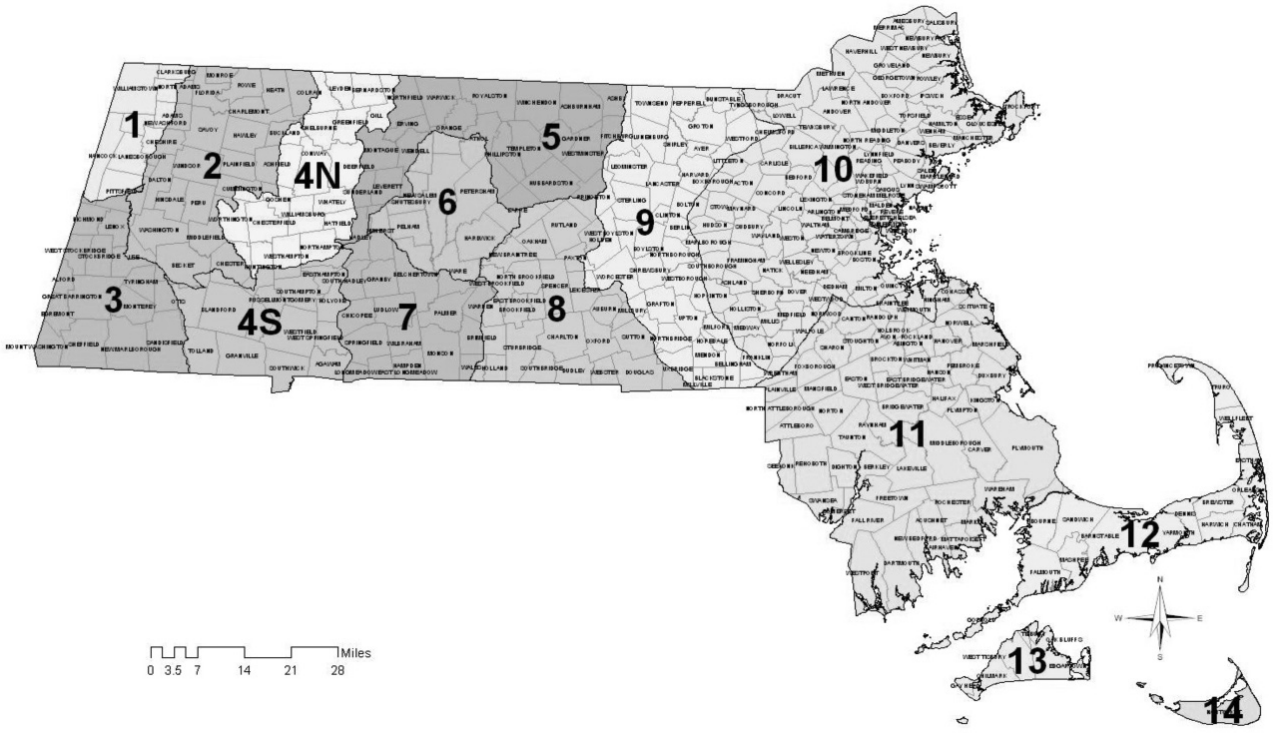
Site	District	Acres
Dunstable Brook WMA	Northeast	50
Noquochoke WMA	Southeast	50
Millers River WMA	Central	50
Herm Covey WMA	CT Valley	50
Southwick WMA	CT Valley	100
Leyden WMA, South	CT Valley	50
Stafford Hill WMA, North	Western	50
Hiriam Fox WMA	Western	50
TOTAL		**450**

The results of the various monitoring efforts indicated that target species of greatest conservation need are benefitting from Upland Program management activities. Data continue to indicate that, following initial reclamation work, target species abundances peak at 5-6 years following treatment, and therefore maintenance mowing should typically be applied every 8-10 years.

Keystone Program

No funding was available to support this program during FY 11. In the past, the Upland Program has provided limited funding for the Keystone (formerly 'Coverts') Program of the UMass Cooperative Forestry Extension, a 3-day forestry and wildlife habitat conservation workshop for individuals in a position to impact conservation in their communities (keystone individuals). These individuals may, for example, serve on local Conservation Commissions and/or land trusts, or may

Figure 1. Map showing the 15 Wildlife Management Zones (WMZs) in Massachusetts.



own undeveloped property available for wildlife habitat management.

Wildlife Management Programs

Upland Game Program

Dave Scarpitti, Upland Game Biologist

Wild Turkey Harvest

The 21st modern-day fall either-sex turkey season was held October 25-30, 2010. The open zone included Wildlife Management Zones (WMZ) 1-9 and 13. A total of 147 wild turkeys were harvested, a considerable increase from 2009, when only 46 fall season turkeys were harvested. Overall, 68 females and 81 males were harvested.

The Massachusetts spring gobbler hunt was held April 25-May 21, 2011. The 4-week open zone included WMZs 1-13. A record 17,047 wild turkey permits were issues. Total harvest during the spring season was 2,857 birds, the second-highest turkey harvest recorded in Massachusetts since wild turkey hunting seasons were established 32 years ago. There were 1,463 adult males, 1,332 immature males, and 17 bearded hens harvested. The total number of turkeys harvested in the spring of 2011 was only slightly greater than the harvest in spring 2010 (2,745); however, the number of immature males harvested in 2011 (1,332) was nearly double that harvested in 2010 (643). This can be attributed to good spring brood conditions and higher brood productivity, resulting in more young birds available for harvest in the subsequent hunting seasons.

Ruffed Grouse

Roadside surveys to measure the conspicuous breeding activity (otherwise known as drumming) of ruffed grouse are conducted statewide from late April through mid-May. In 2011, the 17th year of the annual ruffed grouse drumming survey was completed; of 29 existing random routes, 22 were active, 7 were in constant zero status, and 8 subjective routes were surveyed. The average number of drumming events heard per stop (ANDS) per route for all random routes statewide was 0.16, unchanged from 2010 (0.16). Across the state, drumming activity was slightly greater in the Connecticut Valley District, but down slightly in the Western and Central districts. Drumming activity on subjective routes (n=8) continues to be approximately 3 times higher (0.48) than random routes (0.16), suggesting that good-quality habitat will ultimately influence the local population size of ruffed grouse.

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 USFWS's Woodcock Singing-Ground survey each spring, the results of which provide an index to the breeding population of woodcock across the state. Nine randomized roadside woodcock singing-ground surveys were conducted in 2011 from April 20-May 10. The average number of singing woodcock heard per active route in 2011 (3.0) was slightly higher than recorded in 2010 (2.9). Greater than two woodcock were heard on six of the nine active routes, 1 woodcock was heard on two routes, no woodcock were detected on the remaining one route. In general, population modeling conducted by the USFWS indicates that woodcock populations have remained stable over the past 10 years in the Eastern Management Unit (Atlantic Flyway) and within Massachusetts.

Mourning Dove

Doves are not considered a game species in Massachusetts, but they are one of the most abundant and popular game bird species across the nation. The DFW participates in the annual Mourning Dove Call Count Survey, a standardized survey coordinated by the USFWS. Currently, eight survey routes are active across the state, and are sampled from mid-May to early June. The 2011 Dove Population Status report produced by the USFWS indicated that the breeding population index based on number of doves heard on New England routes was 10.8, a slight decrease from 2009 and 2010 (11.0 and 11.2, respectively). Dove populations in New England have demonstrated stable to slightly increasing populations over the past 2-, 10-, and 45-year time periods.

New England Cottontail Survey and Habitat Restoration

The DFW is continuing work in concert with other New England states through the New England Cottontail Initiative to help conserve our only native cottontail, the New England Cottontail. The New England Cottontail Initiative is comprised of a multi-state effort, in partnership with federal agencies including USFWS, NRCS, and NGO partners, to proactively avoid federal listing of the New England Cottontail under the Endangered Species Act. This partnership brings with it significant effort and resources from public, NGO, and tribal organizations and employs a variety of conservation strategies that are primarily focused on expanding and restoring young forest and shrubland habitats both on public and private lands.

Regionally-significant areas and site-specific focal areas associated with New England Cottontail habitat restoration have been identified using a landscape-scale approach. This approach incorporates regional, habitat-based GIS models to determine the best sites to conduct management for New England Cottontail. This information, coupled with occurrence data from recent and historic survey efforts, has further guided efforts to select parcels most suitable for New England Cottontail habitat management. 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 plant species control.

The DFW-conducted winter surveys to assess sites for the presence of New England Cottontail and Eastern Cottontail have continued in 2010-2011, including efforts to collect road-kill, hunter harvest, or any other rabbit specimens for analysis. These efforts will continue into 2012.

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 2010 was wetter than normal with especially heavy rains and flooding in March. While most flooding occurred before nest initiation, it did result in wet shavings and in some cases shavings floated out of flooded boxes. There were 336 wood duck nest starts in 550 available boxes with 251 successful hatches, well below the peak of 352 hatches in 1995. In addition, there were 91 hooded merganser hatches from 130 starts, slightly below last year but well above the 36 hatches recorded in 1995.

Massachusetts participates in the Atlantic Flyway Resident Goose Banding Program. Our goal is to band 1,000 geese each year to provide data for the federal database. Geese are captured by round ups during the summer molt. A total of 1,023 Canada geese were banded at 82 sites in 75 cities and towns in Massachusetts. The total included 408 goslings and 615 adults. Crews also captured an additional 179 previously banded geese.

Fall of 2010 was the fifth year of use for the new airboat and, unlike several past years, DFW encountered no mechanical problems. However, 2010 was a drought year and some site normally boated could not be, due to low-water conditions. Still, 2010 was a record year, and saw the highest number of ducks banded since 1994, with 1,158 birds captured – the third-largest total in over 38 years of airboat night-lighting. Further, it is also remarkable that this total was achieved in only 16 nights of air-boating, for an average of 72.3 birds a trip, far above the customary 40-45-bird average. DFW added two new sites but was unable to boat three regular sites. Among birds banded, there were 799 Wood Ducks, 198 Mallards, 7 American Black Ducks, 76 Green-winged Teal, 21 Blue-winged Teal, 2 Hooded Merganser, 1 American Wigeon, 1 American Coot, 6 Sora Rails, 2 Virginia Rails, plus a Pied-billed Grebe. Forty-four previously-banded birds were also recaptured. In addition, 7 Mallards and 6 Wood Ducks were banded by bait-trapping conducted by a cooperator and one Wood Duck encountered in a nest box in July was banded.

During the period of September 8-25, Massachusetts conducted a resident Canada Goose season, with a daily bag of seven. The Migratory Bird Hunter Harvest Information Program (HIP) of the USFWS is delayed in harvest estimates for the current year. However, the USFWS estimated a September season harvest of 4,200 geese in 2009. This compares to a harvest estimate of 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 45 days with a three-bird bag limit beginning October 20 in the Berkshire zone.

The annual Midwinter Waterfowl Survey was flown in January 2011. The Program Leader flew as an observer for the first time in 10 years (after 30 years of flying between 1970 and 2000) since a new USFWS pilot was replacing retiring pilot/biologist John Bidwell. The win-

ter of 2010-2011 began with a Christmastime blizzard. After a brief warm-up, January experienced a series of snowstorms and cold temperatures resulting in extensive icing. American Black Duck numbers were 9% below the 10-year average, with 16,625 counted. Mallard numbers were 54% below normal, declining for a third year in a row after reaching an all-time high in 2008. Canada Geese (11,384) were 4% higher than the 10-year average, but Atlantic Brant (1,254) were 37% below the 10-year average. Sea ducks and diving ducks were all below both last year and their 10-year average.

During the period January 15 to February 15, 2011, Massachusetts held a late, resident Canada Goose season in the Central waterfowl zone while the season in that portion of the Coastal zone north of Cape Cod ran January 18 to February 15, with a five-bird daily bag in each zone. The USFWS is delayed in harvest estimates for the current year. However, the USFWS estimated a harvest of 2,900 in 2010 compared to 1,200 geese in 2009, 2,300 geese in 2008, and 3,100 birds in 2007.

Postseason banding of wintering American Black Ducks was resumed for the second 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 15 coastal sites in 11 towns from the New Hampshire to the Rhode Island borders. Trapping was carried out in January and February 2011. This year all Mallards and Mallard x Black Duck hybrids could be banded, broken down into five plumage types. A total of 488 American Black Ducks, 158 black-plumaged hybrids, 8 intermediate types, 7 Mallard-plumaged hybrids, and 82 Mallards were banded. In addition, there were eight captures or foreign recoveries of Black Ducks previously banded in New Brunswick (4), Quebec (1), Maine (1), Parker River NWR (1) and one recovery with no available data. The Project Leader worked with the USFWS and the Bird Banding Lab and others to establish separate codes to identify black-plumaged, Mallard-plumaged, and intermediate Mallard x Black Duck hybrids. Separating black-plumaged hybrids from other hybrids is thought to be useful in analyzing breeding survey data as such hybrids are routinely identified only as black ducks on aerial inventories.

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 87 of the 1,463 plots used in the survey. We were unable to survey six off-shore plots due to airplane problems. The population estimate in the Northeastern states for Mallards was 301,352 pairs ±15%. The estimate for black ducks was 15,467 pairs ±35%; Wood Ducks, 195,563 pairs ±18%, and Canada Geese, 359,627 pairs ±15%. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Massachusetts entered its 13th year of the new federal Migratory Bird Hunter Harvest Information Program (HIP). HIP replaced the old survey based on collecting names of duck stamp buyers at post offices, and allows for more specialized surveys of various migratory bird species. Waterfowl and woodcock hunters are required to register each time they buy a new license by calling an 800-number. Hunters were also able to register online through the state's internet registration system.

Black bear sow and cub in laurel.

Massachusetts began issuing individual egg addling permits for resident Canada goose control under a new federal program begun in March 2007. In 2010, we issued 42 such permits of which 41 reports were returned. The permittees reported addling 1,182 eggs in 230 nests, while USDA-Wildlife Services addled 571 eggs in 127 nests under their statewide permit. Permittees who had not returned their annual reports were ineligible to receive a permit in 2011.

Black Bear Program

Laura Hajduk, Black Bear Program Leader

Black Bear Distribution and Harvest Investigations

A record total of 7,441 bear-hunting permits were issued for the 2010 hunting season. A total of 144 bears (169 in 2009) were taken during the 35-day season, including 114 during the 17-day September segment and 30 during the 18-day November segment. Seventy-seven males, 66 females and 1 unknown were taken in Berkshire (n=57), Franklin (n=42), Hampden (n=16), Hampshire (n=26), and Worcester (n=3) counties. There were 10 additional mortalities in 2010-11, including 7 road-kills, 1 bear taken under Ch. 131, Sec. 37 (causing agricultural damage), and 2 unknown mortalities.

Black Bear Cub Production and Survival

Eleven of 14 radio-collared sows were successfully handled in winter 2011 or during barrel-trapping in spring/summer 2011. Three female yearlings and three incidental sows were captured in dens, urban situations, or in barrel traps. In 2009, a pilot habitat study began in conjunction with the Massachusetts Cooperative Fish & Wildlife Research Unit. Three GPS collars were deployed in 2009 that were removed during 2010 and sent to the manufacturer to be refurbished. Five GPS collars were deployed in 2010 and nine GPS collars were deployed in winter 2011. At least eight additional collars will be available for winter 2012 deployment.

Furbearer Program

Laura Hajduk, *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 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 uses 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;
- Allow a sustainable harvest of renewable furbearer resources.

Harvest and Population

These activities provide recreational and economic opportunity for citizens and households in the state. A total of 1,515 furbearers were tagged at Division check stations during the 2010-2011 season. The harvest (a combination of hunted, trapped, and/or salvaged) by tagged species was: 523 beaver, 62 bobcat, 442 coyote, 298 fisher, 84 river otter, 38 mink, 41 red fox, and 27 gray fox. Trapper survey results indicated that a minimum of 255 raccoon, 8 weasel, 21 skunk, 74 opossum, and 955 muskrat were trapped and/or salvaged.

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 wildlife professionals to regulate wildlife populations and can reduce negative aspects associated with high wildlife populations and allow for a sustainable use of a valuable natural resource. Regulated trapping allows residents of the state to derive financial savings due to decreased amounts of the property damage furbearers cause, which can in turn reduce the need to pay 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;
- Mandatory trapper training;
- Restrictions on the size of traps;
- Restrictions on types of traps;
- Restricted seasons for trapping;
- Restricted areas for trapping;
- Mandatory regular checking of traps;
- Mandatory tagging of traps to identify the owner.

Management Efforts: Fisher

The fisher trapping season was reviewed in February 2011 as a request to shift the trapping season to a later date. Division staff determined that fisher pelt prices from the current Massachusetts season were not different from states with a later season, and no change was made to the fisher trapping season.

Research Efforts: Bobcat

Questions related to bobcat sightings were added to the DFW annual hunter survey in order to calculate a bobcat sightability rate by town and WMZ. Of the 3,483 hunters that responded to the bobcat questions, 224 stated that they observed at least one bobcat while deer hunting. Sightability rates are currently being calculated based on this response data.

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.

Towns are not required to report beaver-related activities that occur under the emergency permitting process, therefore the DFW attempts to obtain this information from annual reports submitted by PAC agents and from voluntary surveys of licensed trappers. Based on pelt sealing, PAC annual reports, and trapper surveys, PAC agents and licensed trappers removed a minimum of 870 beaver from April 16, 2009 through April 15, 2010. There may be minimal overlap from some PAC reports of beaver taken during the season that may have been tagged at Division check stations; however, the number above is likely a minimum estimate of the true number of beaver taken. This estimate does not include the number of beaver removed by PAC agents during 2010, because their permits operate on the calendar year and 2010 reports will not be available until January 2011.

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. Currently, the DFW has developed *Living with Wildlife* sheets for eight of the 14 furbearer species; the fact-sheets describe the natural history of these animals and suggest methods to prevent conflicts. (See also the "Human-Wildlife Conflict Trends Project" section, below.)

Deer Management Program

Sonja Christensen, Deer and Moose Program Leader

Harvest and Population

The statewide 2010 harvest of 10,815 deer represents the ninth-highest harvest reported in Massachusetts since 1966 (Table 1). The 2010 White-tailed Deer harvest by sex/age and the number of antlerless deer permits allocated and issued by WMZ for Massachusetts are given in Table 2. Overall, there was a 2% increase in harvest from the 2009 hunting season. The 2010 archery harvest was the highest on record. Many hunters noticed a large acorn crop in 2010, which often results in less deer sighted, as deer are not forced to move extensively for food resources. Also, as deer populations have begun to reduce or stabilize toward deer management goals, fewer antlerless deer permits are issued and fewer deer are ultimately harvested. The 2010 deer harvest by season and WMZ is in Table 3.

As in previous years, the antlerless deer permit system required a hunter to have an antlerless deer permit to harvest an antlerless deer in any deer season. This permit system increases hunter opportunity statewide while regulating deer harvest across all WMZs. Overall, we have achieved our deer density goals in 10 of the 15 WMZs (1, 2, 3, 4N, 4S, 5, 6, 7, 8 and 12) in mainly western and central Massachusetts. Challenges still remain in eastern zones that are related to hunter access issues and higher deer densities.

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

The antlerless deer permit (ADP) allocation for 2010 was 36,950 permits, a 3% decrease from 2009, while 32,388 permits (88%) were actually issued. Of these permits, 21,870 (68%) were issued through the regular drawing process, 7,454 (23%) were issued over the counter at DFW Offices and on the Islands, and 3,064 (9%) were issued over the counter through the MassOutdoors website. These additional permits sold over the counter resulted in a bag limit increase in those WMZs.

Research

No deer-related research projects occurred in FY 11.

Chronic Wasting Disease

In accordance with the USDA-APHIS guidelines for Chronic Wasting Disease (CWD) Surveillance, we continued with our surveillance program. Deer heads were collected from each WMZ, to obtain the required samples that will generate a statistically valid stratified sample for Massachusetts. During 2010, Massachusetts collected 624 samples from hunter-harvested, road-killed, and targeted deer from across the state for CWD monitoring and testing. Three road-killed moose were also tested for CWD. This was the ninth year of sampling in Massachusetts as part of a nationwide CWD monitoring and surveillance program. Results indicated that CWD was not detected. We will continue surveillance efforts in the 2011 deer harvest season with funding provided by the USDA-APHIS, especially in the WMZs that border New York and those that have captive deer facilities.

Moose Program

Sonja Christensen, Deer and Moose Program Leader

Traditionally, the DFW has collected data concerning moose from sightings reported by the public, moose found dead, and moose-vehicle accidents (MVA). These indices are used for determining population trends and for estimating the moose population in Massachusetts. There have been 1,424 reports submitted to DFW concerning moose since 1924. In calendar year 2010, there were 71 reports made to DFW concerning moose, which included 10 MVAs, 16 sightings, 7 moose found dead, 0 illegal kill reports, 6 LART responses, and 3 relocations of problem moose. Although the trend in moose sightings reported to DFW had seen a trending decline over the previous few years, 2010 saw an increase from 2009. Reported vehicle collisions also increased for the first time since 2006.

Figure 2 represents the number of MVAs per month from January 1980 through 2010. Moose-vehicle accidents include all reported moose that were struck and killed on Massachusetts highways plus all moose that were struck by vehicles but walked away from the accident. There have been 369 MVAs in Massachusetts from 1980 to 2010 (Table 4) reported to the DFW. Figure 3 represents the number of MVAs by town from 1980 to 2010. The MVA rate for 2010 was 2.83 moose per month, which is a 70% increase from 2007 (Figure 2). The 2010 MVA rate is above the 5-year MVA average of 2.02 per month and the 10-year average of 2.35 per month. We feel that this is a minimum number because MVAs are not routinely being reported to the DFW or

Table 1. The 2010 White-tailed Deer harvest by season and sex/age class.

Season	Adult Male	Female	Male Fawn	Unknown sex	Total	% Harvest
Unknown	2	0	0	0	2	0.00%
Paraplegic	1	3	1	0	5	0.05%
Archery	2529	1010	229	10	3778	34.93%
Shotgun	2344	2016	479	7	4846	44.81%
Muzzleloader	782	1074	207	5	2068	19.12%
Sub-Total	5658	4103	916	22	10699	98.93%
Quabbin*	45	48	23	0	116	1.07%
State	**5703**	**4151**	**939**	**22**	**10815**	**100.00%**

* Controlled Hunt with DCR-Limited Access

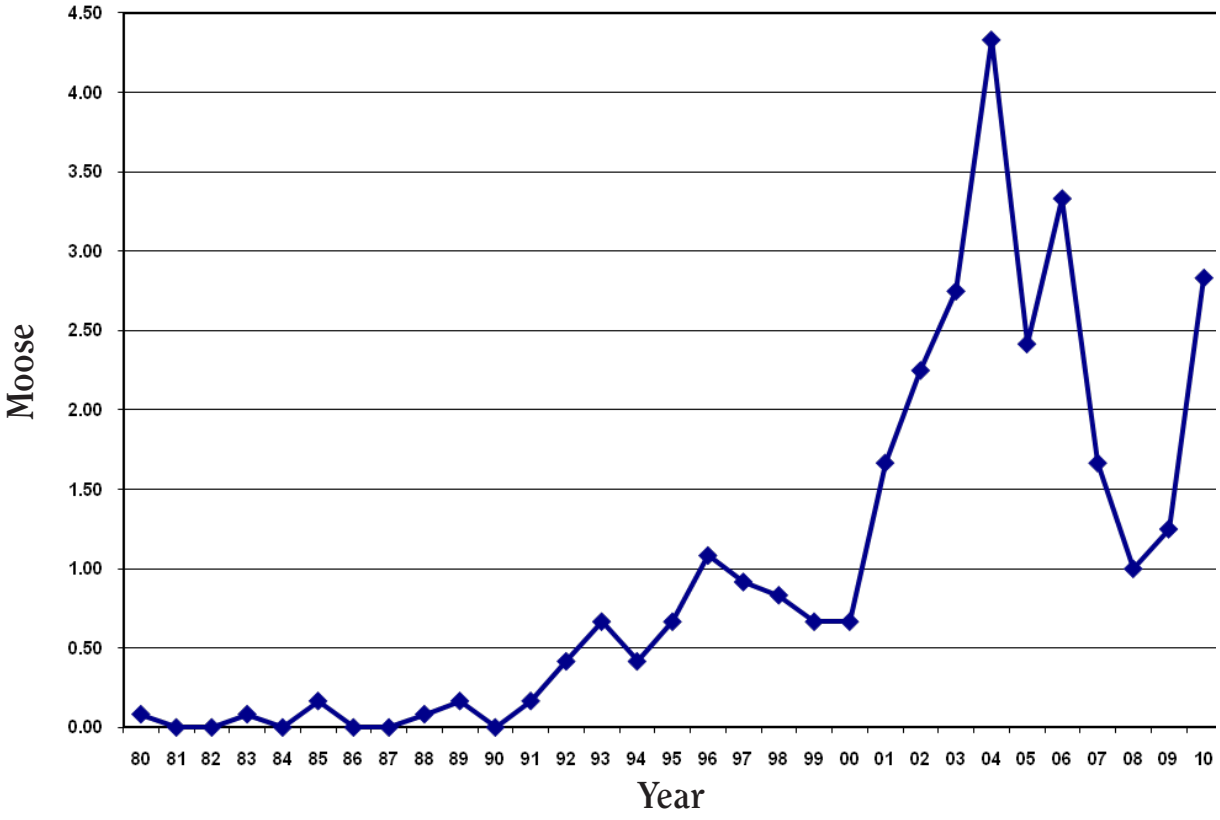
Table 2. The 2010 White-tailed Deer harvest by deer sex/age and the number of antlerless deer permits allocated and issued by Wildlife Management Zone for Massachusetts.

WMZ	Adult Male	Female	Male Fawn	Sex Unknown	Total Harvest	Goal	ADP Allocation	ADP Issued
1	128	47	6	0	181	Stabilize	450	434
2	265	28	5	1	299	Stabilize	200	193
3	355	136	35	1	527	Stabilize	1250	1192
4N	280	71	14	1	366	Stabilize	400	379
4S	152	40	3	0	195	Stabilize	300	277
5	352	224	22	2	600	Stabilize	1450	1399
6	111	50	8	0	169	Stabilize	450	423
7	348	281	56	2	687	Stabilize	2400	2270
8	502	304	47	0	853	Stabilize	2900	2745
9	511	380	89	3	983	Stabilize	4100	3849
10	854	921	214	7	1996	Reduce	8550	8164
11	1173	891	218	3	2285	Reduce	8550	8035
12	146	70	9	0	225	Stabilize	550	511
13	225	273	71	1	570	Reduce	2700	1192
14	253	386	118	1	758	Reduce	2700	1325
Unknown	3	1	1	0	5			
Statewide	**5658**	**4103**	**916**	**22**	**10699**		**36,950**	**32,388**

Table 3. The 2010 deer harvest by wildlife management zone and season.

WMZ	Paraplegic	Archery	Shotgun	Muzzleloader	Unknown	Total
1	0	54	95	32	0	181
2	0	96	146	57	0	299
3	1	132	309	84	1	527
4N	0	112	179	75	0	366
4S	0	72	86	37	0	195
5	0	151	307	142	0	600
6	0	39	97	33	0	169
7	0	230	303	154	0	687
8	0	232	441	180	0	853
9	4	332	397	249	1	983
10	0	895	651	450	0	1996
11	0	970	941	374	0	2285
12	0	45	137	43	0	225
13	0	179	320	71	0	570
14	0	237	434	87	0	758
Unknown	0	2	3		0	5
Statewide	5	3778	4846	2068	2	10699

Figure 2. Moose-vehicle accidents reported in Massachusetts per month from 1980 to 2010.



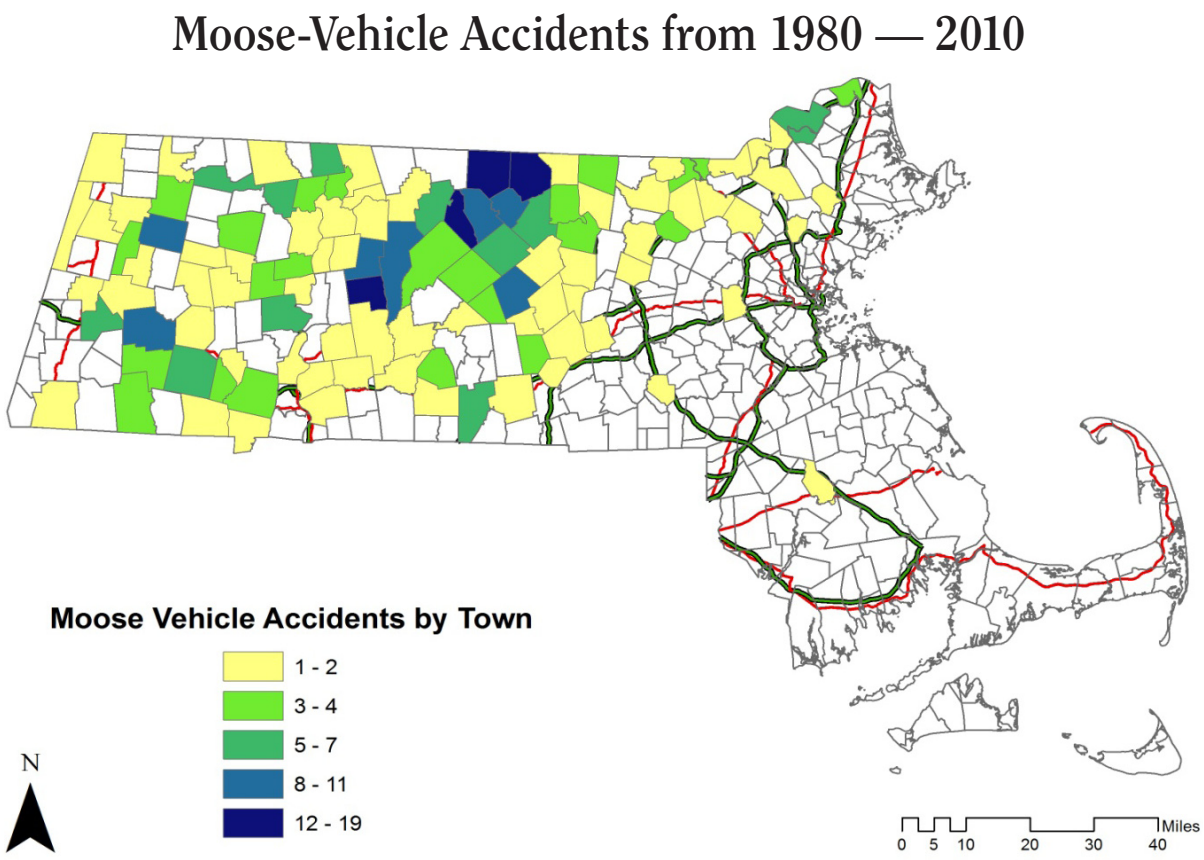


Figure 3. The number and location by town of the moose-vehicle accidents reported from 1980 to 2010 in Massachusetts.

Table 4. The moose mortality reported in Massachusetts from 1980 to 2010.

Total MVA is the sum of road-kill and collisions while total mortality is the sum of total MVA and other mortality.

Year	Roadkill	Collisions	Total MVA	Other Mortality	Total Mortality
1980	1	0	1	0	1
1981	0	0	0	0	0
1982	0	0	0	0	0
1983	1	0	1	0	1
1984	0	0	0	0	0
1985	2	0	2	0	2
1986	0	0	0	3	3
1987	0	0	0	0	0
1988	1	0	1	1	2
1989	2	0	2	2	4
1990	0	0	0	0	0
1991	2	0	2	4	6
1992	5	0	5	5	10
1993	8	0	8	4	12
1994	5	0	5	3	8
1995	8	0	8	5	13
1996	12	1	13	5	18
1997	11	0	11	4	15
1998	6	4	10	8	18
1999	8	0	8	9	17
2000	9	0	9	6	15
2001	18	2	20	10	30
2002	22	5	27	13	40
2003	28	5	33	6	39
2004	43	9	52	15	67
2005	25	5	30	20	50
2006	27	12	39	16	55
2007	11	9	20	10	30
2008	10	2	12	7	19
2009	16	0	16	4	20
2010	21	13	34	11	45
Total	302	67	369	171	540

to Environmental Police and some are only discovered indirectly through newspaper reports.

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

We included moose in our Chronic Wasting Disease surveillance and monitoring for 2010. We collected three samples from road-kill moose. Chronic Wasting Disease was not detected in moose in Massachusetts.

In 2010, we continued work on a research project with USGS Cooperative Fish and Wildlife Research Unit. We are using GPS collars to evaluate movement and habit use at a detailed level in Massachusetts. Major capture activities had been completed in 2010. Full or partial data sets were obtained from five GPS collars. Three of the moose were recaptured, their collars were removed, and new GPS collars were placed on the animals. Two of the collars were long-term GPS collars that will last for 3-4 years. Two collars were recovered after the release mechanisms on the collars were either triggered remotely or automatically released due to low battery. The collars performed well and obtained between 4,000 and 15,000 locations per animal.

Analysis of some of the data sets was performed and used to write and defend a Master's thesis by David Wattles entitled "Status, Movements, and Habitat Use of Moose in Massachusetts" in June 2011. The thesis will include information on moose status and management, home range size, movements, and core area habitat use.

Data collected from these collars will continue to be monitored and analyzed throughout 2011. These data collected after completion of the Master's thesis will be used as part of a Ph.D. dissertation.

The Human-Wildlife Conflict Trends Project

Human-Wildlife Conflict Trends

A study related to human-wildlife conflicts and reports was initiated in 2010 as part of a graduate study through the USGS Cooperative Wildlife Research Unit at the University of Massachusetts. The goal of this study is to analyze wildlife-report data, generated through unsolicited phone calls and emails received at each of the six DFW offices from the public regarding a variety of wildlife-related issues, in order to produce information that can be used to develop proactive management strategies effective at resolving human-wildlife conflicts. We intend to (1) determine the effectiveness of the current Animal Report Data Sheet for providing the appropriate information for investigating trends in human-wildlife conflicts and trends in the public's perception of human-wildlife interactions; (2) develop a new data collection system designed to capture objective information regarding human-wildlife interactions that can be analyzed more efficiently and more effectively; and (3) analyze trends in human-wildlife interactions and the associated concerns (public perception of interactions with wildlife) both spatially and temporally. We intend to analyze these trends using multivariate statistical methods, and by overlaying the data collected with that of data available in the Massachusetts Geographical Information System (MassGIS) database. The MassGIS data includes, but is not limited to, land use, towns, census data, and infrastructure (e.g., roads). Further, this data collection system can be utilized on a long-term basis in order to develop and support hypotheses and experiments for future research to test the effectiveness of management strategies.

Procedures

Animal report data are collected at DFW offices via the DFW Animal Report Data Sheet. The data collected include date of report, species, town and report type (sick or injured animal, aggressive animal, property damage, depredation, etc.). Reports come in the form of phone calls and emails from the general public. Reports are recorded as given by the individual, and therefore

cannot always be considered accurate with regard to species identification or the exact circumstances of the incident. Rather, the data collected are meant to represent the public's perception of a conflict or interaction with wildlife.

Coyote

For example, human-coyote conflict data collected between 2001 and 2007 were analyzed using multiple regression analysis in order to test the effectiveness of the animal report form at providing data that can be utilized for making management decisions regarding human-coyote conflicts. Each town (normalized by town area) in Massachusetts was considered one experimental unit. The dependent variable was coyote conflicts and the independent variables were human population density, year since first report of coyotes within each unit, coyote habitat, and coyote harvest.

In April 2010, we implemented a new data collection system for animal reports. Using this system, DFW staff collects the following information; date, species, town, type of report, and the individual's concern associated with the report. These data are then summarized. Summaries include, but are not limited to, graphs displaying differences in volume of report type, concern type, species, and season. Maps are developed using Massachusetts Geographic Information Systems (MassGIS) to geographically display the distribution of reports by type and species. These summaries are meant to provide district biologists with information to assist them when providing advice and management options to the general public regarding human-wildlife interactions/conflicts. In subsequent years, we will analyze the relationships of species, report type, and concern type to each other and to human population density, property values seasonal variation, habitat availability, and fragmentation of habitat. Analyses will include, but are not limited to, univariate techniques such as, multiple regression analysis and analysis of variance. We intend to also utilize multivariate techniques to fully explore the relationships and multidimensionality of data collected on all of the variables.

Findings

No significant relationship was found between coyote conflicts and human population density ($p=0.97$), year since first report ($p=0.35$), and coyote harvest ($p=0.07$). The relationship between coyote conflicts and habitat availability was significant ($p<0.0001$). Analyzing data collected through this system proved to be complicated. Report data were subjective, and therefore difficult to define. Also, data collection relative to location, species, and type of report seemed inconsistent and somewhat unreliable.

In response, we developed a new data collection system and emphasized the importance of rigorous data collection. The new data collection system gave us the ability to better categorize reports by providing the collector with a set of standard report types from which to choose. Also, we were able to collect data on

Figure 4. Total Animal Reports — April 2010 to June 2011

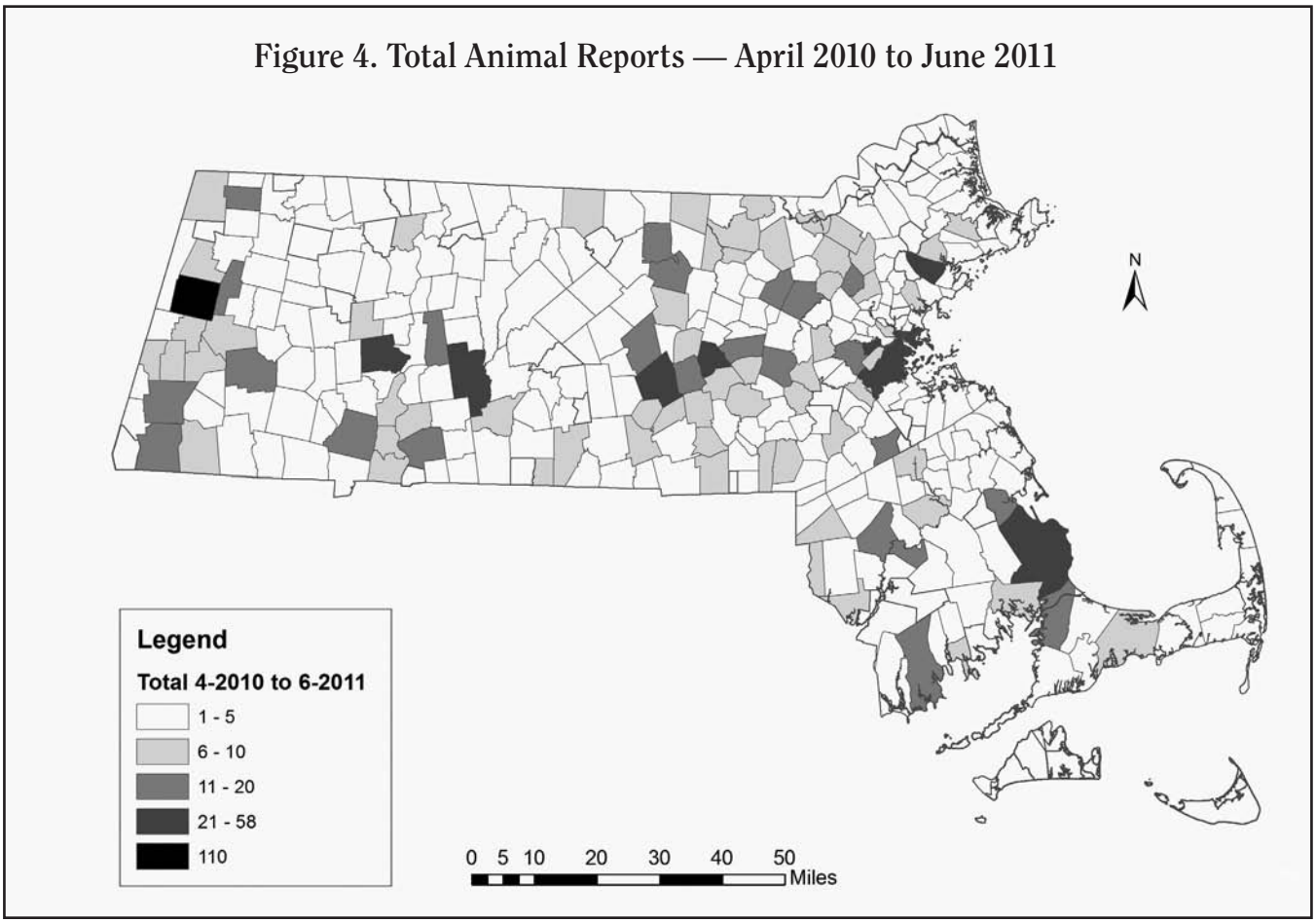


Table 5.	Concern Type					
Report Type	**None**	**Welfare of wildlife**	**Property**	**Pets/ livestock**	**Human safety**	**Total**
General	126	125	71	67	167	556
Sick/injured/young	43	306	32	36	144	561
Property damage	19	149	229	167	439	1,003
Depredation	0	2	36	70	32	140
Public safety	0	21	35	22	101	179
Total	**188**	**603**	**403**	**362**	**883**	**2,439**

Table 5. Total number of report types, by concern type collected. Neither concern type nor report type are mutually exclusive. In other words, more than one category of report type and more than one category of concern type may have been selected for any given individual report (call or email), which is why the totals may be higher than those of the individual reports collected.

the type of concern associated with the report. The new system has made data collection and data entry more efficient by, first, allowing for multiple reports per page and, second, by not requiring the collector to describe the report type; therefore, not requiring the enterer to subjectively interpret and categorize the report type. Also, we have emphasized the importance of collecting data for all reports regardless of species, location, type of report, or concern.

Via the new system, reports were recorded in 319 of 351 towns across Massachusetts, totaling 1,887 (Figure 4). Reports ranged from general inquiry to threat to public safety and covered nearly one hundred species. Report type was categorized into one of five groups: 1) general; 2) sick/injured/young; 3) property damage; 4) depredation; and 5) public safety. Report type and concern type totals were summarized with respect to each other (Table 5). With respect to species, we received 173 reports regarding 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, ten were reported as human attack and involved the following species; turkey (3), hawk (3), fox (1), coyote (1), raccoon (1), and bees (1). We received 105 reports of depredation, which include missing pet or livestock, aggression toward pet, attack on livestock witnessed or not witnessed, and attack on pet witnessed or not witnessed. Sixty-four of the 105 reports included information regarding the pet or livestock species depredated. We received 21 reports of chickens having been taken by bears (5), foxes (4), coyotes (7), bobcats (2), weasels (1), and unknown species (2). We also received 14 reports of domestic dogs and 7 reports of domestic cats depredated. Other reports of depredation included bee hives (5), rabbits (1), sheep (2), goats (1), horses (2), pigs (1), calves (1), trout (1), and koi fish (1).

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 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 Diseases

Division biologists field calls from the public regarding various wildlife diseases, including rabies. The Furbearer Program Leader represents DFW as a member of the inter-agency Zoonotic Disease Advisory Committee (ZDAC) and regularly attends ZDAC meetings.

Federal and state furbearer program personnel along the eastern seaboard began monitoring rabies in raccoon populations in 1977. This epizootic was documented in Massachusetts on September 16, 1992. When the outbreak peaked in the Commonwealth during the 1990s, the die-off of raccoons from this epizootic was tremendous. Since the initial die-off, it appears that

raccoon populations have recovered and, depending on population dynamics, vary on a 3-5-year cycle. Bat rabies is also present in Massachusetts.

As of June 2011, rabies has been confirmed in 12 of 14 counties in Massachusetts. In 1994, the Wildlife Rabies Vaccine Program was established to prevent the spread of rabies in wildlife, and vaccination efforts were focused along the Cape Cod Canal in order to create a barrier between the mainland and Cape Cod. Raccoon rabies broke through the rabies vaccine barrier and the disease was detected for the first time on Cape Cod in March 2004.

In 2010, 1,740 terrestrial mammals were submitted to the State Laboratory Institute (SLI) for rabies testing. Of these specimens, 117 tested positive (in 2009: n=106 positives). Statewide, bats continue to test positive for rabies annually. In 2009, of 678 bats tested, 14 (2.0%) tested positive for rabies. This strain of rabies has been present in Massachusetts since the 1950s.

Raccoons accounted for 78% (n=103) of all positive animals. Currently, rabies is confirmed in all counties in Massachusetts, except Nantucket and Dukes.

Youth Skills and Recruitment Programs

National Archery in the Schools Program (NASP)

This program offers international-style target archery training through a national standardized education package. The NASP and the Archery Trade Association have partnered with the DFW and the non-profit Massachusetts Outdoor Heritage Foundation to promote student education and lifelong interest and participation in the sport of archery and active engagement in outdoor pursuits.

NASP has developed an in-school archery curriculum for grades 4-12 that can be used as a tool in teaching social studies, mathematics, and physical education. Since its inception in 2002, more than 4 million students in 4,900 schools located in 46 different states have participated in NASP. Massachusetts is now the 47th state to offer the program. The following ten pilot schools are participating:

Brockton High School
Brockton, MA 02301

Lee Middle and High School
Lee, MA 02138

John F. Kennedy Middle School
Northampton, MA 01062

Saugus Public Schools
Saugus, Massachusetts 01906

Westport Middle School
Westport, MA 02790-1160

Douglas High School
Douglas, MA 01516

Mahar Regional High School
Orange, MA 01364-9538

Northeast Metropolitan Regional Vocational H.S.
Wakefield, MA 01880

Waconah Regional High School
Dalton, MA 01226-1355

Burncoat Middle School
Worcester, MA 01606-2405

Young Adult Pheasant Program

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

Table 6. 2010 Youth Pheasant Hunt Participanting Clubs/Hunt Information

Club Name	Number of Students	Date of Hunt	Location of Hunt
Carver Sportsmen's Club	20	10/2/2010	Myles Standish SF
Essex County League of Sportsmen	12	9/25/2010	Martin Burns WMA
Falmouth Rod and Gun Club	10	10/2/2010	Unknown
Fitchburg Sportsmen's Club	3	10/9/2010	Unknown
Fin, Feather, and Fur Club	12	10/2/2010	Poland Brook WMA
Lee Sportsmen's Association	10	10/2/2010	Hopbrook WMA
Norco Sportsmen's Club	11	10/9/2010	Norco Club Grounds
Singletary Rod and Gun Club	3	10/2/2010	Singletary Club Grounds
Worthington Rod and Gun Club	3	10/9/2010	Rte. 143 Field
Walpole Sportsmen's Association	7	10/9/2010	Charles River WMA

This program is more than just a day in the field pheasant hunting. It is a comprehensive, three-part recreational program: Part 1 of the program, shooting instruction and practice, takes place during the summer or early fall; Part 2, the pre-hunt workshop, is held a week or two before the youth pheasant hunt; The actual hunt (Part 3) is scheduled for a Saturday prior to the mid-October start of the regular pheasant hunting season.

Youth Turkey Hunt Program

This program was developed by the DFW in cooperation with the Massachusetts Chapter of the National Wild Turkey Federation 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 program is offered by participating local sportsmen's clubs in partnership with local chapters of the NWTF. It is a comprehensive, three-part outdoor education program in which hunter safety is emphasized throughout to help build the confidence of young hunters so that they will feel comfortable hunting either alone or with others.

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

In FY 11, a 1-day mentored Youth Turkey Hunt was held on the Saturday preceding the opening of the spring season. A total of 102 youths (sponsored by 11 clubs) completed the pre-hunt training and field exercise, 70 of whom were aged 12-14 years and 32 of whom were aged 15-17 years old. Previous-year Youth Turkey Hunt Program participants (37) returned to participate in the FY 11 Youth Turkey Hunt day, but did not need to repeat the pre-hunt training and field exercise. Of the total of 139 eligible youths who participated, 51 (36%) succeeded in harvesting a turkey on the Youth day.

The following sportsmen's clubs participated in the program, in cooperation with the state chapter of the National Wild Turkey Federation: Barre Sportsmen's Club, Carver Sportsmen's Club, Cheshire Rod and Gun Club, Conway Sportsmen's Club, Essex County Sportsmen's Association, Falmouth Rod and Gun Club, Fitchburg Sportsmen's Club, Lee Sportsmen's Club, Norco Sportsmen's Club, Stockbridge Sportsmen's Club, Worthington Rod and Gun Club.

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Colleen Hubbard, *Clerical*
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PRIVATE LANDS HABITAT MANAGEMENT

John O'Leary, Supervisor

Overview

Private lands management is essential to the conservation and restoration of important fish and wildlife habitats in Massachusetts. Eighty percent of the land base in Massachusetts is privately owned, and many Special Concern, Threatened, and Endangered species occur on these lands. Two of the programs administered by the DFW to enhance species habitat on private lands are the Landowner Incentive Program (LIP) and the DFW Technical Assistance Program to the 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)

Michael S. Sawyers, *LIP Coordinator*

The Massachusetts LIP was established to create partnerships between state biologists and private landowners to identify common habitat management goals and provide financial and technical assistance 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 that are chosen for LIP funding are reimbursed up to 75% of the cost of the on-the-ground practices performed to complete the project; the landowner provides the remaining percentage either in funds or in-kind labor or equipment.

In awarding grants, the LIP staff focuses on the management of private lands identified by the NHESP BioMap project as being essential for the conservation of declining species. Since its inception in 2005, LIP has played an integral role in restoring and conserving wildlife habitat on a diverse array of private lands across the state with goals to (1) enhance wildlife habitat for At-risk Species, (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 At-risk Species.

Funding for this program was allocated by Congress through the 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 from March 2010, when Tracy Grazia left the DFW, until April 2011, when Michael Sawyers filled the position. In the interim, Marianne Piché, Habitat Management Biologist, oversaw all LIP issues, including managing FY 10 project extensions and providing technical assistance.

The Trustees of Reservations (TTOR) received four project extensions into FY 11 which were necessary to adequately meet project objectives given conditions during scheduled management (Figure 1). The DFW contributed $47,875 and TTOR contributed $18,617.40 collectively among the four projects. Of these extensions, 75% strictly managed to control invasive species and 25% used a combination of invasive species control and manual clearing to achieve project goals in a variety of habitats (Table 1).

Table 1. Habitat types treated in FY 11 project extensions.

Habitat Type	Acres	Percent
Calcareous Rock Outcropping/Cliff	16	19.95%
Conifer/Softwood Forest	12	14.96%
Cultural Grassland	8	9.98%
Early Successional Forest	8.5	10.60%
Emergent Marsh	7	8.73%
Floodplain Forest	16	19.95%
Hardwood Forest	5	6.23%
Salt Marsh	0.2	0.25%
Shrub Swamp	7.5	9.35%
Total Acreage	80.2	

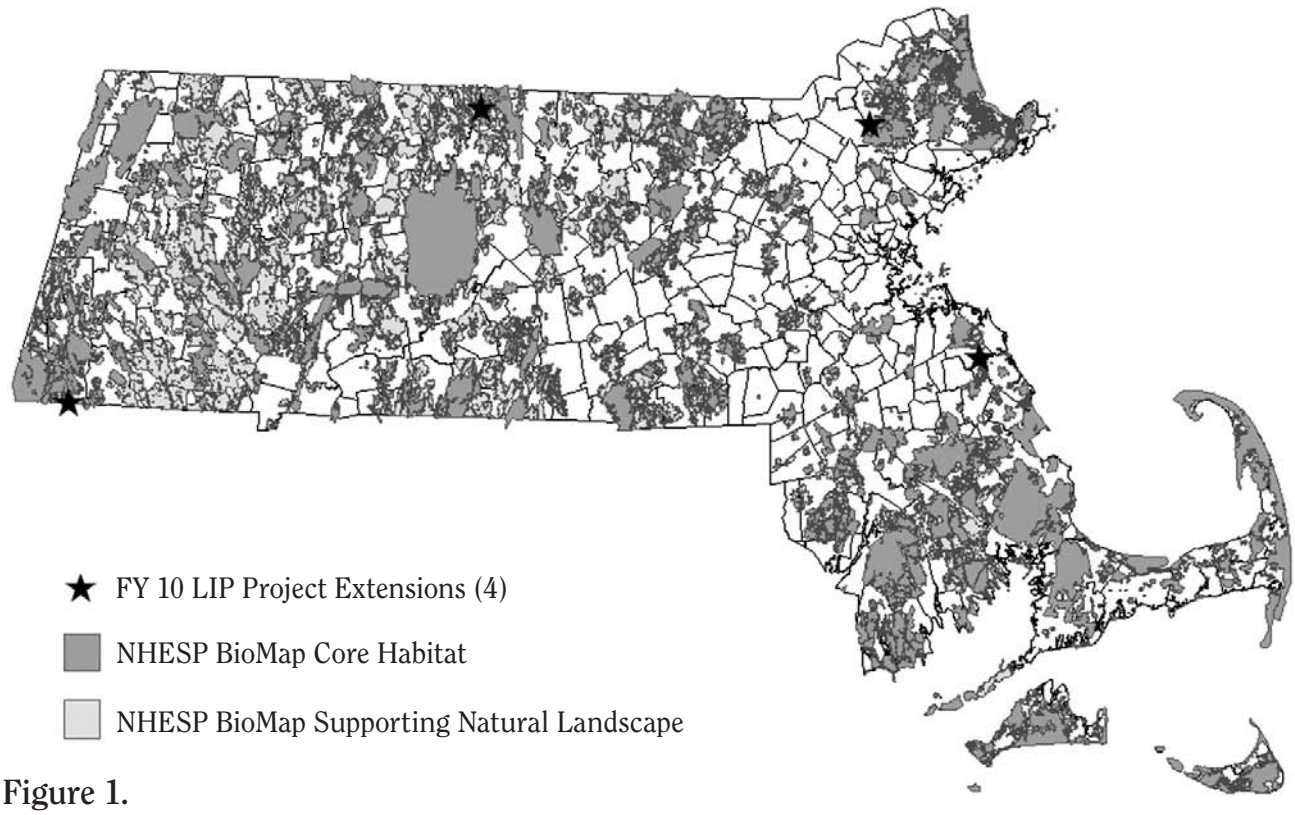

Figure 1.

At least 33 species and 3 natural communities of statewide importance have been identified as benefiting from the project extensions including 21 plants, 3 invertebrates, and 9 vertebrates (Table 2).

During FY 11, LIP staff continued to assist landowners and towns by providing on-site technical assistance, responding to information requests over the phone, and participating in informational public outreach events. LIP staff conducted six site visits to landowners that had not previously sought management recommendations or applied for funding. Recipients of technical assistance included two town Conservation Commissions, one private landowner, one land trust, one corporation, and one college. In May, technical assistance was provided to the Town of Berlin where the Conservation Commission and conservation-minded citizens hoped to further develop and enhance wildlife habitat. The Berlin Conservation Commission intends to develop partnerships with managers of neighboring open space lands to further benefit at-risk species. The private landowner receiving technical assistance benefited pollinator species through plantings and will implement the recommended mowing regime to maintain early successional habitat in late 2011. Technical assistance was also provided to the Greater Worcester Land Trust, which recently acquired property in Priority Habitat within the Worcester city limits that will now be permanently protected.

Table 2. Species-at-risk and natural communities benefiting from LIP FY 10 extensions.

Taxonomic Group	Species
Invertebrates	Sandplain Euchlaena, Skillet Clubtail, and Zebra Clubtail
Reptiles	Wood Turtle, Eastern Box Turtle, and Spotted Turtle
Birds	American Bittern, Brown Thrasher, Eastern Towhee, Northern Harrier, and Prairie Warbler
Amphibians	Jefferson Salamander
Plants	Andrew's Bottle Gentian, Davis's Sedge, Fogg's Goosefoot, Foxtail Sedge, Frank's Lovegrass, Gray's Sedge, Great Blue Lobelia, Hitchcock's Sedge, Intermediate Spike-sedge, Large-bracted Tick-trefoil, Long-styled Sanicle, Moonseed, Mossy-cup Oak, Narrow-leaved Spring Beauty, New England Blazing Star, One-flowered Pyrola, Swamp Dock, Tuckerman's Sedge, Wall-rue Spleenwort, Wapato, and Yellow Oak
Natural Communities	Calcareous Rock Cliff Community, Estuarine Intertidal: Freshwater Tidal Marsh, and Level Bog

Three DFW-hosted public site walks on Wildlife Management Areas were attended by LIP staff to engage citizens interested in active habitat management on their property and address questions about applied management throughout Massachusetts. LIP staff also created a poster and slide show for the DFW's Turtle Awareness Day to inform attendees about active management conducted on private lands benefiting at-risk turtle species and their habitat.

Since April, extensive work has been completed on the Active Habitat Management Database. This tool provides land managers, biologists, and administrators with information regarding habitat management practices occurring across the Commonwealth including management practices, acres of habitat created, and species that benefit. Currently, majority of projects from each district, forestry, upland, and LIP are entered into the database with corresponding spatial reference. This practical tool will assist in determining the highest management priorities throughout Massachusetts and provide a context for how management within the local landscape is integrated into statewide initiatives.

To date, the DFW has funded 157 LIP projects and has provided technical assistance to private landowners from Cape Cod to the Berkshires. Through this program, the DFW has contributed close to $3.5 million for the conservation of declining species on private land over the program's 6-year history.

Technical Assistance Program to the Natural Resources Conservation Service (NRCS)

Marianne Piché, *Habitat Management Biologist*

The DFW and the NRCS have completed a third year of participating in a Memorandum of Understanding whereby a DFW staff person provides wildlife technical assistance to NRCS for Farm Bill Programs that offer cost-share funding for habitat restoration and management on private lands; the Wildlife Habitat Incentive Program (WHIP), the Environmental Quality Incentives Program (EQIP), and the Wetlands Reserve Program (WRP). NRCS will annually allocate $500,000 of WHIP, EQIP, and/or WRP financial assistance dollars, as authorized and appropriated by Congress, to eligible participants for the sole purpose of implementing practices that match the goals and objectives of the DFW Biodiversity Initiative and the Massachusetts State Wildlife Action Plan (SWAP). The NRCS Massachusetts State WHIP Plan includes primary strategies that can be employed to further the goals of the SWAP in 10 of the 22 habitat types on which the SWAP-identified species depend. The 2008 Farm Bill includes private non-industrial forestland as eligible for funding under EQIP, providing additional opportunities for the DFW-NRCS partnership to benefit Species in Greatest Need of Conservation. And, WRP promotes the protection and restoration of wetlands through the purchase of easements and enhancement activities potentially resulting in DFW-NRCS coordination in long term protection and restoration of habitat for SWAP species.

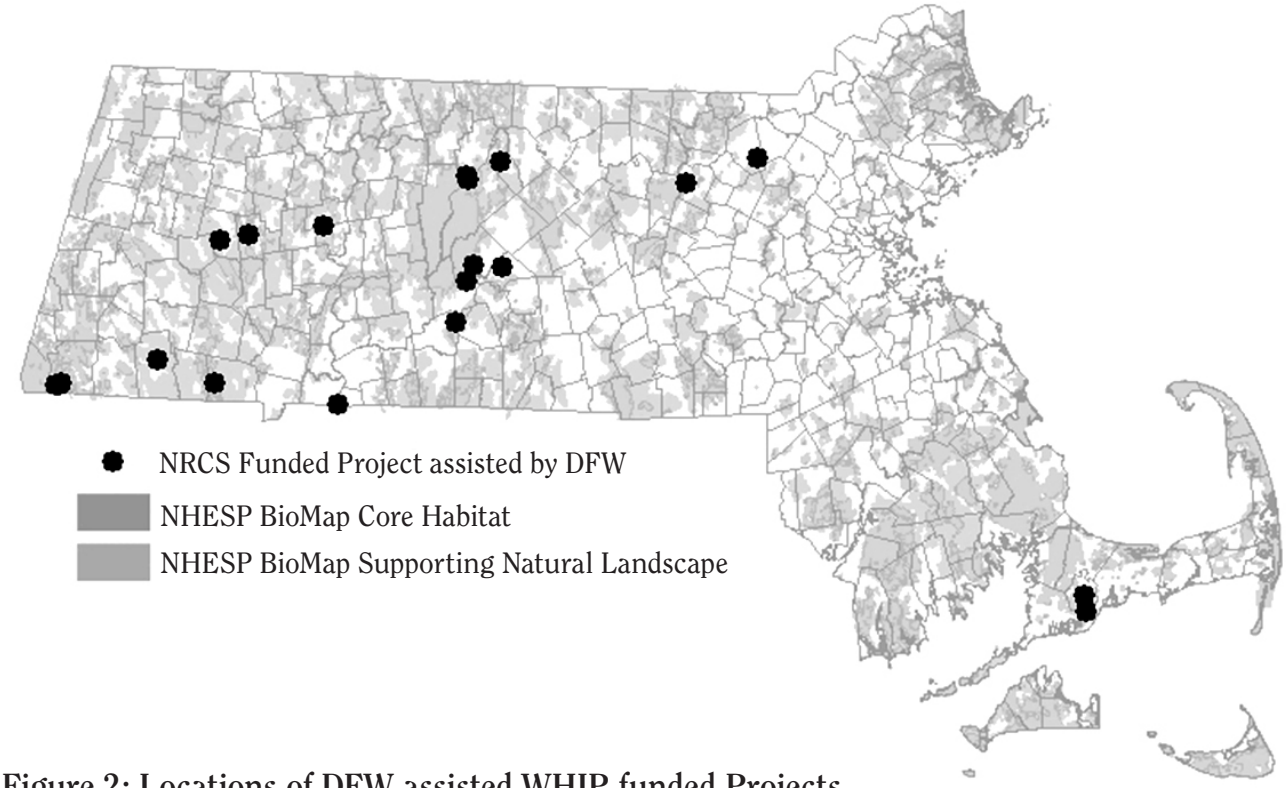

Figure 2: Locations of DFW-assisted WHIP-funded Projects.

Table 3. Species-at-risk benefiting from WHIP projects.

Taxonomic Group	Species
Lepidopteron	Orange Sallow Moth (T)
Amphibian	Northern Leopard Frog
Reptile	Black Racer, Data Sensitive Species (E), Eastern Box Turtle (SC), Eastern Hognose Snake, Eastern Ribbon Snake
Bird	American Kestrel, American Woodcock, Blue-winged Warbler, Broad-Winged Hawk, Brown Thrasher, Canada Warbler, Eastern Towhee, Field Sparrow, Green Heron, Louisiana Waterthrush, Northern Bobwhite, Prairie Warbler, Ruffed Grouse, Whip-poor-will, White-throated Sparrow, Wood Thrush
Mammal	Eastern Red Bat, Hoary Bat, Silver-haired Bat, New England Cottontail (candidate species)
Plant	Climbing Fumitory (SC)

During FY 11, the Habitat Management Biologist participated in site visits at 41 properties with NRCS staff (Figure 2). DFW provided written habitat management recommendations for 38 WHIP applications. Twenty two received funding; six in Berkshire County, four in Hampshire County, three in Hampden County, six in Worcester County, one in Middlesex County, and two in Barnstable County. Nine of these project sites are in Priority Habitat and will benefit state-listed species.

Funded Wildlife Habitat Incentive Program projects assisted by DFW in FY 11 will result in $636,379.53 of federal funds for wildlife habitat management activities on 573.1 acres of private land in Massachusetts. Practices to be implemented will create, maintain, or enhance critical wildlife habitat for SWAP species, in Marsh/Wet Meadow, Shrub Swamp, Forested Swamp, Riparian Forest, Young Forest/Shrubland, Pitch Pine/Scrub Oak System, and Upland Forest. Natural community types to be enhanced include Major-river Floodplain Forest, Mixed Oak Forest, and Pitch Pine/Scrub Oak Community. A total of 27 animal Species in Greatest Need of Conservation and one plant will benefit from WHIP projects (Table 3).

The Habitat Management Biologist also serves as a liaison between DFW and NRCS to implement conservation efforts on privately-owned land under the

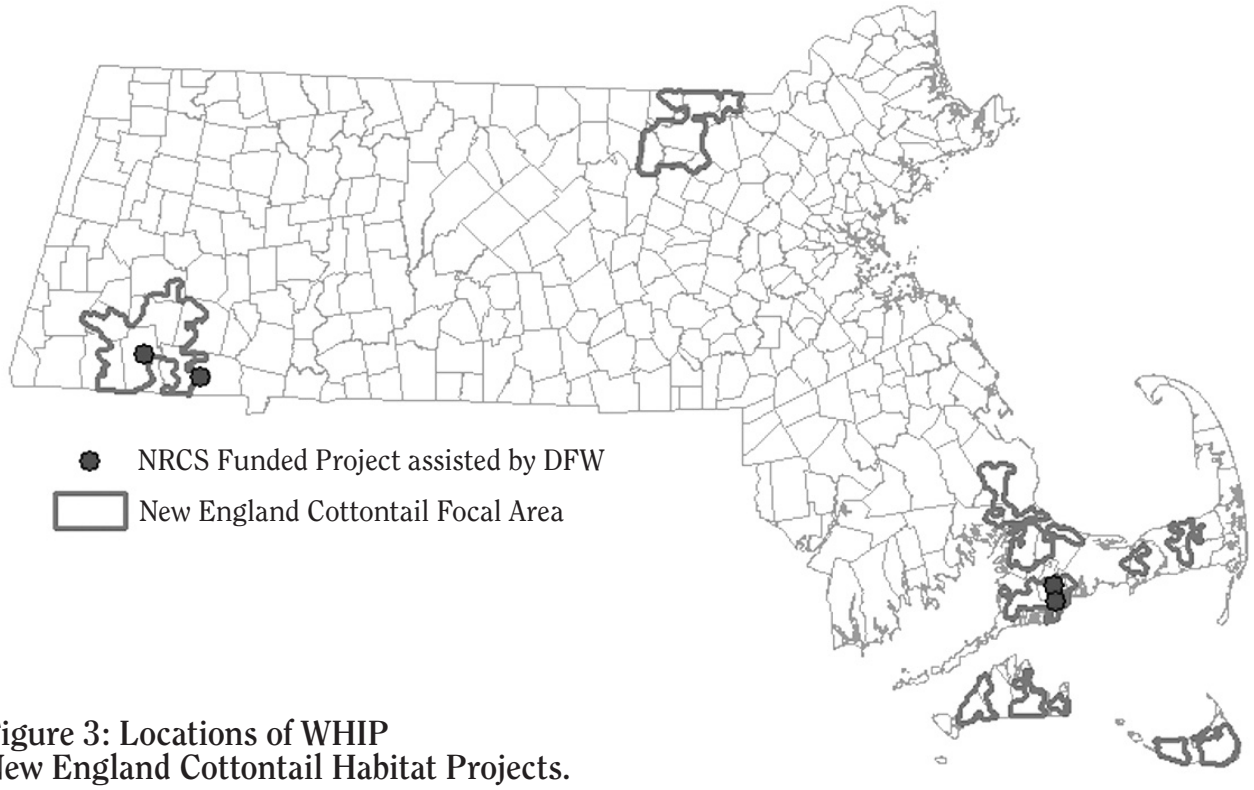

Figure 3: Locations of WHIP New England Cottontail Habitat Projects.

Baby cottontails like these may benefit from current DFW conservation efforts.

Rangewide New England Cottontail Initiative. NRCS has made the New England Cottontail a priority in WHIP and is offering Essential Habitat Agreements at a 90% cost-share rate for managing habitat to benefit New England Cottontail for 15 years. With assistance from the DFW Habitat Management Biologist in coordination with NRCS, other DFW and NHESP staff, and USFWS staff, four applications were developed and funded under WHIP in FY 11 and 104.3 acres will be managed for New England Cottontail (Figure 3).

DFW promoted New England Cottontail conservation efforts at several events during FY 11. This included inviting Open Space property land mangers within New England Cottontail focal areas to a meeting with information presented by DFW, NRCS, and USFWS staff. In addition, DFW responded to requests from the Cape Cod Compact of Land Trusts, Inc., to present this information at a meeting of the Cape Cod Compact and at a Town of Brewster Open Space Commission meeting. Habitat management and Farm Bill Programs were also promoted in response to an invitation from the Nashua River Watershed Association to present information on management/stewardship options to landowners with conservation restrictions within the watershed. The Habitat Management Biologist also attended DFW public site walks at Muddy Brook WMA and Noquochoke WMA to promote Farm Bill Programs.

In FY 11, the DFW-NRCS partnership continued to effectively ensure that Farm Bill Program projects meet the goals of the SWAP. In particular, DFW's written habitat management recommendations identify SWAP species likely to benefit through specific activities designed to meet habitat requirements.

In the process of working with NRCS staff to develop projects, the Habitat Management Biologist consults with other DFW staff, thereby bringing the knowledge and expertise of the NHESP/NRCS Endangered Species Review Biologist, the NHESP Restoration Ecologist, NHESP taxonomic specialists, the DFW Forestry Program Manager, the Upland Program Coordinator, the DFW Upland Game Project Leader, and others to NRCS projects across the Commonwealth of Massachusetts.

In the upcoming fiscal year, the Habitat Management Biologist will continue promoting Farm Bill programs, participating in NRCS site visits, providing written habitat management recommendations, and implementing the Rangewide New England Cottontail Initiative on private land.

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

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

Rare Species Habitat Mapping

In FY 11, the Natural Heritage & Endangered Species Program (NHESP) continued to delineate and revise habitat "footprint" polygons for each new observation record for the 435 rare plant and animal species listed under the Massachusetts Endangered Species Act (MESA). The NHESP also revised and updated habitat maps based on new information, including new aerial photography and new research on the habitat requirements and utilization of a variety of state-listed species.

The Natural Heritage Atlas

These species-specific habitat maps are being used in the creation of the 14th Edition of the Natural Heritage Atlas, due to be published in FY 12. The initial, species-specific habitat mapping associated with this Atlas was completed in FY 11, and additional evaluations and fine-tuning will continue in FY 12 prior to finalization and publication. Pursuant to revisions to the MESA regulations promulgated in October 2010, the Priority Habitat maps included in the Atlas will be posted on the Division's website in 2011 for a 60-day public-comment period prior to finalization of the maps for the Atlas. Associated with the delineation of Priority Habitat, several species have been proposed for status change on the MESA List in FY 12, including delistings, new listings, and changes to the status of individual species (e.g., E, T, SC). When these changes have been formally approved and incorporated into the MESA regulations, they can be incorporated into the delineation of the Priority Habitat maps.

BioMap2

The state's latest biodiversity conservation plan, *BioMap2*: *Conserving the Biodiversity of Massachusetts in a Changing World* (*BioMap2*), was completed and released in October 2010. This plan includes spatial information based in part on the species-specific habitat areas described above. *BioMap2* is an update of the original *BioMap Conservation Plan*, published in 2001, and includes aquatic habitat areas delineated as part of the *Living Waters Conservation Plan*, published in 2003. *BioMap2* is a collaborative project with the Nature Conservancy and is designed to guide strategic biodiversity conservation in Massachusetts over the next decade by focusing land protection and stewardship on the areas that are most critical for ensuring the long-term persistence of rare and other native species and their habitats, exemplary natural communities, and a diversity of ecosystems. During the creation of *BioMap2*, the team utilized a variety of spatial mapping models and other tools to delineate the areas of highest priority for conservation in the state of Massachusetts. An online viewer, printed poster, and summary report were published in the fall of 2010.

2010 Field Season Summary

Birds

Piping Plover

A coast-wide network of cooperators reported breeding pairs of Piping Plovers at 129 sites in Massachusetts during May and June 2010. An additional 119 potential nesting sites were surveyed, but no breeding pairs were detected. The Index Count (statewide census conducted June 1-9) was 573 pairs, and the Adjusted Total Count (total number of breeding pairs statewide estimated over the entire season) was 591 pairs. Overall productivity for the Massachusetts breeding population was 1.50 chicks fledged per pair, based on data reported for 583 of 591 pairs (99%). By comparison, overall productivity in 2009 was only 0.91 chicks fledged per pair.

Two regions contained 61% of the total breeding pairs in the state: the Lower Cape (37%) and the Upper Cape (24%). Individual sites with the largest numbers of pairs (Total Count) were South Beach, Chatham (46 pairs); Sandy Neck, Barnstable (38 pairs); South Monomoy Island, Chatham (33 pairs); Crane Beach, Ipswich (32 pairs); Nauset Spit, Orleans (21 pairs); Plymouth Long Beach, Plymouth (19 pairs); Springhill Beach, Sandwich (14 pairs); Race Point-South, Provincetown/Truro (14 pairs); Parker River National Wildlife Refuge, Newbury/Rowley (13 pairs); and Little Beach/Barney's Joy, Dartmouth (13 pairs). Although the 15 largest sites, i.e., those with 10 or more nesting pairs, supported 50% of all pairs in the state, the 83 smallest sites (1-3 pairs) were also important, collectively accounting for 24% of all pairs.

American Oystercatcher

Preliminary results from 2010 yielded pairs of American Oystercatcher at 84 of the 240 sites surveyed. A total of 390 birds (up 2% from 2009), including 190 pairs (up 8% from 2009), were documented. Productivity of

158.5 pairs (82%), for which data were available, was 0.71 chicks fledged per pair.

Terns, Laughing Gulls, Black Skimmers

Cooperators in Massachusetts surveyed more than 141 coastal sites in 2010 for the presence of nesting Roseate Terns, Common Terns, Arctic Terns, Least Terns, Laughing Gulls, and Black Skimmers. Eighty sites were occupied by nesting pairs of one or more of these species. Roseate Terns increased 4.0%, to 1,393 pairs. Common Terns and Least Terns were stable at 16,224 and 3,484 pairs, respectively. Laughing Gulls decreased 23.3%, to 1,249 pairs. Five pairs of Black Skimmers nested during the peak of the season and three pairs nested late. Two-and-a-half pairs of Arctic Terns nested during the peak. The single Arctic Tern was paired with a Common Tern.

Buzzards Bay Tern Restoration Project

Weather during the 2010 field season was exceptionally hot and dry with very few "weather events." Collectively, Bird, Ram, and Penikese islands supported 1,356 peak-season pairs of Roseate Terns (vs. 1,339 in 2009, +1%) and 6,484 peak-season pairs of Common Terns (vs. 6,905 in 2009, -6%). No seasonal tern staff was hired for the 2010 field season.

Bird Island

Common Tern numbers rose to 1,945 pairs (vs. 1,805 pairs in 2009, +8%). Productivity (0.65 chicks fledged per pair, vs. 1.14) was disappointing, and probably resulted from a low food supply. Roseate Tern numbers increased slightly, from 708 pairs last year to 735 pairs (+4%) this year. Roseate Tern productivity was again excellent at 1.33 chicks fledged per pair (vs. 1.44). No major predation events occurred.

Ram Island

Following a record high of 3,961 pairs in 2009, Common Tern numbers decreased 13%, to 3,466 pairs, still the second-highest number ever recorded at this site. Some extra pairs likely came from Monomoy National Wildlife Refuge in 2009 and returned there in 2010 when conditions improved. Common Tern productivity was fair, with 0.85 chicks fledged per pair (vs. 1.11). Roseate Tern numbers were stable (584 vs. 588 pairs), and productivity was excellent at 1.30 chicks fledged per pair (vs. 1.04). Predation was light.

Penikese Island

Common Tern numbers (1,073 pairs vs. 1,138.5 pairs in 2009) and Roseate Tern numbers (37 vs. 43 pairs) were similar to last year. Because of limited monitoring, the timing and methodology of the 2010 census differed from previous years, so estimates are not strictly comparable. Just one Arctic Tern nested and it was paired with a Common Tern. Data were not collected on productivity, but it appeared to be excellent for Common Terns and moderate for Roseate Terns. There was some predation on adult terns by a pair of nesting Northern Harriers again this year.

Common Loon

In 2010, personnel from the DFW and the Massachusetts Department of Conservation and Recreation monitored Common Loon activity in central and western Massachusetts throughout the summer months. Thirty-three territorial loon pairs (the most recorded) were observed on 14 waterbodies. In comparison, 30 loon pairs took up residence on 11 waterbodies in 2009, and 32 pairs were observed on 14 waterbodies in 2008. Nineteen nesting pairs were recorded, compared to 15 in 2009, and 18 in 2008. The number of fledged chicks decreased slightly from last year; 10 chicks were presumed to have fledged in 2010, compared to 14 in 2009 and 8 in 2008. This resulted in a productivity estimate of 0.53 fledglings per nesting pair in 2010, compared with 0.93 in 2009, and 0.44 in 2008. The number of fledglings per territorial pair was 0.30, compared to 0.47 in 2009, and 0.25 in 2008.

Bald Eagle

During the summer of 2010, there were 32 known territorial pairs of Bald Eagles in Massachusetts. Of these, at least 31 pairs are believed to have laid eggs and 24 pairs successfully fledged 40 chicks. In 2008 and 2009, there were 26 and 24 territorial pairs, respectively, which produced 33 and 37 fledged chicks. This is the twenty-first year that Bald Eagles have raised young in Massachusetts since their restoration. During these 21 years, 377 chicks are known to have fledged from wild nests. There are six additional areas within the state in which a pair of Bald Eagles is believed to be nesting, but the nests have not yet been located.

Peregrine Falcon

The number of pairs of Peregrine Falcons increased from 15 in 2008, to 19 in 2009, with the same number again in 2010. Of these 19 pairs, 10 successfully fledged 25 chicks. This is compared to the 17 successful pairs that fledged 39 chicks in 2009. The increase in the number of chicks fledged in 2009 was probably due to very little rain in the early spring.

Reptiles and Amphibians

Northern Red-bellied Cooter

For the twenty-sixth consecutive year, efforts were made to locate Northern Red-bellied Cooter nests and place wire cages over them to prevent predation. A total of 56 nests were located and caged at Federal Pond by contractor John Crane between May 27 and June 27, 2010. Ten caged nests were dug out by mammalian predators. The surviving 46 nests produced 426 hatchlings. Of these, 119 were saved for headstarting and 307 were released directly into Federal Pond. An additional 20 nests were found to have been predated by a variety of mammal species, including Coyote, Fisher, Mink, Striped Skunk, and Raccoon, in that order of importance, before they could be caged. Some of these nests were moved from their original locations in and along sand roads in order to protect them from being crushed by heavy trucks and equipment.

Headstarted Red-bellied Cooter ready for release.

A total of 115 hatchlings from 2009 that had been headstarted by 22 cooperating organizations and individuals, were released on May 28, 2010. Since 1984, a total of 3,132 headstarted Northern Red-bellied Cooters have been released after 9 months of headstarting.

Freshwater Mussels

Triangle Floater; Special Concern

Under a Small Research Contract (SRC), qualitative freshwater mussel surveys were conducted to update the status of the Triangle Floater (*Alasmidonta undulata*), focusing on locating source populations and identifying populations experiencing recruitment success; additional data collected included other mussel species present, habitat assessments, and potential threats. Contractors surveyed 25 sites in seven major watersheds; survey sites consisted of reaches ~300-600m in length. Triangle Floaters were observed at 12 sites and not detected at 13 sites. Of the 12 sites where specimens were found, only three sites in the Millers River were found to support relatively high numbers of animals with various age classes present. The remaining nine sites were represented by very few animals and only three were found in habitats previously unknown to support Triangle Floaters. Other state-listed mussels observed included: 11 Brook Floaters (*A.varicosa*) in the Nissitissit River and 11 Creepers (*Strophitus undulatus*) in the Millers River, nine in the Quabaug River, and one in the Nissitissit River.

Tidewater Mucket, Eastern Pondmussel, and Triangle Floater; Special Concern

Under an SRC, a lake-wide mussel survey was conducted in Mystic Lake (Barnstable) to determine the magnitude of a 2009 mussel die-off and the status of state-listed mussel populations. The 2009 die-off was preceded by a rapid increase in algal turbidity in the lake. Contractors repeated survey methods utilized in 2007 and results were compared. Results in 2010 yielded a 94.1% reduction in the Tidewater Mucket population since 2007; numbers of live animals dropped from 529 in 2007 to 31 (+491 shells) in 2010. A significant change was not detected in Triangle Floater populations; however, sample sizes were very low, with 10 live animals found in 2007 and nine in 2010 (+11 shells). A 100% reduction was estimated for Eastern Pondmussel; however, sample sizes were too low to elicit high confidence with nine live animals in 2007 and zero (+10 shells) in 2010. Another die-off occurred after the 2010 survey and spread to the connected Middle Pond, resulting in significant mortality in both ponds.

Under an SRC, surveys for these three species were also conducted to update historic records in the Taunton River watershed, which was previously under-studied for mussels (historic data obtained from the H.D. Athearn collection, museum collections, and published and unpublished literature). Fifteen sites were surveyed; Tidewater Mucket was found live at five sites and spent shells only were found at one additional site; Eastern Pondmussel was found live at nine sites and spent shells only were found at two additional sites; and the Triangle Floater was found live at two sites and spent shells only were found at three additional sites.

Tiger Beetles

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

More than 3,200 individuals were reported during a survey occurring on 28 June 2010. This represents the highest count ever for the species in MA. In addition, the population peaked nearly 2 weeks earlier than usual due to a record setting warm May that allowed this year's cohort to develop more rapidly than usual.

Puritan Tiger Beetle (Cicindela puritan); Federally Threatened

A USFWS contractor reported 80 individuals and a population that also peaked earlier than usual. DFW staff assisted with vegetation management.

Plants

Rare Plant Inventory

During the 2010 field season, 860 records were updated, searched for, or discovered.

Special Projects

Protecting the Globally-imperiled and Vulnerable Plants of Massachusetts

NHESP staff wrapped up the USFWS-funded project aimed at the conservation of 38 globally-imperiled and vulnerable (G1–G3G4) plant taxa in Massachusetts. Since 2006, NHESP botanists have implemented numerous priority conservation actions identified in USFWS Federal Recovery Plans and New England Wild Flower Society (NEWFS) Regional Conservation Plans. In addition, state conservation plans were developed and many priority conservation actions were implemented. During the 2010 field season, about 40 populations of globally rare plant species were surveyed. Highlights include the discovery of six populations of Appalachian Bristle-fern (Trichomanes intricatum), three in Worcester County,

where it had not been previously documented; the rediscovery of two populations of Mitchell's Sedge (Carex mitchelliana), each not seen since the early 1900s; and the rediscovery of one population of the exceptionally rare Bayard's Green Adder's-mouth orchid (Malaxis bayardii), not seen since the early 1980s.

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

Sandplain Gerardia (Agalinis acuta); Endangered:

Population censuses or sampling procedures were conducted at three locations on Martha's Vineyard and three on Cape Cod. Five of the six populations appear to be within the normal range of variation, but one indigenous population appears to be declining. Plans for population management are being developed.

Small Whorled Pogonia (*Isotria medeoloides*); Threatened:

The two larger populations were censused; one at a location where the trees were heavily damaged by an ice storm in December 2008 which opened up the canopy showed a dramatic increase in emergence and fruit production, whereas the other population showed a slight decline and low flowering numbers (but within a normal range of variation). In addition, the Program began to implement experimental leaf litter reduction at the sites of the smaller populations in an attempt to increase population vigor (e.g. increasing emergence or improving the seed bed).

Northeastern Bulrush (*Scirpus ancistrochaetus*); Endangered:

The sole known population in Massachusetts was visited, but the species was not located, possibly due to the very high water level at the site. In addition, *de novo* searches for this species were conducted within potential habitat, but no occupied sites were found. Sites that were surveyed included about 10 beaver meadows across three flowages, and five perched hemlock swamps in northern Franklin County.

General Habitat Management Projects

NHESP staff conducted dormant-season control of invasive and aggressive native woody plants in a wet meadow known to support the state-threatened orchid Arethusa (*Arethusa bulbosa*; T). Following the 2010 late season mowing and cut-stem herbicide application to glossy buckthorn and alders, the number of flowering plants has tripled.

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

Monitoring continued at a Showy Lady's-slipper (*Cypripedium reginae*; SC) population that had been fenced to protect it from deer browse. Though the vigor of the plants seems slow to recover, they have been free of deer damage over the past 2 years.

Monitoring continued for two populations of the globally rare Variable Sedge (*Carex polymorpha*; E). Both populations continue to show significant increases in reproductive stems following control of competing woody plants in 2009.

Other Projects

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

A large survey effort for Nantucket Shadbush (*Amelanchier nantucketensis*; SC) was coordinated by NHESP staff. Approximately 6,796 previously undocumented stems, and 25 new locations, were recorded during the 2010 survey season. This increased the known population by 12%. These new populations were found in parts of the state where the species had not been seen for decades or were entirely new finds. The species was rediscovered in Hampden County and newly documented in Worcester County.

Surveys for new populations of Threadfoot (*Podostemum ceratophyllum*; SC) were conducted in 2010. Eight new populations were found. Of note were: a new 10-20 acre site with an estimated 100,000+ ramets was observed in Holyoke, an 8 mile stretch of the lower Miller's River, and populations in three new river systems the Quabog, Quinebaug, and Ware.

Regulatory Review

The following table summarized the environmental reviews conducted during FY 11.

Review Type	Count
Conservation & Management Permits	14
Data Releases	157
MESA Information Requests	242
Forest Cutting Plans	93
MESA Project Reviews	688
MEPA Reviews	71
Notices of Intent	734
Scientific Collection Permits	110
Other	112
Total Reviews	2,221
Vernal Pools Certified	509

Data Management and Data Products

FY 11 Totals	New Records	Updates to Existing Records
Vertebrates	112	861
Invertebrates	59	172
Plants	53	725
Communities	5	8

Land Protection

In FY 11, the DFW spent about $7.91 million to protect 3,037 acres of land across the state, bringing the agency's total land holdings to just over 190,000 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

The Squannacook and Nissitissit Rivers are important for eleven MESA-listed rare species, including Brook Floater mussels (E), Blanding's Turtles (T), and Brook Snaketail dragonflies (SC). This fiscal year, the DFW acquired about 275 acres along these rivers and their tributaries, in seven separate properties.

Southeast District

Acquisition of about 15 acres on Cooks Pond in Plymouth added to the protection of this important Coastal Plain Pondshore natural community, along with three state-listed species of plants and three damselflies.

Central District

Two properties totaling 424 acres in Winchendon added considerably to the protection of two types of uncommon natural communities, an Inland Atlantic White Cedar Swamp and three separate Level Bogs.

Valley District

Protection of 106 acres along East Mountain in Westfield Holyoke added to conservation of the diverse hotspot of rare species along this north-south ridge of circumneutral bedrock. Three Endangered, three Threatened, and two Special Concern MESA-listed rare species were protected just on this property alone.

Western District

Acquisition of 35 acres in Sheffield protected habitat for the Endangered Lyre-leaved Rock-cress (and the Threatened Hairy Agrimony, among other rare species. In Cummington, the DFW protected 153 acres along the East Branch of the Westfield River, which supports the Endangered Lake Chub and Harpoon Clubtail dragonfly, the Threatened Riffle Snaketail dragonfly, and two Special Concern insects.

Natural Heritage and Endangered Species Program Advisory Committee

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

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

During FY 11, the committee held eight scheduled meetings. All eight meetings were held at the Westborough Field Headquarters. The October 2010 meeting was cancelled due to illness of several members and associate members; the November 2010 meeting was cancelled due to the holiday, the January 2011 meeting was cancelled due to inclement weather, and there is no scheduled meeting each year in the month of August.

Presentations from Agency Staff

Coyote 101: Laura Hajduk, Furbearer and Black Bear Project Leader, DFW.

Summary of New Massachusetts Off-road Vehicle Law: Tom French, Assistant Director, DFW.

Update of bat decline in Massachusetts and a discussion of the potential listing of 3 bat species: Tom French, Assistant Director, DFW.

Recommended Changes to the Massachusetts Endangered Species List: NHESP staff.

Box Turtle Conservation Plan: Lori Erb, Turtle Conservation Biologist, DFW.

Update on Housatonic River Cleanup: Jonathan Regosin, Regulatory Review Manager, DFW.

New England Cottontail Initiative in Massachusetts: David Scarpitti, Upland Bird Biologist, DFW.

How C.I.T.E.S. (*Convention on International Trade in Endangered Species)* Works: Jack Buckley, Deputy Director for Administration, DFW.

Other Presentations to the Committee:

Preliminary Results of the *Massachusetts State of the Birds* Study: Joan Walsh, Massachusetts Audubon Society.

Natural Heritage and Endangered Species Program Staff

Thomas W. French, Ph.D., *Assistant Director*
Henry Woolsey, *Program Manager*

Kim Ausmus, *Administrative Specialist* (part-year)
Kristen Black, Ph.D., *Endangered Species Review Biologist*
Tara Boswell, *Natural Heritage GIS Manager*
Amy Coman, *Endangered Species Review Assistant*
Bryan Connolly, *State Botanist*
Karen Dolan, *Finance and Projects Administrator*
Lori Erb, *Turtle Conservation Biologist*
Marea Gabriel, *Aquatic Ecologist*
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Tim Simmons, *Restoration Ecologist*
Patricia Swain, Ph.D., *Natural Community Ecologist*
Amanda Veinotte, *Regulatory Review Administrator*

INFORMATION & EDUCATION

Prepared by Robert D. Deblinger
Deputy Director of Field Operations
Acting Chief, Information and Education

Overview

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

Long-time I&E Chief Ellie Horwitz retired in early June of FY 11. Throughout her career, Ms. Horwitz was instrumental in a multitude of important agency projects and programs, including the Massachusetts Waterfowl, Archery, and Primitive Firearms stamps, Project WILD, and the Becoming an Outdoors-Woman Program. The agency as a whole and her staff in particular wish her a long, happy, healthy retirement.

Information and Outreach

Marion Larson, *Outreach Coordinator*

Responses to Public Inquiry

Agency Email Activity

A total of 6,485 agency email messages were processed this fiscal year (4,739 FY 10). Of that total, 3,071 emails were legitimate inquiries to the agency; 3,514 were some form of spam or junk email. January's high numbers were due to eagle-sighting reports during the mid-winter eagle count.

Media Inquiries

As per protocol, media inquiries are routed through the 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 11, the agency received 291 media inquiries (277 FY 10) from 215 media outlets. Many members of the media are not familiar with the EEA media protocol and call the agency first; of the 291 inquiries, Ms. Larson directed 78 media inquiries to EEA. Nearly 200 of the inquiries resulted in interviews with DFW staff, 6 with DFG staff, 4 with both DFG and DFW staff. EEA handled 25 media interviews directly, with the remaining interviewed jointly by DFW, EEA, and/or DFG. EEA press team members often call the Outreach Coordinator for guidance on staff members to be interviewed. Most inquiries came from newspapers (206), with 38 from television (includes public access), 23 from radio, 9 from magazines, 5 from online publications, 2 from film makers, and 1 each from a blog and a book author.

Geographically, the vast majority of media inquiries (108) originated with media outlets in the Northeast District, followed by 54 in the Central District area, 51 in the Connecticut River Valley, and 21 in the Western District. The remaining inquiries were either unknown, from the Associated Press, or outlets covering New England or New York. One inquiry and subsequent interview was from a reporter in Zurich, Switzerland. A brief breakdown of the topics of interest to media related to each DFW sections is as follows: 77 topics for Wildlife, 41 for NHESP, 24 for Fisheries, 18 for both I&E and Realty, and 6 relating to Administration.

Print Media Coverage

As in past years, DFW has utilized a newspaper clipping service to collect all articles in Massachusetts newspapers that mention the agency by name. This year, 2,360 news articles mentioned the agency in some form (2,399 FY 10).

MassWildlife E-newsletter

Thirteen issues of the newsletter were published this fiscal year. The mailing list for hard copies is around 1,100. For the electronic listserv, there were 6,438 subscribers in June 2009 and 6,603 reported June 30, 2011. This final number is suspect as there were numerous additions over the fiscal year from sign-ups at fairs, shows, and other meetings. Other agencies have reported problems with the current listserv situation and there may be a need to look for a more useful system that allows for better segmenting of and communicating with the various audiences the agency reaches.

E-newsletter Listserv Subscriber Information

When individuals sign up to receive the newsletter, subscribers have the option of filling out a brief survey asking about their interests and other demographics. This past year, intern and former Framingham State University student Jennifer Fritsch quantified the data from the past 4 years of returned surveys. Of the over 6,000 email addresses on the newsletter email list, 1,833 responded to the survey. The first questions ask about affiliation, and the majority, by an order of magnitude, hold a hunting, fishing, or trapping license (1,235);

others identified themselves as belonging to a conservation organization (417), 348 were landowners, 245 identified themselves as educators, 212 were government employees, and 95 were environmental consultants. Among the media, 32 identified themselves as with the media, 21 in TV and 16 radio; 83 identified themselves as freelance writers. Fifty-two people identified themselves as website hosts.

The remaining questions asked about subscribers' outdoor activities: Wildlife-related travel came out on top, with 1,720 subscribers indicating that they enjoyed that activity. Other popular activities among subscribers include fishing (1,401), hiking/walking (1,340), canoeing/kayaking (1,099), camping (1,063), hunting (981), wildlife/bird-watching (893), Nature education/study (908), outdoor photography (868), bicycling (713), and snowshoeing/skiing (658).

This is one way to learn about the audiences that are receiving our newsletter. Information from hard-copy sign-ups are also entered into the database, which also identifies a number of audiences at meetings, fairs, and training workshops that receive the newsletter.

Media Value of MassWildlife E-newsletter Topics Published in Print Newspapers

To provide a better understanding of how often and widely MassWildlife newsletter articles are used by print media, a database was developed to measure the media's use and the corresponding value of the agency's MassWildlife E-newsletter articles and topics. Data was entered by two interns, former Framingham State University students Jen Fritsch and Sharon Scully.

New this year, the news-clipping service the DFW employs now provides information on the media value of each newspaper clipping, a value that is determined by each individual newspaper's advertising rates. This year, 243 MassWildlife E-newsletter articles were published verbatim or expanded as featured articles in Massachusetts newspapers. For the 156 articles published August 2010–June 2011, the service reported a total media value of $30,313.94. Media value data was unavailable for 21 articles published in July and early August. Sixty-six other articles during this time period had been assigned media values, but because the articles were contained within a larger article or a much longer calendar listing, the high values assigned reflected the entire article, so these values were not included in the total.

Media Utilization of MassWildlife E-newsletter Topics

Of the 243 MassWildlife E-news topics published in newspapers, 90 articles were in papers in the Northeast District, 56 articles in Central District newspapers, 46 articles in the Southeast District, 41 articles in Conn. Valley District, 10 in Western District newspapers. Sorted by DFW section, 20 Wildlife topics were published, 15 I&E topics, 7 for Fisheries, 5 for NHESP, and 3 relating to Realty. A wide variety of organizations receive the MassWildlife E-news, and some utilize MassWildlife information or contact the agency to write a specific story for their own newsletters or other publications.

MassWildlife E-news Advisories

Advisories are sent out on occasion through the MassWildlife E-news listserv, to alert various publics to new regulations, special events, meetings to which the public is invited, etc. Some advisories cover only one subject; others contain a series of events or announcements. Some are published in coordination with other EEA agencies. Eight advisories were issued to the listserv this fiscal year, including advisories on such diverse topics as the Antlerless Deer Permit deadline, a wildlife habitat management tour in Phillipston, the Becoming an Outdoors Family camping weekend, land acquisition events in Ashfield and Lancaster, the release of BioMap2, a call for artists for the 2011 Junior Duck Stamp Program and Contest, a public pre-harvest forestry site visit, information meetings on recent changes to the Massachusetts Endangered Species Act, an American Chestnut seedling planting behind the DFW Field Headquarters in Westborough, and the release of Endangered Northern Red-bellied Cooters in Hanson.

Website

A new webpage highlighted photo contest winners for *Massachusetts Wildlife* magazine, Number 3, 2010. Existing web pages were also expanded; the MassFishHunt information was updated on the Licensing page, and the Coldwater Fisheries Resources pages were also updated.

Tourism and Outdoor Recreation Outreach

Massachusetts Office of Travel & Tourism (MOTT)

Unfortunately, most tourism centers are still closed due to the poor economy. Hunting and Fishing Guides were sent to only the visitor's centers in Lancaster, Adams, and Marshfield.

Outdoor Recreation Map

By the fall of 2010, the DFW's supply of the Outdoor Recreation Map, last printed in 2008, was nearly exhausted and the DCR had no maps left at all. DFW, DCR, and the Hunter Education Program were once again able to provide funding for an update to the map. The Outreach Coordinator worked very closely with counterparts at the DCR. Assistance in this project was also provided by the DFG's GIS office, the Office of Boating and Fishing Access, the Realty section, and the Land Agents and the District offices. The maps were printed and delivered to the DFW just before the end of the fiscal year.

Great Outdoors Blog

The purpose of the Great Outdoors Blog (GOB; ***http://environment.blog.state.ma.us***) is to promote different outdoor opportunities on state properties, state outdoor-related programs, reports from staff in the field, and other outdoor-related items. Assigned individuals from DAR, DCR, DFG, and other EEA agencies submit blog posts and images to the EEA Press Team, which then creates the actual posts. The Outreach Coordinator serves as the principal DFW blogger for the GOB, with

Chief Ellie Horwitz submitting some posts in FY 11.

During the fiscal year, at least one, but usually multiple posts were submitted each month by the DFW, on such diverse topics as the Outdoors Family Camping Weekend, hill-topping with dragonflies, the Mass. Outdoor Expo (The Big MOE), Tree Stand Safety, the Midwinter Eagle Count, Forest Stewardship for BOW (Horwitz), Spring Trout Stocking, and spring and summer bear biology and activity.

The Great Outdoors Blog has been the fourth- to fifth-most-viewed of the 13 state government agency blogs, behind Mass. Dept of Transportation, the Department of Revenue, and the Department of Public Health. The Patriot Ledger (Quincy) and Gatehouse Community Newspapers group started providing a link to the Great Outdoors blogs on their media websites in the fall of 2010. The Worcester County League Newsletter reprinted DFW blogs in their monthly newsletter in April, May, and June of 2011.

Great Outdoors Events Calendar

A new calendar was initiated by EEA in FY 11, and several DFW events were posted for promotion by the EEA intern: the Outdoorswoman Trailblazing Workshop and the Spring and Summer DFW Fishing Festivals.

Presentations and Professional Assistance

In the course of a year, the Outreach Coordinator makes many presentations to various audiences and participates in training sessions both for the public and for professionals in a number of different fields. In FY 11, she presented information and materials to the Student Veterinary Technician Program at Becker College, Leicester; the Sterling Land Trust's Annual Meeting; the Northeast Organic Farmers Association; the Animal Control Officers Academy, Boylston; and the North Worcester Fox and Coon Club as part of their 75th anniversary celebration.

Ms. Larson also represented the agency as an instructor with the Hunter Education Program and the Massachusetts Junior Conservation Camp, and she was joined by retired Wildlife Biologist James Cardoza when she manned the deer check station on Nantucket to gather biological data during the first week of shotgun deer season. She also served as foreman and judge at the Massachusetts Envirothon competition in May.

Promotion of Agency Activities

Susan Benoit, *Promotion Specialist*

Promotion of the agency is now differentiated from Outreach. While Outreach efforts are designed to identify appropriate audiences and disseminate relevant information to those audiences in a timely way, Promotion takes a somewhat longer view, and works both with agency staff and directly with the public specifically to establish or reinforce the agency's reputation as one of the most highly-professional science-based state wildlife agencies in the country. A promotion campaign has been developed to showcase and translate DFW programs and ongoing land conservation and management for its current constituents, including sportsmen, naturalists, and other outdoors-people, as well as for the general public. The presentations and print products that are developed are designed to 1) maintain and increase the engagement and activity of current constituents by offering them resources and information that will be valuable to them and 2) establish new connections with a wider audience of citizens who have not traditionally contacted the agency or taken part in its programs, but are now turning to the DFW for information, particularly about the wildlife they are encountering in Massachusetts, and for programs and publications that will help them and their children reconnect with the outdoors. Current promotion efforts are directed into two principal areas: the Wildlife Districts (primarily through manned displays at four regional fairs and four to trade shows in FY 11) and agency publications, which are all designed and edited to provide needed or requested information in the most professional, readable, and engaging manner possible (please see the Publications section, below).

Promotion through the Districts and Hatcheries

The Wildlife District offices and the hatcheries that are open to the public have traditionally offered the agency's best and most frequent opportunities to interact directly with members of the public, so strong promotion support was given to these installations in FY 11. Agency presence at local and county fairs (late summer-early fall) has traditionally been provided by the Wildlife District within which the fair occurs (with some assistance from staff at the Westborough Field Headquarters), but competing demands and limitations on staff time often hamper an individual district's ability to man its display and provide fairgoers with opportunities to ask questions and make connections to the agency. The Promotion Specialist provides support to the Wildlife Districts by coordinating the displays where needed or requested, filling in schedule gaps, restocking literature from Westborough, answering or referring questions, and generally giving fairgoers more chances to be directly exposed to the mission and work of the agency and to talk to an agency representative if they wish.

Two of the few remaining traditional sportsmen's shows, the Eastern Fishing and Outdoor Expo and the Springfield Sportsmen's Show, continue to be highlights of the agency's outreach and promotion year. Staff from the nearby district offices traditionally take the lead on staffing these shows, with coordination assistance and strong staff support from the Westborough office. FY 11 brought electronic licensing to the shows for the first time, and Westborough staff played a more prominent role in planning, setting up, and staffing the DFW exhibits. Staff and show visitors alike were very patient with the new process of selling and buying a license, which allows for convenient reprinting of duplicates and enables future ease of purchasing a license, whether online at home or through a DFW office or vendor.

The agency also continued its efforts to exhibit and present information to new audiences throughout the year. The principal criteria for selecting venues are 1) the potential for hundreds of conversations over 2-3 days and 2) visitors who represent a cross-section of the general public that may not be aware of, but would potentially benefit greatly from, knowing about the work and programs of the DFW. The regional home and garden shows between Boston and Worcester each offer the potential for exposure to 10-20,000 visitors, people who spend or intend to spend significant amounts of time and money on their yards and gardens and thus need to understand wildlife behavior and know how to control and discourage various species that may become a nuisance. Examples of the "Living with Wildlife" series of factsheets were handed out and visitors had opportunities to share sightings and experiences and ask questions about the wildlife in their yards and neighborhoods.

Information Kiosks

In keeping with an effort to standardize district signage at minimal cost, a simple, roofed information kiosk was developed by Northeast Wildlife District staff, and materials were secured and kiosks built by all five District offices to display notices, maps, and other helpful information at as many as five Wildlife Management Areas in each District. State-of-the-art posters that include District contact information; large-scale, geo-referenced maps; and site-specific species photos and write-ups are being developed for display in the kiosks.

Promotion and Outreach Events: Exhibits, Displays, and Conferences

Many 1-day events, conferences, and programs also serve as promotional opportunities for the agency throughout the year. The Promotion Specialist consulted with the professional staff involved in outreach events, provided appropriate display equipment and literature for the targeted audiences, and often helped to staff the agency's display at these events, including the habitat management public meetings that the DFW hosted throughout the Commonwealth in July, August, and September and the MESA informational meetings offered by NHESP Regulatory Review Biologist Everose Schluter in May and June. A selection of additional 1-day events and conferences in which the DFW participated are detailed below.

September

Massachusetts Outdoor Expo (The Big MOE), Sturbridge; sponsored by the Facts About Wildlife and Nature Society (FAWNS), the DFW, and others, the Big MOE is a free, volunteer-driven day of outdoor-activity stations on the grounds of the Hamilton Road and Gun Club that provides children and families with opportunities to see demonstrations and try out dozens of outdoor skills and activities. Experienced mentors and professionals provide guidance and introduce skills and techniques in a safe, family-friendly atmosphere.

Waterfowl Stamp Reception, Salem; this event celebrated the Waterfowl Stamp art winners in the 2011 stamp program. An invitation-only reception for the artists who submitted artwork was held at the Peabody-Essex Museum in Salem. Event partners include the Peabody-Essex Museum and Mass. Chapter of Ducks Unlimited.

Red Brook Annual Family Day Sponsored by Massachusetts and Rhode Island Council of Trout Unlimited (Southeast Wildlife District).

Northeastern Transportation and Wildlife Conference, UMass Amherst (materials only).

October

Joint Mass. Veterinary Medical Association/Animal Control Officers Fall Meeting, Mansfield; Division display coordinated with the Department of Agriculture Resources.

January

The ninety-eighth Massachusetts Tree Wardens and Foresters Association Conference, Sturbridge.

February

Merrimack River Eagle Festival, Newburyport/Amesbury.

Wildlife Rehabilitator's Association Annual Conference and Meeting, N. Grafton.

March

Massachusetts Association of Conservation Commissions Conference, Worcester; DFW staff made presentations about BioMap 2 and the MESA.

Massachusetts Land Conservation Conference, Worcester; DFW presented information about BioMap2 and staffed an exhibitor display.

Massachusetts Audubon Society Birders' Meeting, Waltham; the nineteenth annual Bird Conference (Materials only: DFW *Checklist of Birds of Massachusetts* and BioMap2.)

May

Celebrate Turtles! Westborough; as part of the Partners in Amphibian and Reptile Conservation (PARC) Year of the Turtle awareness campaign, the DFW invited the public to "A Celebration of Turtles", from 4 P.M. to 7 P.M. on, Friday May 20.

Celebrate Turtles! Burrage Pond WMA, Hanson/Halifax; as part of the Partners in Amphibian and Reptile Conservation (PARC) Year of the Turtle awareness campaign, the DFW invited the public to a release of head-started, Endangered Northern Red-bellied Cooters and a Turtle Celebration. This was a new location for the annual release of head-started Cooters. It was very well attended by the public and the media, and afforded Senior Photographer Bill Byrne many fine opportunities for excellent photos of children and their families interacting with the turtles.

Other Promotion Efforts

The Westborough Field Headquarters reception areas were given another update this year, both to make customer access to materials easier and to make the reception spaces more welcoming to all visitors. Reception staff works constantly to update and organize the ever-popular Pond and WMA map wall display, making it easier for the many hunters, anglers, and hikers who visit Westborough to find the maps they want. Staff also regularly updates the bulletin boards in the main hallway with examples of current newspaper articles about the DFW and related topics. The Current Events and Opportunities and the Sport Fishing Awards boards are updated frequently throughout the year. The latter board also provides – at kids'-eye level – colorful, descriptive plates for all the species of fish in the ever-popular fish tank nearby, which is maintained by Peter Mirick with volunteer design consultation, and maintenance services from Glenn Krevosky of EBT Environmental Consultants, Inc.

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 that is sent to more than 22,000 paying subscribers, a rate that appears to be extremely steady. Magazine/Publications Editor and Wildlife Biologist Peter Mirick, Senior Photographer Bill Byrne, and staff produced four issues of *Massachusetts Wildlife* (Number 3, 2010 – Number 2, 2011), with Mr. Mirick soliciting and developing articles on 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, fisherman, and nature observer. During FY 11, specific subjects of articles included a history (and thorough pictorial presentation) of classic double-barrel shotguns; the paraplegic deer hunt; managing shorebirds on a heavily-used beach; research and management of Ring-billed Gulls at Wachusett Reservoir; the micro-wilderness of the Boston Harbor islands (with focus on invertebrate surveys); a history of Bald Eagle restoration in Massachusetts; a short piece on the discovery of exotic soft-shell turtles in the Connecticut River; natural history (and related research) of native parasitic plants; restoration of the headwaters of the Eel River; natural history and research study of the Box Turtle in Massachusetts; low-water river fishing in summer; essays on Wild Turkey and house-dwelling bats; and a pictorial on the reproduction of brook trout in the wild.

The highlight of the year was Number 3, 2010, the long-awaited Photo Contest issue. We received 1,138 photo entries in eight categories from 183 photographers from all over the state. These were pared down to 450 finalists by general staff consensus, and five professional wildlife photographers (including Mr. Byrne) judged these to select the winners. The judges created an additional "Wild Card" category, to honor unusual-subject photos; and staff added yet another, "Editor's Picks," for photos whose subjects are difficult to catch on film or that were exceptional but did not quite fit a specific category. The issue was so successful and popular that we plan to make the contest a bi-annual event, and will offer another contest early in calendar year 2012.

For the Senior Photographer's part, extensive effort was put into photographing the subject material for the history of Double Barrel Shotguns article, the shore bird article, the chronology of the Bald Eagle Project article, and the article on the special deer season for paraplegic hunters. Each issue requires a substantial effort by several key staff members to ensure a consistently professional DFW publication, with the photographs always a key component of its popularity with subscribers.

Other Publications

In addition to the annual materials and the magazine, I&E staff produced and printed (or reprinted) a variety of materials needed for the smooth operation of ongoing programs. These small publications (trout-stocking lists, the Waterfowl Abstracts, the Annual Report, the popular Freshwater Fishes of Massachusetts brochure) were updated and reprinted. In addition, flyers and registration materials were produced for several BOW events; and the Wildlife Rehabilitation Manual was edited, reformatted, and thoroughly updated. Editor Mirick also spent much time writing, editing, and proofing the 2011 Guide to Hunting, Fishing & Trapping (formerly the Abstracts).

Photography

Bill Byrne, *Senior Photographer*

Several annually-held MassWildlife-supported events were photographed by Mr. Byrne during the year. Chronologically, they included the 2010 Sport Fishing Awards at the Worcester DCU Center in early February and then the Junior Duck Stamp awards and display in Worcester; the new venue at Notre Dame Academy provided a gallery-style room with natural lighting, giving all students a classic art display experience for their artwork. Photos were taken of the Massachusetts Junior Conservation Camp awards, presented to outstanding campers at the Scout Camp in Chesterfield. In addition, Mr. Byrne captured the numerous outdoor activity events at the fourteenth annual Big MOE in September. The weather was favorable and resulted in a fine public turnout, and once again there was an outstanding opportunity to photograph kids having fun learning about and participating in outdoor activities.

Special Projects

A few specific migrating sandpiper species were photographed on the northeast coast of Massachusetts for inclusion in an upcoming article in *Massachusetts Wildlife* magazine on the importance of beach/resting areas for feeding migrants at the high tide mark. Additional bald eagle project material was gathered for

another article. On the Cape, horseshoe crab studies were photographed for yet another future article. June's Tornado damage in south central Massachusetts was documented, specifically in the McKinstry WMA of Southbridge. This dramatic, 34-mile-long swath of damage will enable unexpected forest succession studies along its path, particularly in the state-owned portions of the tornado-impacted areas.

In support of additional future magazine articles, an effort was made to photograph some early forest succession species of songbirds that rely on that habitat. Also, specific effort was put into photographing woodpeckers for another future article. The DFW's digital image collection continues to grow with each photo project, providing a powerful resource to staff seeking to illustrate formal papers, to enhance PowerPoint presentations, or to provide images to the media.

Production of Annual Materials

Ellie Horwitz, *Chief* (part-year)

Licenses and Abstracts

The Abstracts of Fish and Wildlife Laws and Regulations (Abstracts), which had been expanded to 40 pages in 2009, was renamed the Guide to Hunting, Freshwater Fishing and Trapping in FY 11 and further expanded into a full-color, glossy-stock, 60-page booklet that, in addition to laws and regulations, contained articles of interest to sportsmen, a guide to Massachusetts freshwater fish, and much more. Senior Photographer Bill Byrne contributed a lot of time to the production of the 2011 Guide, providing photos and support to other staff involved with this critical project. The expansion and upgrade was underwritten by the sale of advertisements managed by the J.F. Griffin Publishing Co. and was thus effected at no cost to the Commonwealth.

As in the past, Section Chief Ellie Horwitz worked with the DFW's financial staff to update the license sellers' manual. Production of licenses, guides, and stamps ran smoothly, with all materials arriving at Field Headquarters on schedule.

Massachusetts Hunting Stamps

With the advent of all-electronic licensing in Massachusetts in 2012, the stamp art selection process was closed in 2011, and sportsmen and collectors of Massachusetts stamps who have collected since the inceptions of these stamps now have the complete sets.

Selection of the art for the following year's Waterfowl Stamp begins in February of each year, when notices are sent to a list of artists. Entries are received in late May. All artwork is screened to ensure that each entry meets the rigorous standards of the competition. Each entry must be by an artist who has not won the competition during the past 3 years. It must depict a species not used for the Waterfowl Stamp in the previous 5 years and must show a decoy crafted by a deceased Massachusetts decoy maker. After the art has been vetted, a panel of judges reviews the artwork in a blind process wherein the identity of the artists is not disclosed.

Five judges reviewed the entries submitted for the 2011 Waterfowl stamp in July 2010 in a day-long process. They chose a painting by Randy Julius of East Bridgewater, Massachusetts, of a Brant goose decoy, carved by Joseph Lincoln of Accord (Hingham). Following the competition, all of the qualifying artwork was exhibited at the Peabody Essex Museum in Salem. The artwork remained on public display at the museum Tuesday, September 14, through Thursday, September 23, and was much enjoyed by visitors.

The artwork for both the Archery and Primitive Firearms stamps is also selected in blind judging processes in open competition. Jeffrey Klinefelter, of Etna Green, Indiana, painted a grouping of deer against an autumn sky that the judges selected for the state's 2011 Archery stamp, while Mike Brown, of Canton, Georgia, won the Primitive Firearms stamp for his pair of alert deer in a snowy, winter landscape.

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. Staff presented programs for both youth and adult audiences on a wide variety of wildlife-related topics.

Formal or School-based Education Programs

Pam Landry, *Coordinator*

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

Project WILD

Twenty-Seven Project WILD facilitators offered 28 (4 WILD, 3 combination WILD/Aquatic WILD, 17 Growing Up WILD, and 4 cancelled due to under-enrollment) workshops that reached a total of 516 grade pre-K–12 educators from across the Commonwealth. Workshop participants included under-graduate and graduate college students, formal and non-formal educators, nature center natural history guides, state park interpreters, homeschooling parents, librarians, early-childhood educators, Montessori and Head Start staff, family child care workers, student conservation alliance volunteers, scout leaders, and summer camp staff.

Growing Up WILD: Exploring Nature with Young Children

This new Project WILD early-childhood (ages 3-7 years) education program is being very well received in Massachusetts. The program builds on children's sense of wonder about nature and invites them to explore wildlife and the world around them through a wide range of activities and experiences. Growing Up WILD is a tool for helping fish and wildlife agencies meet their conservation goals by recognizing that children start

developing attitudes towards wildlife and nature at an early age, providing knowledge and skills to early-childhood educators so they may teach about nature, providing suggestions for outdoor, nature-based recreation, providing conservation suggestions for each activity, providing activities that families can do together, and laying the foundation for acquiring increased scientific knowledge and problem-solving skills.

Twenty-one facilitators are trained to offer Growing Up WILD workshops. Statewide workshops were provided for over 400 early-childhood educators with participants representing Family Child Care, Child Care Centers, Mass. Association for the Education of Young Children (Mass AEYC), Head Start and Early Head Start, Mass. Department of Early Education and Care, Montessori Schools, YMCA's, State and Community Colleges, Self-Help/Community Partnership for Children, and Child Care Resource and Referral Agencies. Throughout the course of the year, facilitators contributed an impressive 742 volunteer-hours to Project WILD.

Public Education Programs

Through our wildlife education programs (general wildlife, wildlife in your back yard, endangered species, tracking, living with wildlife, wildlife and habitats), public appearances at conferences, and workshops, we reach out to urban youth, scouts, early childhood educators, Department of Youth Services secure treatment residents, pre-service teachers, undergraduate and graduate college students, formal and non-formal students, and other adult audiences.

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

Students in grades K-12 from across the Commonwealth submitted 389 pieces of artwork to this *"Conservation through the Arts"* program. Entries were received from public, private & 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 hen mallard in pastels by Viviana Hanley, Bishop Feehan High School, Attleboro, was selected as Best of Show and represented Massachusetts at the National Competition. Nearly 250 people (student artists, families, judges, and teachers) attended the awards ceremony held at Notre Dame Academy, Worcester. Combinations of the top 100 pieces of art were part of a statewide traveling exhibit appearing at 11 different venues. Supporters of the JDS program include the DFW, the USFWS, and the Massachusetts Wildlife Federation.

Massachusetts Envirothon

The DFW's continued involvement in this natural resource program, which reaches over 500 urban and rural high school students annually, is through Education Coordinator Pam Landry hosting teacher and student workshops, serving on the state education committee, preparing the wildlife exam, providing wildlife-related information to the 'Current Issue' question (FY 11: Wetland Protection), and attending the competition. Promotion Specialist Susan Benoit also contributes to this important program by serving on the Steering Committee, coordinating the recruitment and placement of volunteers, and helping with the competition, including organizing the morning and noontime meal offerings. The 2011 Envirothon was held at Great Brook Farm State Park, Carlisle.

Environmental Education Initiatives and Training

Secretary's Group for Environmental Education (SAGEE)

I&E Section Chief Ellie Horwitz continued to represent the DFW on SAGEE. During this year, she reviewed submissions for the Environmental Education Awards Program and continued working with at subcommittee on the Environmental Literacy program, which, although it has made considerable progress, is still in the formative stages.

Association of Fish and Wildlife Agencies

The Section Chief served as one of the Northeast Representatives to the Education, Outreach, and Diversity Committee of the Association of Fish and Wildlife Agencies. In FY 11, ancillary materials to the North American Conservation Education Strategy Toolkit (produced last year) on Field Investigations and the North American Wildlife Management Model were completed. In October, the Chief attended an intensive 5-day program in Nebraska designed to provide states with the strategies of implementing the Conservation Strategies within the state agency as well as the state. Several in-house agency meetings in late winter were held with a diverse group of staff to review the materials and discuss how they might be used or already be occurring within current programming.

Skills Programs

Hunter Education Program*

Susan Langlois, *Administrator*

Overview

It is the mission of the Massachusetts Hunter Education Program to protect the lives and safety of the public, promote the wise management and ethical use of our wildlife resource, and encourage a greater appreciation of the environment through education. The Hunter Education Program is a public education effort that provides instruction in the safe handling of firearms and other outdoor activities related to hunting and firearm use. Massachusetts offered its first hunter safety course in 1954. The program is administered by the DFW, wildlife

* 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.

biologist Susan Langlois, Administrator and courses are taught by certified volunteer instructors. All courses are offered free of charge.

Courses

Courses were offered in six disciplines across the state in FY 11. A total of 4,368 students participated in the Hunter Education Program in FY 11. The participation level is consistent with the 5-year average of 4,226 students. The following is a summary of course offerings and statistics on student participation in FY 11.

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.

78 courses were offered. Courses were 12-18 hours in length. A total of 3,476 students participated, 3,242 successfully completed the course, 8 failed and 226 did not complete the course. Students are asked to volunteer information on age, gender, and ethnic background on their registration forms: 536 students were minors (10-14 years old), 465 were 15-17-year-old minors, and 134 were minorities. Four hundred and ninety one of the participants were women.

Bow Hunter Education

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

Seventeen courses were conducted. Course length ranged from 8-12 hours. A total of 425 students participated; 418 successfully completed the course; 7 did not complete the course. Fifty-eight students were 10-14 years of age and 31 were 15-17 years of age. Ten minorities and 65 women were identified.

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 habitat, trapping laws and ethics, and landowner relations.

Five courses were offered, with a total of 220 participants. Courses were 11-13 hours in length. One hundred and ninety participants successfully completed the course; 5 failed and 25 did not complete the course. Six 10-14 year-old minors, two 15-17-year-old minors, four minorities and eighteen women participated.

Black Powder Education

Topics addressed in this program cover the selection of hunting equipment, state laws, the safe handling of muzzleloaders, and powder storage. A Certificate of Completion from the Basic Hunter Education course is a pre-requisite for all students under 18 years of age.

Two courses were conducted. Course length was 10 hours. Twenty-one students participated. All successfully completed the course. Two women, one minor (10-14 years old), and one older minor (15-17 years old) attended.

Map, Compass & Survival

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

Nine courses were conducted (two in Pittsfield and seven in Westminster). Courses range from 8-10 hours in length. A total of 180 students participated; two did not complete the course. Thirteen minorities, 11 minors (10-14 years old), 8 minors in the 15-17-year-old age range, and 42 women participated.

Waterfowl Identification

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

Two courses were held with 46 students participating. Forty-five students successfully completed the course and one did not complete the course. Four women and 4 minors (10-14 years old) participated.

Shooting Range Development and Enhancement

It is the DFW's objective to provide access for the public to range facilities for hunter education and 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 11. A total of seven clubs responded with 9 project proposals. Two project proposals from two clubs were selected for funding. The selected clubs were notified of the awards, and both clubs responded and began work on the projects. Follow-up site visits are conducted by DFW agency staff.

Angler Education Program

Jim Lagacy, *Coordinator*

Overview

The Angler Education Program is an outreach/education program within the I&E Section of the DFW. It is the main component of the Aquatic Resource Education Program. The other component is Aquatic Project WILD. The DFW's Education Coordinator oversees

Aquatic Project WILD. The Angler Education Program has several components set up to introduce people to fishing and the outdoors, including Family Fishing Festivals, Fishing Clinics, and our own Fishing Tackle Loaner Program.

The Angler Education Program is in part a volunteer-run program. Each year the program gains and looses volunteer instructors, and depending on the year there can be anywhere from 100 to 150 instructors on the roster. Currently there are 107 established volunteer instructors as well as 4 Instructors-in-training (instructors that have completed the training course during this segment, or are apprenticing instructors) in 11 workshop groups. Among the 111 total instructors, 74, or 68%, were active during the segment. We advertise for instructors through the agency e-newsletter, the various winter sportsmen's shows, and from positive publicity by word of mouth. The Angler Education Program was on display at two sportsmen's shows during FY 11, the Eastern Fishing and Outdoor Exposition held at the DCU Center in Worcester, and the Springfield Sportsmen's Show held at the Big E Fairgrounds in West Springfield. New instructors are trained in a 1-day Instructor Training Class, or by apprenticing within the program. All instructors need to fill out a volunteer application and are CORI-checked.

Family Fishing Festivals and Derbies

There were a total of 23, mostly weekend, family fishing events for the segment. Included here are our family fishing festivals, fishing derbies and other weekend fishing events we assist with. In FY 11, these events ranged in size from approximately 50 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 and baiting up. Also in this category are fishing derbies and special needs events that we support with volunteer instructors and equipment. Total estimated participation for Family Fishing Festivals and Derbies for FY 11 was approximately 4,820 people.

Basic Freshwater Fishing Courses

We are phasing out this component of our program because there has been a steady decline in participation over the past 10 years. There was only one course in FY 11, with approximately 15 participants. We have decided that with the steady decline in demand for our courses and the steady increase in demand for our short programs we will focus on our fishing clinics and weekend fishing festivals. However, a few of our instructors still enjoy doing these courses, so we will continue to offer these on a very limited basis.

Fishing, and Fishing-related Short Programs

Our fishing clinics, while short in duration, are a very popular program component. These clinics are generally 2 hours long, involving a short lecture on fish and fishing, followed by casting instruction, and a healthy dose of fishing. Fishing educational handouts are generally provided, and class participation is kept small enough to allow the instructors to work with participants one on one. Also in this category: trout-stocking programs, casting programs, and angler education talks typically to school or scout groups. There were a total of 65 fishing short programs during the fiscal year in various parts of our state performed by the coordinator, and numerous volunteer instructors. Approximately 1,721 people (mostly children) participated.

Delighted, successful fishermen at the Big MOE.

Tackle Loaner Program

The Angler Education Program keeps and maintains fishing equipment onsite (Westborough) for loan to various groups throughout the state. We loaned equipment on 19 separate occasions during the segment totaling 453 rod and reel combinations loaned. Our equipment was loaned to various groups/agencies including the Massachusetts Department of Conservation and Recreation, U.S. Army Corp of Engineers, U.S. Fish & Wildlife Service, various sportsmen's clubs, scout troops, and others. Along with the rod-and-reel combinations, we also make available the necessary terminal tackle, and various fishing education materials.

Becoming an Outdoors Woman Program

Ellie Horwitz, *Coordinator*

Becoming an Outdoorswoman (BOW) is a program designed for women ages 18 and older, providing basic outdoor skills sessions. Ms. Horwitz, Chief of Information and Education, has been the coordinator for the entire 16-year program history. A Steering Committee of volunteers meets each year to plan workshops for the following calendar year. New this year was a workshop planned jointly with DCR focusing on Camping for Families, which was coordinated by Outreach Coordinator Marion Larson and DCR Interpretive staff. The purpose was to attract urban families with little or no camping experience. Fourteen families participated in the event, the majority of which had camped 0-3 times, and over half the attendees came from urban communities. The

overnight session was held at Harold Parker State Forest in Andover and received high marks in the evaluations. The weekend was deemed a success and planning for an August 2011 session at Myles Standish was well underway at the close of the fiscal year. Unfortunately, due to low enrollment, the June BOW Weekend in Becket had to be cancelled for the first time in its 16-year history.

BOW Workshops held in FY 11

Date	Topic	Number of Participants
July 2010	Lost in the Woods-Miles Standish	14
August	DCR/BOW Family Camping	14 families 44 people
September	Hanson Shooting Sport	40
October	Women Sustaining Woodland (re-scheduled for Spring 2011)	
	Deer Hunting Seminar	9
December	Deer Hunt	9
Feb 2011	Fly tying	7
March	Hunting 101	15
April	Turkey Hunt Seminar	14
April	Women Sustaining Woodlands	16
May	Turkey Hunt	10
	Striper fishing	17
June	BOW Weekend in Becket (cancelled--enrollment)	
Total Attendance		240

Massachusetts Junior Conservation Camp

In August 2010, the Conservation Camp held its 2-week session for the eighth year at the Chesterfield Boy Scout Reservation. Approximately 110 campers participated. 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 an Information Quiz that evaluates the participant's comprehension of outdoor information and skills presented during the camp session; and participated in the graduation ceremonies.

Division of Fisheries and Wildlife Visibility

Uniforms

This year, a number of uniform items were purchased. Fleece jackets and vests, gray and green Division T-shirts, khaki long- and short-sleeve shirts, a few long-sleeve polo shirts, and knit hats.

Information & Education Staff

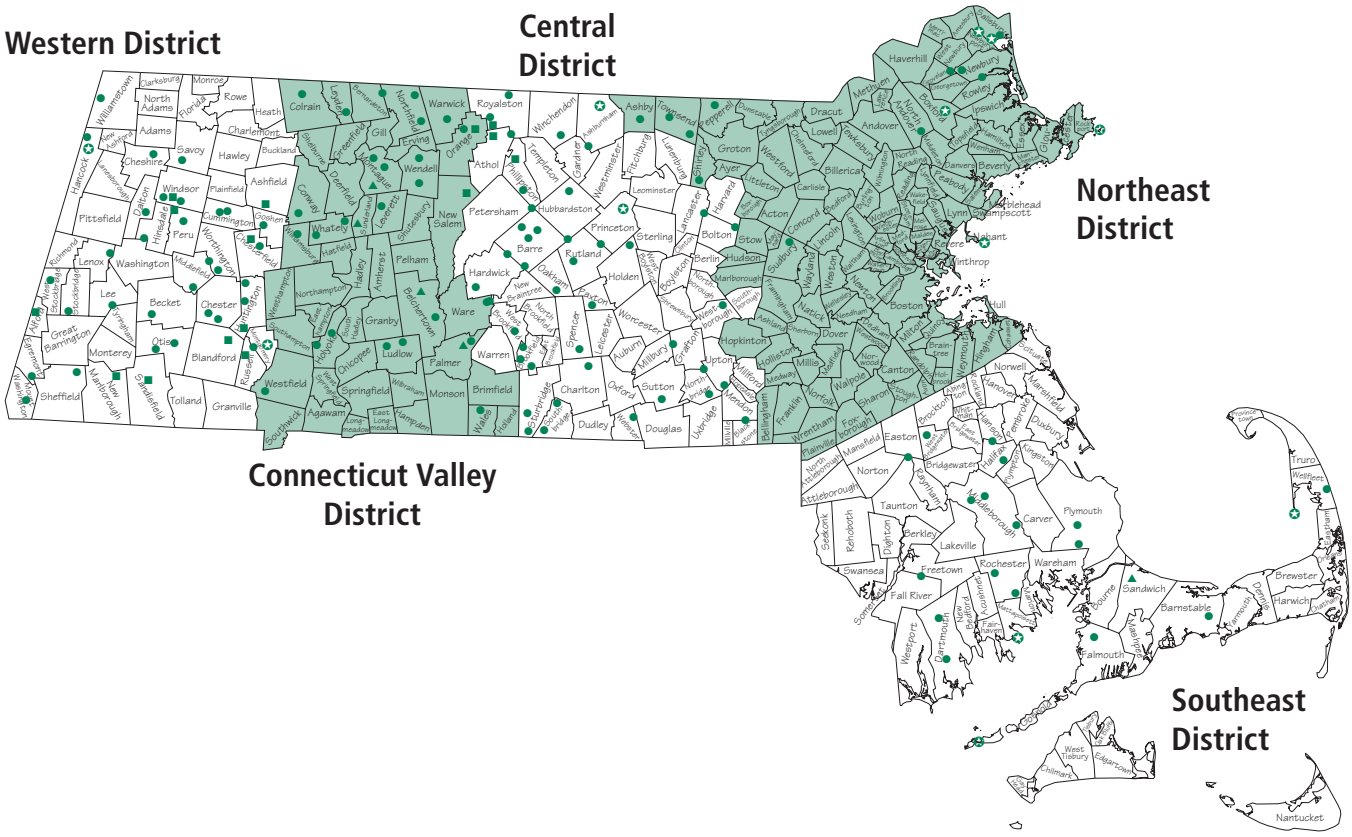
Ellie Horwitz, *Chief*

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

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

DISTRICT REPORTS

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



Overview

Most people who meet the DFW do so through one of the agency's five Wildlife Districts. The District offices are this agency's field stations: administering wildlife lands, conducting onsite 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 Massachusetts Environmental Police to ensure public adherence to wildlife laws and regulations, and they assist the staff of the Wildlife Lands Section in prioritizing lands to be acquired; locating titles, landowners, and boundaries; and in making other arrangements necessary for the acquisition of lands for wildlife.

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

District staff members enhance recreational opportunities throughout the state by stocking Brown Trout, Eastern Brook Trout, Rainbow Trout, Tiger Trout, and Broodstock Salmon into waters scheduled to receive them. Prior to releasing trout, they monitor the water quality of the designated lakes and streams. They release pheasants on Wildlife Management Areas (WMAs) and in open covers (suitable habitat on public land). They monitor and maintain the WMAs in their region by cutting brush, mowing, trimming trails, assisting with

forest cutting operations, planting shrubs, and maintaining roads and parking areas. They emplace gates, erect signs, and make other arrangements related to the protection and management of the agency's lands, buildings, and vehicles. They also build and maintain nesting boxes for wood ducks, bluebirds, and bats, and establish cooperative agreements with farmers who raise crops on DFW land. District staff members also operate check stations, where sportsmen register deer, bear, turkeys, and furbearers taken during the designated hunting and trapping seasons.

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

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

Northeast Wildlife District

Administration

The Northeast District crew welcomed Richard Pecorelli, who transferred into the Wildlife Technician position vacated by Steve Wright, who transferred to the Southeast District to replace Ed Krauss. For the most part, the staff was healthy, except for an old back injury that periodically acted up on one employee.

An ASV PT100 Terex Forestry machine and trailer were purchased with Natural Resource Damage funds incurred through the closure and clean-up of the Charles George Landfill in Tyngsborough/Dunstable. The ASV exponentially expanded the capacity of the Northeast District to manage properties such as Dunstable Brook WMA, where over 30 acres of shrubland habitat can now be efficiently maintained for upland birds and other early-successional wildlife. Computers were upgraded to Dell Optiplex 980s for the District Supervisor, Secretary, and Wildlife and Fisheries biologists, with replacement of the GIS computer as well.

Neighbors of Delaney WMA received a boost when the Delaney house came up for demolition. This dilapidated house was an attractive nuisance to local kids, and an eyesore. The District Supervisor handled all aspects of this project, including environmental permitting and testing, contractor selection and oversight, to ensure project completion before the end of the fiscal year.

Acton town officials toured the former District office on Harris Street several times and considered it as a possible town building. Staff returned periodically to the former office in Acton to move or dispose of the remaining materials that had accumulated over the last 30+ years of occupancy. A large dumpster was filled with junk and recyclables were kindly accepted by the town of Acton. The last bit of work will entail sorting through boxes of old papers and photographs that still remain in the attic. Over the winter, staff worked on the conference room at the Ayer office, recycling oak paneling from the Bellerman Cabin at Squannacook River WMA, redoing ceiling tiles, and painting walls.

Twenty-five (20 FY 10) sportsmen applied for waterfowl permits at the Delaney WMA, vying for eleven waterfowl blinds that are maintained by District staff. Twenty (56 FY 10) field trial permits, 1 (1 FY 10) camping permit, and 285 (300 FY 10) range permits were issued. The U.S. Coast Guard and Peabody Police Department used the shooting range at Martin Burns WMA for training purposes, and helped with clean-up. Dog field trials are held at Delaney WMA and William Forward WMA, with four clubs competing for access.

Twelve deer check stations operated within the District, with the Martin Burns installation open 6 days a week. Six hunters (6 FY 10) took part in the paraplegic hunt held at Fort Devens, at which 4 deer (1 FY 10) were taken. The District tagged 8 coyotes (49 FY 10), 52 fisher (19 FY 10), 3 gray fox (7 FY 10), 6 red fox (5 FY 10), 1 mink (3 FY 10), no bobcats (1 FY 10), and 141 beaver (202 FY 10).

A Letter of Permission was issued to the Hale Middle School track team for use of the woods roads at Delaney WMA for track meets, while their cross-country site is under construction. Four License Agreements were renewed in Newbury, Rowley, and Ashby for hay or corn production. A Letter of Permission was issued, and in-field oversight provided, for arsenic testing on Crane Pond WMA as part of a DEP Immediate Response Action for an abutting landowner parcel in Georgetown.

The District Supervisor attended 6 months of Newbury Planning Board meetings on the proposed Martin Burns Subdivision off Scotland Road, providing comments on impacts to habitat and recreation. The layout of this proposed development created serious concerns about hunting access within the management area, forest and vernal pool habitat fragmentation, water quality and quantity impacts, and loss of management access. A snafu was found at William Forward WMA where the Myopia Hunt Club had planned their hunt to cross a newly-restored streambank on a rainbow smelt spawning stream. Much time was spent searching for an alternative route amenable to the club, to no avail. A request by National Grid to make permanent their transmission lines over the Nashua River Access Area was reviewed, and denied. Staff checked and controlled water levels at Pantry Brook WMA every month with the assistance of the Sudbury Board of Health, where beaver had been very busy building on top of the dike.

The District Supervisor's land acquisition activities included reviewing parcels for their ecological and

recreational significance on properties in Townsend, Shirley, Pepperell, Newbury, Salisbury, Ashby, Groton, and Dunstable. Title work for the "Big 3" – Martin Burns WMA, Crane Pond WMA, and William Forward WMA – was reviewed by staff. All Northeast District Conservation Restrictions were reviewed with Chief of Wildlands Craig MacDonnell, and core focus area parcels with NHESP Habitat Protection Specialist Lynn Harper.

The Northeast District Office was chosen as the new storage and sorting location for hunting and fishing licenses and guides because of its available garage space, with the former site being the Westborough Field Headquarters. District Clerk Sue Ostertag spent many hours sorting licenses for pick-up.

Research and Conservation

Wildlife

District staff conducted springtime waterfowl surveys in the Northeast and Central districts, where six waterfowl breeding plot surveys were checked (five in the Northeast and one in the Central District), and banded waterfowl from the airboat in August and September. District staff conducted dove, grouse, and woodcock census routes for the Annual Breeding Bird Surveys, and checked 204 wood duck boxes (154 FY 10). Throughout the month of June staff scouted for potential Canada goose banding sites.

The District Wildlife Biologist and Wildlife Technicians assisted with deer farm checks. During the summer, red deer escaped again from the Pearson deer farm in Newbury: one deer was struck and killed on I-95 (driver was unharmed), and three escaped onto nearby Martin Burns WMA. An intensive search ensued by staff and Environmental Police Officers, but in the end, the red deer returned to the farm on their own. The owner decided to harvest the deer and the DFW did not reissue the license.

Black duck banding work occurred in January and February at sites in Essex County, including the Parker River National Wildlife Refuge. Swim-in bait traps were used effectively on the salt marsh; and114 black ducks (33 FY 10) were captured and banded. NED staff persisted through ice storms and deep snow, timing their work to the tides. This is the second year of banding work conducted in support of the national 5-year experimental population modeling study.

The first female black bear tagged in the Northeast District was harvested during the 2010 black bear season. A black bear incident occurred in the district when several very unwise people took a black bear cub into their house, which prompted a visit by the Environmental Police.

The third year of the Dunstable Brook WMA turtle work continued with the count holding steady at 20 stated-listed turtles documented so far. Nineteen of these turtles are being tracked using radio-telemetry and data still indicates significant overwintering on DFW property. One of the three constructed turtle nesting structures eroded during a storm when a hidden culvert in the field opened up. Turtles are using the nesting structures, but then so are all-terrain vehicles.

A forestry project at Elbow Meadow Natural Heritage Area was completed in coordination with the town of Dunstable, which restored several acres of upland field in exchange for forestry access through DFW land.

Fisheries

During the summer stream survey work staff assessed 36 brooks (11 FY 10) in six major watersheds. There were no responses recorded for fish kills.

The Fisheries Biologist investigated a request to stock fish at different sites within the Charles River watershed, finding one of the suggested locations unsafe for staff to stock fish, while the other suggested site was already near an existing stocking location.

Natural Heritage and Endangered Species Program

Springtime herpetological assessments at Martin Burns WMA were conducted by seniors from Masconomet High School in Topsfield, under the supervision of their teacher, Norm Clark, and DFW staffers Erik Amati and Pat Huckery. This is the second year of a cooperative effort through which the students learn field assessment techniques and the DFW receives important data about amphibians and reptiles. The students identified and collected data on 14 vernal pools (20 vernal pools FY 10) and collected morphometric data on spotted turtles and painted turtles. The students updated an old wood turtle (*Glyptemys insculpta*) record. This project will continue next year, expanding into other parts of Martin Burns WMA, Crane Pond WMA, and including other animal and plant studies.

Northeast District Wildlife Biologist Erik Amati assisted NHESP staff in their effort to update state-listed amphibian data at and near Crane Pond WMA and Martin Burns WMA, where two new blue-spotted salamander (*Ambystoma laterale*) breeding sites were found in each area. Salamander assessments were also performed in Topsfield and Bolton.

The terrible job market brought herpetologist Julie Liske to our door asking whether she could help us with amphibian and turtle survey priorities to keep her busy until she found a job. Her excellent work gave us new rare species and vernal pool information in key land acquisition areas.

Dragonfly survey work was conducted by staff at Martin Burns WMA in Newbury, where likely habitat existed for a globally rare species. Aerial breeding wheels and oviposting (laying eggs in water while on the wing) females confirmed the existence of a reproducing population. More work will be done next year to delineate the extent of suitable habitat for this species, and develop a conservation and management plan.

Bald eagle chick banding was exciting this year with the Tyngsborough chick jumping from the top of a 100-foot tree as a DFW climber attempted to net it. Fortunately, there was no serious injury to the chick. The West Newbury bald eagle pair never recovered from the collapse of their nest, though they attempted to nest in their Haverhill nest across the Merrimack River. The Methuen chick was found to be too big to band, and the Salisbury pair moved on since their nest collapsed. The District had another successful year participating in the Merrimack River Eagle Festival, sponsored by the Massachusetts Audubon Society (MAS), where DFW is stationed at Deer Island in Newburyport, a favored location for viewing eagles. The mid-winter bald eagle survey was conducted along the Merrimack River.

Peregrine falcons had a good breeding year in the Northeast District with four chicks banded in Lowell and three in Lawrence. Cooperators David and Ursula Goodine tracked the Tobin Bridge peregrine falcon family, and, with advice from DFW staff, rescued a chick that crash-landed at a boat club. This chick was taken to the Lawrence nest box, where the parents adopted it after much squawking. A family of peregrine falcons nested on a building in Cambridge, where a legal issue prevented their banding this year. One of these fledging chicks ended up perched on a street post, eye level with a surprised passing public.

"Turtleland" in Georgetown is under assault from off highway vehicles that are damaging state-listed turtle habitat and DFW property. The District Supervisor gathered with Georgetown conservationists and the Environmental Police to sort out the problem access points and form a plan of action that might curb the illegal traffic.

Enhancement of Outdoor Recreation

Staff released 288 salmon in nine ponds throughout the District. Combined spring and fall trout stocked numbered 124,350. In the fall, anglers saw13,400 12-inch rainbows released into two rivers and 18 lakes and ponds, followed in the spring by110,950 rainbow, brown, and brook trout in 42 ponds, 7 major rivers, and 66 brooks and minor rivers.

Kent's Island and Corn Island at William Forward WMA in Rowley and Newbury were developed as new sites for release of pheasant. A total of 680 birds were released onto the islands and surrounding salt marsh for the enjoyment of local sportsmen and sportswomen. This change was implemented to draw hunters from Martin Burns WMA, a well-used pheasant hunting area, in order to enhance the bird hunting experience locally. A few parking spaces were staked off at the Corn Island access to keep cars off Route 1, and signs were erected at Kent's Island to direct traffic.

The staff received property-boundary-delineation training from Forestry Project Leader John Scanlon, who spent an entire day in the field teaching new and old members the meticulous protocols needed to find the correct boundary line.

Acquisition of the Milly Turner property in Pepperell opened up several thousand linear feet of the Nissitissit River to public enjoyment, in addition to protecting important floodplain habitat. The conveniently-placed turnaround driveway was left in place, and next to it, a three-car parking area was framed-in over the old barn foundation.

Five thousand pheasants were released into five WMAs and 11 open covers. No one applied for a Special Pheasant Stocking Permit at Martin Burns WMA because of the deep winter snow. The Danvers Fish and Game Club ran a successful Youth Pheasant Hunt at Martin Burns WMA, with 12 (9 FY 10) youngsters participating, and Walpole Rod and Gun held their hunt at Charles River WMA. The District Supervisor conducted the Youth Hunt Seminar sponsored by the Danvers Fish and Game Club, where youth learned about the history of pheasant in Massachusetts, pheasant hunting regulations, and hunting safety. Controlled pheasant hunts were held at Martin Burns WMA and a controlled waterfowl hunt was offered at the Delaney WMA.

After almost two years of effort, tremendous progress was made in the trespass case at Mulpus Brook WMA in Shirley. A signed settlement agreement was entered into that gained a 25-foot access for the DFW in exchange for not cutting off a section of a house. Removed from DFW property were a paved turnaround, an underground sprinkler system, extensive plantings, fencing, a play-set, and a tree-house.

A whopper of a trespass was found at the Nashua River Access Area in Pepperell, where about 2 acres of riverfront property was gradually taken over by a horse farm owned and managed by a neighbor. Twenty-one horses, five buildings, fenced paddocks, tractor trailer storage units, an occupied camping trailer, substantial manure piles, a gate across the access point with a "No Trespassing" sign, and numerous other materials were either stored or dumped on the 2 acres. The DFW had the property surveyed so that the extent of the trespass could be discerned. Wide yellow tape was strung between the stakes to demarcate the boundary for the public, the trespassing neighbor, and DFW personnel. A meeting was held with Representative Harrington about the trespass problem, and the Pepperell Conservation Commission and the Massachusetts DEP were notified of the Wetlands Protection Act resource-area impacts. Restoring this habitat for wildlife and fishing access to the Nashua River is of prime importance.

A trespass at Charles River WMA was brought to our attention by the Army Corps of Engineers, from which we lease the land. It consisted of fencing and signs preventing public entrance, a boardwalk through a wetland, a dock, and lights.

Outreach and Education

A great deal of wildlife education happens every day in the District during each wildlife-conflict call. The Northeast District public is fairly naive about wildlife,

Adult Blandings turtle.

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.

The District Supervisor attended Essex County League of Sportsmen and Norfolk County Sportsmen's League meetings to disseminate news of importance, and to answer questions about our work and other matters of interest to each League.

Wooden property signs were installed at William Forward WMA (Kent's Island), Squannacook River WMA, and the Nissitissit River WMA. Roadside access was posted at the new May property at the Squannacook River WMA, Mulpus Brook WMA properties, and Symonds parcels at Ashby WMA.

Coordination, scheduling, and booth coverage for the Topsfield Fair were handled by District personnel and Promotion Specialist Susan Benoit, with booth assistance from Westborough staff. Staff also worked the Worcester Sportsmen Shows, and contributed their services to the annual Massachusetts Outdoor Exhibition ("The Big MOE"). Five talks/workshops were presented by the District Supervisor.

The "World of Turtles" workshop led by the District Supervisor at Oxbow National Wildlife Refuge, with help from Conservationist Rona Balco, was a success. The attendees got close up and personal with snapping turtles and a state-threatened Blanding's turtle. They also had a window into how a herpetologist works by seeing the handling of hoop traps, and being part of a discussion about the conservation of turtles and turtle ecology.

Technical Assistance

Staff fielded phone calls from the general public on everything from injured frogs to raccoon infestations. Many hours were spent listening to and helping the public with questions about wildlife they see around their houses, in their yards, and in woodlands.

Highlights include the District Supervisor touring a problem coyote area with the Stow Board of Health Agent in order to assess the situation, finding the housing development surrounded by an active apple orchard. Coyotes like apples and the rodents that feed on them, so it was recommended that people pick up dropped apples to reduce the frequency of coyote visits to their yards. The expanding beaver population in the Northeast District finally made its way into the town of Needham, to the dismay of town sewer officials and neighbors. Technical help was provided to all who wanted to hear about management options. One Concord resident was horrified when she discovered a raccoon latrine in her attic. We guided her investigation and provided some helpful facts for her to know about raccoon behavior.

Southeast Wildlife District

Administration

In April 2011, Debra Silva was hired into the Clerk III position, which had remained vacant since February 2010.

District staff provided opportunities for sportsmen to purchase hunting, fishing, and trapping licenses at the District office. The annual over-the-counter antlerless deer permit sales were again conducted out of the Myles Standish State Forest HQ in Carver with approval and assistance provided by DCR staff and rangers.

FY 11 was a busy year for License Agreements on District lands, with seven agreements coming under review for renewal. The District Supervisor revised and renewed all of the agreements that were reviewed, making certain that the licensed activities provided a net benefit to wildlife and/or wildlife-dependent outdoor recreation. Four agricultural license agreements, one groundwater remediation agreement, and two special-use agreements were renewed. Significant changes were made to a model airplane field agreement at Noquochoke WMA, wherein the field was reduced greatly in size and the model airplane club has agreed to locate a new site to establish an airstrip and move their operations from the WMA within 2 years.

Research and Conservation

Wildlife

District staff completed breeding surveys for ruffed grouse, 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 556 ducks throughout Plymouth, Bristol, and Barnstable counties. Annual Canada goose banding was also completed; however, geese were more difficult to locate this year, both because we had a focus on banding at new sites and because the geese appeared to be more spread out. The District also assisted Westborough staff in completing duck banding at New Bedford Reservoir using the DFW's airboat. Nesting boxes for wood ducks and Eastern bluebirds were monitored and maintained on DFW lands and other public and private lands.

The District Supervisor assisted the Massachusetts Environmental Police in dealing with two aggressive male wild turkeys that had been chasing and attacking a U.S. Postal Service mail carrier and local residents on a daily basis in Centerville and Scusset Beach. Both birds were captured and one was able to be relocated to a captive wildlife facility in West Yarmouth, while the other had to be euthanized due to preexisting injuries that were discovered after capture. The District also assisted the Environmental Police in capturing and relocating an illegally-possessed fallow deer in Westport.

District technicians worked closely with Westborough biologists to assist a permitted commercial deer farm in Westport in ear-tagging his captive fallow and sika deer. A portable squeeze chute and fencing setup that the DFW had previously received a grant to purchase was used to complete the tagging. The District Supervisor, working with the DFW Deer and Moose Project Leader, reviewed a number of deer damage complaints throughout the District. Several site visits were conducted to assess the validity of the damage claims and most complainants were issued letters summarizing their legal options under Massachusetts General Laws, Chapter 131, Section 37. The majority of deer damage complaints in the District come from coastal towns in Plymouth and Bristol counties.

The District continued to maintain water control structures, to both ensure their safe operation and to create/enhance wetland habitats, on several WMAs, including Burrage Pond and Rochester. The NAWCA grant project at Burrage Pond WMA continues to progress with several necessary permits/reviews completed, including NEPA and the Massachusetts Historical Commission. The District is in the process of going through local permitting with the towns of Hanson and Halifax and hopes to complete those steps before the end of summer 2011 and break ground in the following fall or winter.

The other major habitat restoration project in the District, the Red Brook Headwaters Restoration Project, also progressed in FY 11 with the District Supervisor and Fisheries Manager coordinating a series of planning and data collection meetings, working closely with the Department of Ecological Restoration. An initial contract was executed with Princeton Hydrological to collect baseline data, such as groundwater levels and temperature, surface water temperatures, and soil characteristics, which will be used to create a conceptual design for the restoration project. Further, the District Supervisor has been working with our major partner, the Manomet Center for Conservation Sciences, to plan the project in a way that is climate-smart, taking the anticipated effects of global climate change into consideration.

District staff responded to inquiries from the general public and the press regarding black bear sightings in southern Bristol and Plymouth counties in June 2010. Confirmed sightings of a young male black bear, estimated at 100 pounds, were made in several southeast towns, including Attleboro, Rehoboth, Dighton, Taunton, Raynham, Lakeville, Middleboro, Mattapoisett, Wareham, Rochester, and Marion. The District Supervisor provided educational materials to multiple media outlets, provided interviews, and met with local residents and police departments to provide information and technical assistance. As of the end of FY 11, the bear had seemed to settle in to the south Rochester/north Mattapoisett area near the Haskell Swamp WMA and had not caused any significant conflicts with humans, other than raiding the occasional bird feeder.

Fisheries

Stream restoration and brook trout restoration have become an important part of fisheries activities in the Southeast District. Planning and monitoring for the restoration of the Century Bog complex at the headwaters of Red Brook was begun in earnest this year and a consultant (Princeton Hydro) was hired to assist in these efforts. Fisheries Manager Steve Hurley wrote an article on Century Bog and Red Brook for the 2011 Massachusetts Fish and Wildlife Guide.

Brook trout research using PIT (Passive Integrated Transponders)-tagging methods continued on Red Brook, Quashnet River, and Childs River. Red Brook sampling in fall 2010 was filmed for segments on the World Fishing Network and Trout Unlimited TV.

Technical assistance was provided in support of small dam removals to restore fish passage for salter brook trout at Wellingsley Brook in Plymouth. Technical assistance was given in support of a Coastal Zone management grant on stream improvement opportunities for Waquoit Bay Tributaries, Biomap2, and the Santuit Pond dam repair. Sampling assistance was given in collecting freshwater mussels in Mystic and Middle

Southeast District Staff PIT-tagging brook trout as part of the Childs River Brook Trout Restoration project.

ponds in Barnstable and for a Master's Thesis study of the Eel River restoration in Plymouth. Alum treatments at Mystic Lake and Ashumet Pond in September 2010 were monitored. Field sampling was provided in support of an acoustic tagging study of Red Brook's salter brook trout. This study documented use of the marine environment of Buttermilk Bay by anadromous brook trout. Fish sampling assistance was also provided for a mercury study of smallmouth bass in Long Pond, Falmouth. Surveys were conducted on Phillips Brook in Duxbury and Fresh Brook in Wellfleet in support of future stream restoration activities.

Due to severe winter weather, fish kills due to winterkill (oxygen depletion) were reported at ponds in Hanson, Halifax, and Plymouth in March 2011.

In summer 2010, ten streams were sampled using the statewide stream survey protocol and temperature and dissolved oxygen profiles were conducted at a majority of the Southeast District's trout ponds.

Natural Heritage and Endangered Species Program

The District continued to work very closely with Carolyn Mostello throughout the year to assist with the NHESP's tern restoration project. District staff regularly conducted boat and/or trailer transport and maintenance; habitat improvement projects on Ram, Bird, and Penikese Island; installation of nesting structures; and nest/chick surveys. The District Supervisor also serves on the Penikese Island habitat restoration project management team, which is in the process of planning and executing a major habitat restoration project, including the use of mechanical and chemical vegetation control and prescribed fire.

The District coordinated with NHESP and the MAS to monitor and protect piping plover habitat at our Fox Island WMA in Wellfleet. District staff assisted with the establishment of symbolic fencing and the monitoring of a piping plover nest that was established within the symbolic fencing area. District staff was prepared to monitor the chicks and provide vehicular escorts to fishermen operating shellfish beds on the nearby flats, but the nest was predated very close to the expected hatch date and the pair did not re-nest.

District Wildlife Manager Dick Turner installed signage and floats to protect the active Bald Eagle nest at Pocksha Pond in Middleboro. District staff participated in the annual mid-winter bald eagle census, covering portions of Middleboro, Lakeville, Fall River, Westport, and Dartmouth. District staff also monitored a total of four eagle nest sites, including a new nest at White Island Pond in Plymouth. Two of the sites failed, including the White Island Pond nest, which had previously been an active osprey nest, as the adult eagles were driven away from the nest by ospreys following a long period where it appeared the eagles were incubating eggs. The nest at Anuxanon Island in Great Quittacus also failed when one of the main support branches for the nest gave way and toppled the majority of the nest just after we expected eggs to hatch. District staff climbed this nest site immediately after learning of the collapse and installed some additional support beams just below the old nest location in hopes that the eagles will rebuild in this location next year. The District Wildlife Manager also assisted in the capture and transport to the Tufts Veterinary Clinic in Grafton of an injured bald eagle in Onset.

District staff successfully banded three healthy eaglets at North Watuppa Reservoir in Fall River and Jeff Breton, District Technician II, safely and successfully climbed to the Pocksha Nest in Middleboro, lowering two healthy eaglets to the ground crew to be banded. District staff also monitored our two known peregrine nesting sites, the Braga Bridge in Fall River and an old mill building in New Bedford. The Braga Bridge pair, which consists of the old male and a new female, produced three chicks that unfortunately had to be removed from the bridge following a failed attempt to relocate them away from bridge repair activities. The chicks were placed with surrogate parents at another nest that had just fledged their own chicks and two of them survived to fledge. The New Bedford pair produced two healthy chicks that were successfully banded with the gracious assistance of the New Bedford Fire Department, which provided a ladder truck for us to utilize to access the nest.

District staff assisted in the planning and operation of the annual Northern Red-bellied Cooter release event. The event, historically held in the Assawompsett Pond complex in Lakeville/Middleboro, was relocated this year to the Burrage Pond WMA in Hanson and Halifax. District staff cleared parking areas, repaired the access roadways, installed signage, and assisted in all aspects of the event, which drew well over 100 people.

Enhancement of Outdoor Recreation

The staff provided birds for another safe and successful upland game bird hunting season, stocking 7,908 pheasant and 3,500 quail on six WMAs and over 12 open covers throughout the District. Eight-week-old pheasants were 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 Club and the Falmouth Rod and Gun Club for use in the DFW's Young Adult Pheasant Hunt, and assisted with the operation of both hunts.

District staff stocked its fall 2010 allocation of trout into 25 ponds and stocked its spring 2011 allocation of trout into 46 ponds and 35 streams. The Southeast District stocked salmon from the Palmer (Roger Reed) Hatchery and the National Fish Hatchery in White River Junction, Vermont, in December 2010. District staff also monitored and maintained many boat ramps and fishing access areas throughout the District this fiscal year.

In preparation for hunting seasons, District personnel mowed and maintained roads, trails, parking areas, and

fields within our WMAs, to provide safe and effective access and hunting opportunities to the general public.

The District completed late-summer mowing of fields early in FY 11 on the Frances A. Crane WMA to maintain grassland habitat and of dikes on the Burrage Pond WMA to prevent damage/degradation of the dikes and dike roadways caused by woody tree and shrub growth. The following summer, fields on several WMAs were improved, including by cutting, plowing, harrowing, and seeding with a native seed mix. Four fields at the Myles Standish State Forest WMA and three fields at the Frances A. Crane WMA were completed in June 2011. The seed mix used is a local ecotype grass blend obtained through Ernst Conservation Seeds and contains a mixture of native grasses including little bluestem, Indian grass and switchgrass, among other species. This mixture has worked well in the past, especially when we are able to follow up the seeding with a prescribed fire within a few years of planting.

District staff assisted in the completion of several prescribed fires in FY 11 to enhance or restore wildlife habitat on DFW lands, including the Noquochoke WMA, the Frances A. Crane WMA, and the Penikese Island Wildlife Sanctuary. The District also mobilized for a major prescribed fire planned for the Massachusetts Military Reservation (MMR), to enhance habitat for the New England cottontail, but the fire was postponed due to a Mass. DEP air-quality threshold.

New signage and a gate were installed at the Dartmoor Farms WMA. Parking lots were created at the Black Brook WMA, Plymouth Town Forest WCE, and Plymouth Pine Hills WCE. The parking area at the Route 106 canoe launch on the Taunton River was enhanced significantly with mowing and grading to create proper drainage. Major roadway repairs were also completed at the Burrage Pond and Old Sandwich Game Farm WMAs.

Boundaries were marked at many properties, including Red Brook WMA, Black Brook WMA, Rocky Gutter WMA, Hockomock Swamp WMA, Grassy Pond–Plymouth WMA, Eastham Salt Marsh WMA, Burrage Pond WMA, Spring Hill Lot WMA, Hog Pond Lot WMA, and the Fisk–Forestdale WMA. Flumes and dikes were maintained at the Burrage Pond and Rochester WMAs, including a significant repair to the main flume at the Rochester WMA, which partially gave way during a major storm event.

The District Supervisor issued permits for a total of 34 special winter game bird hunts, two at the Erwin Wilder WMA and 32 at the Frances A. Crane WMA. A total of 67 pheasant and 549 bobwhite quail were stocked during these hunts. Additionally, the District Supervisor reviewed and issued permits for seven hunting dog field trials held at the Frances A. Crane WMA. These field trials provide an opportunity for serious upland game bird hunters and sporting dog trainers to participate in a controlled field competition on the WMA.

The District operated and managed controlled access hunting opportunities for white-tailed deer, wild turkey, and coyotes on the MMR. This effort provided 1,296 days of recreational deer-hunting opportunity and 170 days of recreational turkey-hunting opportunity on roughly 9,500 acres of land on the MMR. A total of 67 deer and 7 turkeys were taken during the 2010 deer seasons and 2011 spring turkey seasons, respectively. Further, the District worked with MMR staff to again provide a youth turkey hunting program at the MMR on April 23, 2011, with eight youth participating in the hunt, four of which harvested birds. The District also has gained approval to expand our successful paraplegic deer hunting program to the MMR and will be hosting the first-ever paraplegic deer hunt there in November 2011.

Steve Wright, District Technician, participated as a guide/mentor for the annual Becoming an Outdoorswoman spring turkey hunting program. He attended several meetings, scouted a portion of our Taunton River WMA and led a small group of hunters on a very successful and enjoyable turkey hunt.

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, presentations and attending meetings and events throughout the region.

Southeast District personnel prepared and staffed displays for the Thornton Burgess Animal Day, Waquoit Bay National Estuarine Research Reserve Watershed Block Party, Freetown State Forest Fun in the Forest Day, Falmouth Rod and Gun Club's Youth Day, the Monument Beach Sportsman's Club Show and Standish Sportsmen's Association Show. The District assisted in manning the new permanent display at the Marshfield Fair, receiving a lot of positive feedback from the community. The District Supervisor held an information meeting for the public on the DFW's ongoing habitat restoration activities at our Noquochoke WMA.

The Fisheries Manager gave presentations on the brook trout restoration and research activities to the Trout Unlimited Northeast Chapter, the Southern New England Chapter of the American Fisheries Society, the Cape Cod Salties, the Falmouth Fishermen's Association and the DFW's Fisheries Section Symposium, as well as a PIT-tagging workshop at the Conte Anadromous Fisheries Laboratory. He also gave a presentation on Cape Cod's freshwater fisheries to the Tradewinds Senior Care Center in Sandwich and a presentation on the Santuit Pond Preserve to the Barnstable Land Acquisition and Preservation Committee.

Technical Assistance

District staff assisted other DFW personnel, federal, state, 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 Massachusetts Environmental Police 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, 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 Manager 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, Cape Cod Rabies Task Force, Mashpee National Wildlife Refuge Management Team, Nantucket NWR Comprehensive Conservation Plan (CCP) Planning Team and the Monomoy NWR CCP Planning Team. The District Supervisor and Fisheries Manager both served on the No Man's Land Island NWR CCP Planning Team. The Fisheries Manager was actively involved in monitoring MMR cleanup activities as a member of the Plume Containment Team (PCT). Annually, a considerable amount of time is spent in providing technical assistance to the Air Force Center for Environmental Excellence and their contractors in relation to the MMR cleanup.

District staff assisted our sister agency, the Division of Marine Fisheries, with their annual striped bass tagging and research, as well as their ongoing acoustic tagging study of juvenile sand tiger sharks in Duxbury Bay.

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

District Clerk Priscilla MacAdams retired after 24 years of service to the DFW. She was replaced by Debra Manty, who laterally transferred to the District after having worked 6 years at the Hunter Education Program.

District Wildlife Biologist Bridgett McAlice took family leave for the birth of her first child, a daughter, Teagan Corinn, on April 25, 2011.

Hunting, fishing, and trapping licenses and antlerless deer, bear, and turkey permits were sold at the District headquarters and 2011 licenses and abstracts distributed to central Massachusetts vendors. 2010 licenses were collected and pre-audited.

District personnel oversaw the operation of 17 deer check stations, 14 turkey check stations, 14 coyote check stations, and one Black Bear check station. Beaver, Otter, Coyote, Fisher, Bobcat and Fox pelts were also tagged and recorded at the District office.

Multiple trespass, motor vehicle, and illegal cutting of trees incidents were investigated on District WMAs.

The District participated in DFW Lands Committee and Parcel Ranking meetings.

Research and Conservation

Wildlife

Tissue samples of white-tailed deer, moose, and sika deer were collected as part of the Chronic Wasting Disease monitoring study. Ruffed Grouse, American Woodcock, and Mourning Dove censuses were completed.

Canada Goose leg banding was conducted in Central District and assistance was provided for sites in the Northeast District. Waterfowl breeding plots were surveyed as were waterfowl found in association with parks.

Wood Duck nesting boxes were checked and new boxes erected at various wetland sites. Donations of wood duck boxes and rough cut lumber were accepted from sportsmen and the general public.

Turkey brood reports were submitted during the 3-month study period.

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

Bluebird, Kestrel, and other cavity-nesting bird boxes were constructed and erected on WMAs. The bluebird nest box trail and sign were maintained at the High Ridge WMA.

Radio-telemetry studies were continued focusing on tracking collared deer, moose, and bear. One sow black bear retained her radio collar and was tracked to a rock den in Phillipston. Her two cubs from the previous winter had survived and denned with her. They were ear-tagged and the female yearling fitted with a telemetry collar. The sow was given a GPS collar and is being monitored jointly by the District and UMass.

Nuisance animal reports were addressed and recorded. Technical assistance was provided and site visits con-

ducted where necessary. The majority of reports related to beaver, coyote, bear, fisher, bobcat, and fox. Reports of suspected illegal activity were forwarded to the Massachusetts Environmental Police.

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

Active Osprey nests were documented at two sites in Sturbridge, both on cell towers. The known nests in Westborough and Grafton were also active. The Westborough pair continued to use a nest pole installed by District staff. Plans were formulated with the town of Oxford and National Grid to install a nest pole at a town recreation field where ospreys had shown in interest in nesting on a light tower. The pole was installed, but not until after the nesting season. New Osprey pairs were documented in Auburn (cell tower) and Sterling (former heron nest).

Fisheries

Central District staff surveyed 55 sites on streams to assess fish populations and water conditions, focusing on the Millers, Blackstone, Nashua, Quinebaug, French, and Chicopee river basins. Baseline water quality data on acidity/alkalinity, conductivity, and temperature were recorded. Additional surveys were conducted to follow up on an impacted stream in Lunenburg and at the request of the Army Corps of Engineers in Leominster.

Reported fish kills were investigated in Gardner, Lancaster, and Sterling.

District staff assisted Palmer Hatchery staff with Atlantic salmon spawning.

Sampling studies were conducted at Congamond Lake, Nashawanik Pond and Manchaug Pond to determine species composition and growth rates. A target study of northern pike and chain pickerel reproduction and growth continued at Quaboag Pond and in the Quaboag River.

The District assisted with continuing research on bass survival at Congamond Pond in Southwick.

A creel survey was initiated at Wachusett Reservoir with the assistance of DCR, Division of Water Supply Protection.

Natural Heritage and Endangered Species Program

Peregrine Falcons were present in downtown Worcester but a nest site was not located. A new nest box was installed on the Printers Building but was not used.

District personnel assisted in the annual Midwinter Bald Eagle Survey. The Bald Eagle nesting territory at Wachusett Reservoir in Boylston was active and produced two chicks. Both chicks were banded by District staff with assistance from Kurt Palmateer, Assistant Culturist at the McLaughlin Hatchery. The Quaboag Pond eagle pair also produced two young. The Lake Shirley pair produced a single chick, which was banded. A local photographer maintained a remote camera which enabled people to view the nest via the Internet. A new nest was located at Pine Hill Reservoir in Paxton. A single chick was banded in cooperation with the Worcester Water Department. Two Quabbin Reservoir nests, located in Worcester County, each produced two chicks that were banded. Three other Worcester County nests at Quabbin were either vacant or failed.

Common Loon nesting rafts were floated by DCR at Quabbin and Wachusett Reservoirs. The District compiled statewide loon nesting data for submission to the NHESP database.

Enhancement of Outdoor Recreation

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

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, school groups, youth groups, New England Fly Tyers, Trout Unlimited, and local sporting clubs.

Broodstock salmon were stocked in Comet Pond and Quinsigamond, Whalom, Wallum and Webster lakes. Salmon were obtained from the Roger Reed hatchery in Palmer, and the White River National Fish Hatchery in Bethel, Vermont.

Outreach and Education

District personnel set up the new DFW exhibit and helped staff the Eastern Fishing and Outdoor Expo at the Worcester DCU Center. The District manned the agency exhibit at the Spencer Fair, with assistance from Westborough staff.

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

A 300-seedling chestnut orchard was maintained at the District in cooperation with the American Chestnut Foundation and the DCR.

The District Manager continued to represent the agency on the Board of Trustees of the Worcester County Horticultural Society.

Technical Assistance

The District Manager attended meetings and functions of the Worcester County League of Sportsman Clubs. The District Manager, Biologists, and Technicians attended meetings with various federal, state, and local agencies and private organizations, including the U.S. Army Corps of Engineers, the Mass. DCR, the Mass. DEP, the Massachusetts Audubon Society, the Fisherville Redevelopment LLC, the Blackstone River National Heritage Corridor Commission, the American Chestnut Foundation, the Ecotarium, the MidState Trail Commit-

tee, the Wachusett Greenways, the East Quabbin Land Trust, the Northborough Trails Committee, the Central Mass. Regional Planning Commission, the Westborough Trails Committee, the Princeton Land Trust, and the Friends of the Upton State Forest.

Connecticut Valley Wildlife District

Administration

The District Manager attended regular meetings of the Hampden County Sportsmen Council, the Hampshire County League of Sportsmen, and the Franklin County League of Sportsmen. The District Manager and the District Biologists participated in various meetings with federal, state, local agencies and land trusts - focusing primarily on land acquisition, management and informational talks.

District Staff distributed hunting and fishing licenses to 60 vendors throughout the Valley District. The District Clerk sold 230 licenses and 148 stamps, 76 antlerless deer permits and 9 duplicate antlerless deer permits; 110 bear permits and 1 duplicate bear permit; and 205 turkey permits and 5duplicate turkey permits during the reporting period. There were 2,694 Quabbin 1 day fishing licenses sold, which generated $13,470. There were 1,737 Quabbin antlerless permits sold, generating $8,685.

There were 11 camping wilderness camping permits issued for the campsites at the Herman Covey WMA. Two Field Trial permits were issued for the Herman Covey WMA.

The Division's Employee Conference was held at the Connecticut Valley District Headquarters for the third consecutive year.

Research and Conservation

Wildlife

Valley District staff completed Ruffed Grouse drumming routes and line transect surveys, assisted with the resident Canada Goose survey, a the mid winter Bald Eagle survey, and the wild turkey brood survey.

Staff monitored the survival and reproduction of 17 radio-collared female bears during the reporting period. One adult female was shot during the hunting season and one was hit by a vehicle. Females were checked in their dens during February and March to determine reproductive success and first-year cub survival. Eight GPS collars were affixed to bears to monitor locations every 90 minutes. This is a cooperative study with the University of Massachusetts. Staff trapped 6 bears (3male, 3 female) during the spring and summer of 2011 to increase the sample of radio-collared female bears and to replace collars on bears missed during the den season.

UMASS graduate student Dave Wattles continues to monitor moose collared in previous years.

Staff banded 100 Canada geese at 9 sites. Staff maintained 180 wood duck nesting boxes at 48 sites. Bird and kestrel nesting were maintained at several WMAs, as well.

District Wildlife Biologist Dave Fuller is responsible for coordinating the checking of all deer, bear, turkey, and furbearers in the district. The headquarters is staffed to check all required species. In addition, the Valley has 8 deer, 7 turkey, 3 bear, and 3 furbearer check stations throughout the district. District staff manned 5 biological deer check stations during the first week of deer shotgun season, as well.

Fisheries

Due to high water and uncooperative weather patterns, survey and inventory work has been delayed but we anticipate completing the stream surveys by fall 2011.

Natural Heritage and Endangered Species

The Valley District is monitoring all breeding territories and banded all eaglets in trees we can safely climb at the Quabbin Reservoir and west to the New York line. District Biologist Fuller assisted in the midwinter eagle survey (aerial survey) at the Quabbin Reservoir and the Connecticut River

Staff banded a total of four peregrine chicks in the District, all at the UMass Library, Amherst. Staff also checked the nest at Mt. Tom in Easthampton, which produced at least two chicks, neither of which were banded.

Enhancement of Outdoor Recreation

Boundary-marking activities were conducted at the Satin's Kingdom WMA, the Green River WMA, and the Wendell WMA. District staff cleared a total 12 acres of woody invasive plants to enhance field habitat (10 acres at Southwick WMA and 6 at Herm Covey WMA). An additional 83 acres of fields were mowed to maintain grasses and forbs (25 acres at Southwick WMA, 20 at Herm Covey, 6 at Leyden WMA, and 22 acres at Southampton WMA). Existing signs and access were maintained at all Wildlife Management Areas in the Valley District.

The Bitzer, McLaughlin, Sandwich, and Sunderland hatcheries provided 118,950 trout, which were stocked into 24 lakes and 56 streams and rivers of the Conn. Valley District in fall 2010 and spring 2011. This included Eastern brook trout, brown trout, rainbow trout and tiger trout.

District staff stocked 200+ surplus brood stock salmon in Lake Mattawa (Orange), Lake Metacomet (Belchertown), Five Mile Pond (Springfield) and Lake Congamond (Southwick); the fish were from the White River Junction Federal Hatchery and the Reed Hatchery.

Four Fishing Festivals were conducted in the Valley District at Five Mile Pond in Springfield, Heritage Pond in East Longmeadow, Dean Pond in Brimfield, and at the USFWS Open House, in Hadley.

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

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

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

Outreach and Education

District Staff manned the Franklin County Fair over its 4 days of operation and provided river fish shocked at the Oxbow on the Connecticut River for its display tanks.

District staff provided a presence at the Springfield Sportsmen's Show, selling 69 licenses and 14 stamps.

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 the course work.

Public presentations were made at County League meetings. A talk on Coyotes in Massachusetts was given at the Shutesbury Town Hall and two talks on District Activities were given to the Bernardston Kiwanis and the Greenfield Kiwanis.

Jim Lafley of the Federation of Fly Fishers taught a Becoming an Outdoors-Women (BOW) class focusing on learning to tie an imitation fly and using it to catch a fish. Mr. Lafley covered materials, tools, and various types of fishing flies. Participants had the opportunity to tie at least two patterns during the class, with all materials and equipment provided.

Technical Assistance

The District Manager coordinated efforts with the Source-to-Sea Cleanup committee and participated in the cleanup by providing one of the 30 yard disposal containers. The District also located and provided GPS locations of dumped-trash sites.

Western Wildlife District

Administration

There were no personnel changes in the Western District in FY 11. We continued minor improvements to our new primary office facility in Dalton.

District staff participates in many meetings dealing with land conservation and management throughout the year. The District Manager represented the agency at public meetings dealing with PCB contamination and the future of the Housatonic River.

A contract to demolish an abandoned house on the George Darey Housatonic Wildlife Management Area was successfully executed removing an eyesore and potential safety hazard.

Research and Conservation

Wildlife

Bat counts were conducted in Western District caves and mines. The results of these surveys confirmed the devastating effects of White Nose Syndrome (WNS) on Massachusetts bats. The number of hibernating bats found was a small fraction of historical levels. Gates installed in FY 10 continue to successfully control human access to the sites.

Annual surveys for woodcock, grouse, doves, and waterfowl were conducted in cooperation with Wildlife Section biologists. Staff also cleaned, constructed, and installed nest boxes for bluebird, wood duck, and kestrel. District Wildlife Manager Tony Gola and Wildlife Technician Morris-Siegel participated in the 26th Annual Hiram Fox Bird Count. Western District personnel provided support for wildlife project leaders through game check stations, radio-telemetry monitoring, Chronic Wasting Disease monitoring, goose banding, and habitat work. Rabbit pellets were collected throughout the district and submitted for genetic analysis to identify potential and historical New England Cottontail sites.

In December and January, District staff released and pruned approximately 30 apple trees on the Savoy WMA and the Green River WMA. In both locations, formerly productive orchards were shaded and overgrown from many years without maintenance. Releasing these trees is a first step in restoring some of their historical productivity, providing important food for wildlife.

Fisheries

In FY 11, district staff began the first of 5 years of annual monitoring of fish populations in Laurel Lake in Lee. This monitoring effort is designed to assess changes in the fish community since the introduction and discovery of zebra mussels in the lake. Sampling was conducted using electro-shocking and gillnets collection gear. In addition, visual surveys and mapping of habitat features was conducted.

Fish community surveys were conducted on three ponds and 48 streams in FY 11. Survey efforts focused on small, previously-unsampled headwaters. These efforts produced 35 new records of coldwater streams as indicated by reproducing brook trout. In addition, staff surveyed fish communities at five dam removal projects throughout Berkshire County. Each project location had three sites sampled before and after barrier removal. The objective of this monitoring is to describe changes to fish communities where connectivity has been enhanced by barrier removal. Fisheries Manager Dana Ohman presented some of the preliminary results at the National Conference on Engineering and Ecohydrology for Fish Passage.

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

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

The District hosted monthly meetings of the newly formed Housatonic East Branch Partnership, a group dedicated to the promotion and enhancement of river resources.

Natural Heritage and Endangered Species Program

District Staff provided support in the form of local knowledge and biological input for the NHESP on environmental reviews and listed-species issues. The District Wildlife Manager continued his association with the New England Plant Conservation Program (NEPCOP) and supported that organization by conducting botanical surveys for rare plants. He also worked with the NHESP and the Nature Conservancy on rare turtle issues on DFW properties.

District staff participated in the Midwinter Bald Eagle Survey and assisted staff from the Connecticut Valley District in banding eagles in Sheffield and Pittsfield.

Enhancement of Outdoor Recreation

Enhancement of outdoor recreation is a primary function of the District office. Trout were stocked into 24 lakes and ponds and 56 streams and rivers to enhance recreational fishing. District staff also stocked broodstock salmon into five Western District lakes. Staff maintained open areas on five WMAs where pheasants are stocked. District staff released 4,000 pheasants onto 14 areas (including WMAs and local covers). These areas represent the best available opportunities for pheasant hunting and cover all parts of the District. Pheasant chicks were provided to two 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 staff. Staff also provided support for the DFW's special deer hunt for paraplegic hunters, which provides a unique opportunity for these hunters to participate in the hunting season. The District Supervisor and the District Biologists provided input on potential land acquisition projects, focusing on wildlife habitat and recreational opportunities. Efforts continued to mark WMA boundaries and access.

Outreach and Education

District staff participated in many activities that provide information and education about outdoor recreation and wildlife to members of the public.

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

The District Supervisor gave wildlife and fisheries presentations to Project Wild participants, the Student Conservation Association, as well as to local community and school groups. He also led an interpretive walk for the DFW's Becoming an Outdoors-Woman Program at its January event.

The District Fisheries Manager presented a talk to Trout Unlimited Taconic Chapter. Other staff participated in outreach activities at the Springfield Sportsmen's Show.

Public events were held at Stafford Hill WMA to view ongoing habitat management work and in Ashfield to dedicate the new Ashfield/Hawley WMA.

Technical Assistance

The District Clerk fielded hundreds of calls requesting technical assistance. District Staff, particularly the Clerk, District Supervisor, and District Biologists, responded to these inquiries with professionalism and expertise. The Clerk also addressed the needs of walk-in visitors, and issued permits and licenses to hundreds of sportsmen. In addition to advising members of the public, District personnel were often called upon to provide technical assistance to other agencies or user groups. The Wildlife Manager responded to numerous calls seeking advice on dealing with black bear and other wildlife species.

Because the district office is the first point of contact with the agency for the local public, staff receives numerous calls regarding wildlife in distress. Often the situation requires a site investigation. Among the incidents that required some level of physical response in FY 11 include the following: numerous injured hawks and owls, injured geese, abandoned fawns, skunks, moose problems, bear damage, bats, and fox. Among the most notable incidents included the separation of two entwined adult bald eagles, the removal of a beaver from inside a dam raceway, and the collection of abandoned bobcat kittens.

District Personnel

Northeast Wildlife District

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

Southeast Wildlife District

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

Connecticut Valley Wildlife District

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

Central Wildlife District

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

Western Wildlife District

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

WILDLIFE LANDS

Craig A. MacDonnell
Chief of Wildlife Lands

Land Acquisition

FY 11 was another very successful year for land protection. Department of Fish and Game and Division of Fisheries and Wildlife staff completed 46 projects conserving 3,037 acres at a cost of $7.91 million. Across the state, most of the transactions involved additions to existing areas, although five new Wildlife Management Areas and six new Wildlife Conservation Easements were added.

These acquisitions were well distributed around the Commonwealth. This year the Central and Western Districts contributed mightily to our efforts, together accounting for 62 % of the acreage conserved. The Northeast District also had a very good year, with almost 500 acres protected. As is agency preference, fee acquisitions dominated over the purchase of conservation restrictions. Only about 15 % of the acreage protected this year was via restriction, although several key projects utilized this conservation tool (486 acres in total). Altogether, including both easement and fee acquisitions, the Western District added 716 acres; the Connecticut Valley District added 155 acres; the Central District added 1,170 acres; the Southeast District added 499 acres; and the Northeast added 497 acres.

Fee acquisitions ranged in size from the small but important (a 4.8-acre addition to the Squannacook River WMA, a 5.2-acre addition to the Red Brook WMA, and an 8-acre addition to the Quaboag River WMA) to the substantial and concentrated (143-acre, 280-acre and 329-acre additions to the Millers River WMA). Other relatively large fee acquisitions included a 153-acre addition to the Cummington WMA, a 147-acre addition to the Haskell Swamp WMA, and a 107-acre addition to the East Mountain WMA.

Non-profit partnerships again contributed substantially to our success this fiscal year. They directly assisted on numerous acquisitions and provided valuable input on others. Direct assistance was provided by various non-profits, including The Nature Conservancy, Berkshire Natural Resources Council, Inc., Dudley Land Conservation Trust, East Quabbin Land Trust, and Wildlands Trust of Southeast Massachusetts.

Fourteen acquisitions were recorded in the Northeast District, 14 in the Central District, eight in the Western District, seven in the Southeast District, and three in the Connecticut Valley District.

All things considered, Realty staff in the field and in Boston completed another impressive year of land conservation in FY 11. Tight fiscal times again encouraged early, vigorous acquisition activity that enabled transactions to be spread out through the year's four quarters. The 3,037 acres protected in FY 11 bring the total protected acreage to just over 190,000 acres or approximately 297 square miles.

Acreage Cost, by District

Western Wildlife District	
Expended	$2,220,800.00
Acreage	715.83
Cost per acre	$3,102.41
Connecticut Valley Wildlife District	
Expended	$485,000.00
Acreage	154.70
Cost per acre	$3,135.10
Central Wildlife District	
Expended	$1,437,000.00
Acreage	1,170.42
Cost per acre	$1,227.76
Northeast Wildlife District	
Expended	$2,863,300.00
Acreage	496.79
Cost per acre	$5,763.60
Southeast Wildlife District	
Expended	$907,600.00
Acreage	499.53
Cost per acre	$1,816.90
Total Expended	$7,913,700.00
Total Acreage Conserved (Fee & Easement)	3,037
Average Cost per Acre	$2,605
Total Acreage Purchased (Fee Only)	2,551
Average Cost per Acre	$2,936

These acreage figures and costs are for properties acquired with FY11 funds and recorded on or before June 30, 2011. Ancillary costs, such as appraisals, surveys, title examinations, and other related transaction expenses are not included.

Western Wildlife District

The Western District completed eight acquisitions in FY 11 and protected a total of 716 acres at a cost of $2,220,800. The most notable conservation effort in this district was the completion of the first two (of three) phases of the acquisition of Maple Hill Farm in West Stockbridge, a long-sought target for protection. These transactions conserved 290 acres of magnificent

fish and wildlife habitat, including a pristine pond and wetland complex that will be known as the Flat Brook WMA. The third phase, which will be completed no later than FY 13, contains another 220 acres of upland that would double the size of the nearby Maple Hill WMA. Berkshire Natural Resources Council was an invaluable partner on this project and brought significant private funding to the table.

Other significant acquisitions included a 153-acre addition to the Cummington WMA, an 80-acre addition to the Hinsdale Flats WMA, and a 67-acre addition to the Peru WMA.

The Western District now has over 57,000 acres under conservation management and control.

Connecticut Valley Wildlife District

The Valley District completed three projects in FY11 and protected a total of 155 acres at a cost of $485,000. The featured project in this district was the acquisition of 26 acres in Ware along the Ware River, including 2,400 feet of frontage along the western bank that contains habitat for five rare species. This land will provide much-needed access to a section of the river not easily reached. The East Quabbin Land Trust was a helpful partner on this project, which also resulted in the removal of two small cabins and several outbuildings along the river.

The Valley District now has over 23,000 acres under conservation management and control.

Central Wildlife District

The Central District had another excellent year of land conservation, completing 14 acquisitions. A total of 1,170 acres were protected in eleven municipalities at a cost of $1,437,000. As is preferred, a majority of the acreage protected in this district was via fee acquisition. Key projects included multiple additions to the Millers River WMA (four projects totaling over 760 acres) and Muddy Brook WMA (four projects conserving over 100 acres).

The most newsworthy conservation effort among these projects was an assemblage of several parcels in the Lake Jones Focus Area in Winchendon. Building off the acquisition of the 110-acre Shaw parcel in 2010, we added the 82-acre Hunt Pasture and the 61-acre Kennedy Lot in FY 11, both of which provide substantial protection to the rare and intact wetland/level bog/pond complex encompassing Lake Jones and Lake Sal. Later in the year we added 280 acres of land between and among the prior three acquisitions, making for a 533 contiguous-acre addition to the Millers River WMA over the past two fiscal years.

The Central District now has over 43,500 acres under conservation management and control.

Northeast Wildlife District

The Northeast District is a challenging area due to land fragmentation and high property values. Despite this relative difficulty, the Northeast District enjoyed another outstanding year of land conservation progress, completing 14 projects and protecting nearly 500 acres of land in seven different municipalities at a cost of $2,863,300.

Although not the largest project in the Northeast District, the 24.5-acre Scotland Road purchase in Newbury was clearly one of the most satisfying because it protected a key piece of land that was slated for intensive development. At risk was a parcel bounded on three sides by the 1,657-acre Martin Burns WMA. With the financial support of the Essex County Greenbelt Association and a very generous local sportsman, the DFG acquired the land and secured this virtual inholding from a residential development that would have precluded hunting on a significant portion of the WMA. Both bond capital and land stamp funding were also utilized for this important acquisition.

The Northeast District now has 15,250 acres under conservation management and control.

Southeast Wildlife District

The Southeast District completed seven land conservation projects in FY11 involving a total of 500 acres in six towns at a cost of $907,600.

In this district, our land agent happily concluded a 147-acre project that has been in negotiation for over ten years. As a result of the purchase of this landowner's multiple parcels, which includes a tract of pristine Atlantic White Cedar swamp, the Haskell Swamp WMA is now over 3,000 acres. Visitors to this area will enjoy the cathedral aspect of this new acreage and may hear the call of a barred owl. The Haskell Swamp WMA has nearly doubled in size since the initial acquisition of the Acushnet Saw Mill Company in 1997, with later acquisitions coming from 14 different landowners.

The Southeast District now has over 50,100 acres under conservation management and control.

Land Agents

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

Land Inventory

Western Wildlife District	Acres
Wildlife Management Areas (33)	
Agawam Lake	779.8
Ashley-Hawley	278.0
Becket	239.6
Chalet	7,093.0
Cummington	378.73
Day Mountain	382.4
Dolomite Ledges	120.46
Eugene Moran	1,669.9
Farmington River	1,760.3
Fisk Meadows	1,145.2
Flat Brook WMA	290
Fox Den	4,723.6
Green River	489.2
Hancock	491.5
Hinsdale Flats	1,554.3
Hiram H. Fox (ex Canada Hill)	3,766.96
Hop Brook	424.8
Housatonic Valley	817.9
Hubbard Brook	58.4
John J. Kelly	267.0
Jug End (held jointly with DCR)	1,233.8
Knightville	721.0
Lilly Pond	349.7
Maple Hill	370.1
Mount Tekoa	1,422.0
Otis	83.5
Peru (with Tracy Pd.)	5,434.92
Powell Brook	402.6
Savoy	1,603.8
Stafford Hill	1,591.6
Taconic Mountain	157.3
Three Mile Pond	1,141.8
Walnut Hill	867.00
Total	**42,194.37**
Wildlife Conservation Easements (14)	
Alford Spring	784.0
Ashfield	101.0
Blanford	986.0
Chesterfield	491.0
Dalton Fire District	2,754.0
Huntington	78.0
Jug End Fen WCE	81.5
Mount Plantain	1,337.4
Mt. Darby WCE	319.29
New Marlborough	239.0
Sandisfield	692.0
Tyringham	1,136.0
Westfield Watershed	2,300.0
Wright/Mica Mill	1,782.00
Total	**13,038.19**
River Access (7)	
Farmington	4.1
Green River (Egremont)	21.5
Hoosic River	5.9
Housatonic River	146.5
Konkopot River	8.8
Westfield River (W)	800.0
Williams River	35.0
Total	**1,021.8**
Wildlife Sanctuaries (2)	
E. Howe Forbush	268.0
Grace A. Robson	69.5
Total	**337.5**
Wildlife District (1)	
District Headquarters	**2.1**
Natural Heritage Areas (9)	
Bullock Ledge	15.5
Dolomite Ledges	164.9
Fairfield Brook	203.3
Hawley	532.7
Jug End Fen	38.8
Kampoosa Fen	72.0
Lanesboro	88.6
Nordeen Marsh	22.9
Rowe	36.40
Total	**1,170.1**
Total Western Wildlife District	**57,764.06**

Connecticut Valley Wildlife District	Acres
Wildlife Management Areas (31)	
Brewer Brook	214
Catamount	413.0
Coy Hill (V)	211.6
East Mountain	454.9
Facing Rock	1,556.1
Herman Covey**	1,521.5
Honey Pot/Westfield	227.0
Lake Warner	94.8
Leadmine (V)	344.0
Leyden	759.0
Millers River (V)	65.84
Montague	1,815.9
Montague Plains	1,504.8
Mount Esther	191.0
Mount Toby	379.5
Orange	1,605.2
Palmer	1,052.32
Pauchaug Brook*	161.3
Poland Brook	679.4
Satan's Kingdom	2,044.8
Shattuck Brook	178.8
Southampton	170.6
Southwick	264
Tully Mountain	1,187.4
Tully River (V)	59.0
Wales	207.1
Warwick	379.0
Wendell	585.7
Whately	380.7
Whately Great Swamp	445.6
Williamsburg	88.00
Total	**19,242.11**

*Combination-Hatchery (McLaughlin), WMA, and District HQ
**WMA and Connecticut River Access

Wildlife Conservation Easements (3)

Amherst/Pelham ALA	36.9
Ludlow Reservoir	1,750.0
North Quabbin CRs	
New Salem	59.0
Tully River	250.0
Tully Mountain	72.87
Total	**2,168.77**

Islands (Connecticut River; 2)

Shepherd's Island	15.0
Sunderland Islands (2)	9.0
Total	**24.0**

Fish Hatcheries (4)

Bitzer	150.6
McLaughlin (within Herman Covey WMA)	
Reed	301.0
Sunderland	47.7
Total	**499.3**

Game Farm (1)

Wilbraham (DFG easement over town fee)	**137.2**

River Access (9)

Connecticut River	94.8
Deerfield River	20.5
Green River (V)	199.45
Mill River	23.0
Sawmill River	52.0
Sibley Brook	13.4
Tully Brook	154.9
Ware River (V)	39.0
Westfield River (V)	76.80
Total	**648.85**

Pond Access (4)

Little Alum Pond	0.5
Lake Lorraine (OFBA)	0.3
Lake Rohunta	2.5
Packard Pond	0.5
Total	**3.8**

Fisheries & Wildlife Areas (1)

Whately Ponds	**85.6**

Natural Heritage Areas (5)

Rainbow Beach	30.9
Mt. Toby Highlands NHA	100.0
Mt. Tom	72.7
Darwin Scott Memorial	27.3
Honey Pot NHA	234.1
Total	**465.0**

Total Connecticut Valley Wildlife District	**23,299.63**

Central Wildlife District	**Acres**

Wildlife Management Areas (43)

Ashby	48.5
Bennett	281.2
Birch Hill	4,122.4
Bolton Flats	1,542.15
Breakneck Brook	1,409.0
Coy Hill	654.2
E. Kent Swift	200.5
Fish Brook	221.0
Fitchburg	40.0
Four Chimneys	200.0
High Ridge*	2,348.5
Hitchcock Mountain	32.0
Lackey Pond	150.5
Lawrence Brook	1,051.5
Leadmine (C)	482.0
Martha B. Deering	272.4
McKinstry Brook	348.3
Merrill Pond (System)	803.0
Millers River (C)	4,407.7
Moose Brook	754.3
Moose Hill	567.1
Muddy Brook	1,845.6
North Brookfield	102.6
Oakham	730.2
Palmer	208.0
Phillipston	3,615.2
Popple Camp	1,161.0
Poutwater Pond (ex North Street)	378.71
Prince River	749.0
Quaboag River	1,886.15
Quacumquasit	179.9
Quisset	635.0
Raccoon Hill	645.5
Richardson	467.2
Savage Hill	1,165.0
Thayer Pond	131.0
Tully Mountain	119.5
Tully River(C)	9.0
Ware River(C)	291.4
Westboro	894.6
Winimusett	670.1
Wolf Swamp	1,048.50
Total	**36,703.86**

* Management and control by DFW: 1,673.7 acres;
DFW owned in fee: 282.0 acres

Wildlife Conservation Easements (16)

Burnshirt River	5.64
Carter Pond	280.0
Dudley	73.92
Fitchburg Watershed	1,197.6
Hitchcock Mountain	610.0
Hunting Hills	53.7
Leadmine Mountain	826.0
Moose Brook	125.0
Nineteenth Hill	623.9
North Quabbin CRs	
Phillipston (Secret Lake)	212.0
Quabbin Corridor	99.3
Tully River	6.6
Northboro Forest Area	19.12
Quabbin	28.0
Quabbin Corridor (MGLCT/Wilson)	99.3
Stillwater River	29.0
Templeton	100.0
Wekepeke	564.00
Total	**4,853.74**

Wildlife Sanctuaries (2)	
Susan B. Minns	140.0
Watatic Mountain	100.0
Total	**240.0**
River Access Areas (5)	
Blackstone/West River	28.0
Five Mile River (17 acres are easement)	195.5
Natty Brook	95.2
Quinapoxet River	32.0
Seven Mile River	77.0
Total	**427.7**
Natural Heritage Areas (4)	
Chockalog Swamp	52.5
Clinton Bluff NHA	42.0
Podunk Marsh	15.0
Quag Pond Bog	31.0
Total	**140.5**
Marshes (1)	
Quinsigamond Marsh	**59.0**
Pond Access (6)	
Cusky Pond	23.75
Fisherville Pond	1.6
Glen Echo Lake	1.0
Mossy Pond	16.1
South Meadow Pond	0.25
Sputtermill Pond	58.5
Total	**101.2**
Forest (2)	
Hamilton	70.0
Northboro	88.80
Total	**158.80**
Total Central Wildlife District	**43,681.30**

Northeast Wildlife District	**Acres**
Wildlife Management Areas (13)	
Ashby	1,028.4
Crane Pond	2,256.1
Dunstable Brook	131.6
Hauk Swamp	6.0
Hunting Hills*	452.92
Martin H. Burns	1,682.0
Mulpus Brook	353.46
Nissitissit River	383.19
Pantry Brook	410.9
Salisbury Marsh	658.8
Squannacook River**	1,584.1
Townsend Hill	366.59
William Forward	2,122.50
Total	**11,457.96**

* Includes 53.7-acre easement in CWD

** 21 acres owned by DCR

Wildlife Conservation Easements (10)	
Ashby	148.0
Fitchburg Watershed	677.4
Groton	127.0
Martin H. Burns	26.74
Mill Creek	59.0
Newbury Common Pasture	46.7
Pepperell Springs	255.0
Surrenden Farms	159.7
Throne Hill	177.5
Great Swamp Brook	106.00
Total	**1,783.04**
Wildlife Sanctuaries (5)	
Carr Island	110.5
Egg Rock	2.0
J.C. Phillips	391.0
Milk Island	29.0
Ram Island	20.0
Total	**552.5**
Game Farm (1)	
Ayer	**111.9**
Wildlife District (1)	
District Headquarters	**1.9**
Fisheries & Wildlife Area (1)	
Flint Pond	81.9
Flagg Swamp	54.0
Total	**135.9**
Forest (2)	
Acton	36.0
Townsend	60.0
Total	**96.0**
Pond Access (4)	
Knops Pond	0.6
Mascopic Lake	0.3
Baddacook Pond	0.2
Long Sought For Pond	1.0
Total	**2.1**
Salt Marsh (1)	
North Shore	**407.7**
River Access (7)	
Concord River	23.6
Ipswich River	1.8
Nashua River	68.5
Sucker Brook	12.0
Sudbury River (held jointly with DCR)	139.1
Trapfall Brook	45.4
Weymouth Back River	16.4
Total	**306.8**
Natural Heritage Areas (4)	
Boxboro Station	124.2
Eagle Island	5.0
Elbow Meadow	210.3
Hauk Swamp	55.0
Total	**394.5**
Total Northeast Wildlife District	**15,250.3**

Southeast Wildlife District	**Acres**
Wildlife Management Areas (24)	
Black Brook	388.55
Burrage Pond	1,969.7
Cook's Pond	15.63
Copicut	3,874.1
Church Homestead	163.0
Dartmoor Farms	473.0
Erwin Wilder	450.0
Frances A. Crane	1,912.8
Freetown Swamp	337.0
Gosnold	3.5
Halfway Pond	28.6
Haskell Swamp	3,069.9
Hockomock Swamp	4,454.5
Hyannis Ponds	357.0
Maple Springs	129.2
Meetinghouse Swamp	109.0
Noquochoke	204.6
Peterson Swamp	250.0
Purchade Brook	120.0
Red Brook	654.2
Rochester	70.0
Rocky Gutter	3,054.7
Taunton River	409.0
West Meadows	227.90
Total	**22,725.88**
Wildlife Conservation Easements (15)	
Acushnet River	30.2
Agawam River	4.0
Angeline Brook	50.7
Barnes Swamp	174.0
Billington Sea	69.7
Brandt Island Cove	109.5
Camp Cachalot	789.0
Fall River (co-held with DCR)	4,300.0
Forbes Swamp	390.14
New Bedford Water Supply	3,065.0
Pickerel Cove	78.3
Plymouth County	52.7
Plymouth Pine Hills	188.0
Plymouth Town Forest	296.0
Santuit Pond	293.00
Total	**9,890.24**
Wildlife Sanctuaries (4)	
Billingsgate Island	0.5
Penikese Island	60.0
Ram Island	2.0
Tarpaulin Cove	4.5
Total	**67.0**
Wildlife District (1)	
District Headquarters	**29.8**
Fish Hatcheries (1)	
Sandwich	**35.0**
Game Farm (1)	
Sandwich	**133.00**
Salt Marsh (6)	
Brayton Point	2.2
Chase Garden Creek	56.4
Eastham	7.4
English	191.5
Fox Island	87.1
South Shore	22.4
Total	**367.0**
River Access (7)	
Bread & Cheese Brook	5.2
Canoe River	116.6
Childs River	0.2
Mashpee River	56.5
Nemasket River	0.5
Quashnet River (360 acres held jointly with DCR)	426.0
Taunton River	8.9
Total	**613.9**
Pond/Coastal Access (13)	
Agawam Mill Pond	1.7
Bakers Pond	1.7
Bearse Pond	5.8
Clapps Pond	68.4
Cooks Pond	3.0
Dogfish Bar Beach (PAB)	2.4
Lake Snipatuit	0.5
Robbins Pond	1.0
Sandy Point	0.2
Scorton Creek	5.5
Spectacle Pond	0.5
Triangle Pond	81.9
Wakeby Pond	15.9
Total	**188.5**
Military Lands (7)	
Dillingham Lot	37.0
Fisk Forestdale Lot	117.0
Hog Pond Lot	26.2
Lawrence Pond lot	10.0
Mashpee Pond Lot	25.0
Poponesset Beach	2.0
Springhill Lot	7.0
Total	**224.2**
Hatchery Lands (2)	
N. Attleboro Hatchery	36.5
E. Sandwich Hatchery	20.55
Total	**57.05**
Mass. Military Reservation (MMR)	**15,000.0**
Fisheries & Wildlife Area (3)	
Muddy Pond	72.0
Provincetown Rte.6 Corridor	122.0
South Barrier Beach (Leland)	99.5
Total	**293.5**
Natural Heritage Areas (11)	
Grassy Pond	59.4
Grassy Pond (Dennis)	7.2
Harlow/Cooks Pond	53.6
Head of the Plains	2.0
Katama Plains	18.5

Mashpee Pine Barrens	193.2
Miacomet Heath	3.8
Olivers Pond	12.0
Sly Pond	192.0
South Triangle Pond	10.3
Thad Ellis	1.5
Total	**558.4**
Total Southeast Wildlife District	**50,183.47**

Total Massachusetts Wildlife Lands Acreage, by Area Type

	Acres
Wildlife Management Areas (144)	133,320.68
Wildlife Sanctuaries (13)	1,197.0
Fish Hatcheries (5)	534.30
Game Farms (3)	382.1
River Access (35)	3,044.05
Salt Marsh (7)	774.7
Lake, Pond, and Coastal Access (27)	295.6
Fisheries & Wildlife Areas (6)	515.0
Natural Heritage Areas (33)	2,728.5
Conservation Easements* (59)	31,733.98
Mass. Military Reservation (1)	15,000.0
Other	652.85
Grand Total Massachusetts Wildlife Lands Acreage	**190,178.76**

*Some acreage included in WMAs

FEDERAL AID PROGRAM ADMINISTRATION

Kris McCarthy
Federal Aid Coordinator

Project Objectives

To implement the DFW's Federal Aid program, acting through the Deputy Director for Administration, including overview of documentation, reporting, compliance with acts and regulations, and other requirements for administration of federal grants, as well as to serve as liaison between the grantee and the Region 5 office of the U.S. Fish and Wildlife Service (USFWS) grant administrator for the U.S. Department of the Interior (DOI).

Federal Aid in Wildlife Restoration (Pittman-Robertson)

The DFW apportionment of Federal Aid in Wildlife Restoration funds, $3,901,164, was a decrease from 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 $3,646,948 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 $547,042.20 (15%); and the balance of $3,099,905.80 was equally divided between the Division of Marine Fisheries and the DFW ($1,549,952.90 each).

Eleven projects were obligated with the OFBA and DFW shares of the Dingell-Johnson and Wallop-Breaux funds. The OFBA, in cooperation with the DFW, had nine boat accommodation grants active in FY 11, while the DFW had four grants of its own. DFW activities reimbursed under the Sport Fish Restoration Program include aquatic resources education, program coordination, hatchery operations, hatchery maintenance, fish distribution, and anadromous fish coordination and technical assistance.

State Wildlife Grant Program (SWG)

The DFW's FY 11 State Wildlife Grant apportionment of $685,449 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 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 $1,000,000 through the national State Wildlife Grant Competitive program to implement the Rangewide New England Cottontail Initiative (NEC). Massachusetts' share of the funds ($308,975) will be used to restore New England Cottontail habitat in Massachusetts. The Competitive State Wildlife Grant funds are in addition to the funds awarded in FY 10. Implementation of the NEC program will continue into future fiscal years.

The Endangered Species Act (Section 6)

DFW's apportionment of $62,000 was an increase from the previous year's apportionment. Funds will be used to reimburse the Federally-listed Plant Monitoring and Management Project and Piping Plover Monitoring, Management, and Research.

Near the close of FY 11, the DFW was awarded $15,600 under the USFWS White-nose Syndrome Funding Opportunity to acquire materials used to initiate long-term summer bat surveys. Funds will be used in FY 12.

Landowner Incentive Program (LIP)

The federal government did not fund the LIP in FY 11; 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.

The DFW used prior funding to complete the implement the FY 10 projects. In FY 07, the DFW had received a combined award of $1,029,510 under this highly-competitive program; that amount 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, was used for program implementation. For more detailed information relating to the DFW's FY 11 activities under the LIP, please see page 40.

Chronic Wasting Disease (CWD) Surveillance and Management

In FY 11, the DFW received $70,000 in federal assistance through the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service, Veterinary Services for CWD Surveillance and Management. The CWD funds are used to fund the DFW's CWD Surveillance and Management Program. For more information relating to DFW's activities under the CWD Surveillance and Management Program, please see page 32.

Environmental Protection Agency

In FY 11, the DFW was successfully awarded $280,000 through the competitive Wetland Program Development grant program for the development and implementation of a vernal pool and rare species information system. Implementation of the project will continue into future fiscal years.

Audits

The office of the State Auditor conducts a state audit of the DFW Federal Aid Program once every 2 years and the U.S. DOI, Office of Inspector General, conducts a federal audit of the program once every 5 years. No audits were active in FY 11.

Other Matters

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

Project Personnel

Kris McCarthy, *Federal Aid Coordinator*

Jessica Lane, *Assistant to the Federal Aid Coordinator*
Debbie McGrath, *Federal Aid Bookkeeper*

MAINTENANCE & DEVELOPMENT

Gary Zima
Senior Planner

Maintenance and development projects enable the Division to address numerous upgrades and improvements at our properties statewide. The following highlights are projects completed in FY 11 at the Westborough Field Headquarters Complex.

Priority infrastructure projects for FY 11 saw two projects completed, the first was the replacement of carpeting in the Natural Heritage and Endangered Species Section of Building A that was ruined earlier by water issues. Secondly, our continued effort to maintain our sewer line was also addressed by a visual inspection and jetting to clean problem sections to our line. A third project was a safety upgrade that replaced one of the main electric service poles to the Field Headquarters Complex. The original pole was warped and placing additional stress on the lines.

Major equipment purchases at the Westborough Field Headquarters included a replacement chainsaw and lawn mower. An upright freezer unit was acquired and installed in the Wildlife garage bay. Assistance was also provided to our Central Wildlife District in the purchase of a diesel tractor with attached boom mower.

One category of FY 11 equipment that is noteworthy is vehicles. The Division was unable to acquire new vehicles again this year. However, one vehicle was replaced with a trade-in from the state auction lot.

Maintenance & Development Staff

Gary Zima, *Senior Planner*

Bruce Walker, *Wildlife Tecnician*

LEGISLATIVE REPORT

Jack Buckley
Deputy Director & Legislative Liaison

During FY 11, there were no legislative actions that had an impact on fish and wildlife in the Commonwealth.

PERSONNEL REPORT

Peter Burke
Personnel Officer

New Hires - Permanent

Name	Title	Date of Hire	Comments
Paulson, David J.	Conservation Biologist I	10/17/2010	
Mazzei, Benjamin	Game Biologist II	1/28/2011	From Contract Postion
Silva, Debra A.	Clerk III	4/24/2011	
Kielbasa, Christopher	Wildlife Technician I	5/22/2011	
Kendall, Joseph E	Wildlife Technician I	5/29/2011	
Nye, Timothy L.	Wildlife Technician I	6/5/2011	
Slade, Shasta M.	Wildlife Technician I	6/5/2011	
Ingalls, Susan E.	Wildlife Technician I	6/11/2011	

New Hires - Contractors

Name	Title	Date of Hire	Comments
Rempel, Jessica A.	Scientist	10/13/2010	
McDermott, Derek R.	Contracted Seasonal Employee	4/17/2011	
Johnson, Jason L.	Contracted Seasonal Employee	4/17/2011	
McCollum, Arthur B	Contracted Seasonal Employee	4/17/2011	
Pszybysz, Tara	Contracted Seasonal Employee	4/24/2011	
Mercer, Owen W.	Contracted Seasonal Employee	4/24/2011	
Perlot, Nicole L.	Contracted Seasonal Employee	4/24/2011	
Sawyers, Michael S.	Scientist	4/24/2011	

Terminations - Permanent

Name	Title	Date of Hire	Comments
Gieder, Thomas	Wildlife Technician I	11/8/2010	Resigned
MacAdams, Priscilla	Clerk III	01/20/2011	Retired
Sienczyk, Elizabeth	Admin. Services Coordinator	1/24/2011	Post-retirement Termin.
Cooke, Laura L.	Administrative Assistant II	5/21/2011	Resigned
Horwitz, Eleanor	Program Manager V	6/13/2011	Retired
Meagher, Kerry	Program Coordinator II	6/18/2011	Terminated
Woolsey, Henry	Conservation Biologist IV	6/30/2011	Retired

Terminations - Contractors

Name	Title	Date of Hire	Comments
Nunzuanto, Michael	Contracted Seasonal Employee	7/17/2010	
Prior, Timothy	Contracted Seasonal Employee	7/17/2010	
Takaki, Norio	Contracted Seasonal Employee	7/17/2010	
Hamilton-Smith, Nicole	Researcher	8/13/2010	
Johnson, Jason L.	Contracted Seasonal Employee	10/2/2010	
Leon, Bennet	Contracted Seasonal Employee	10/2/2010	
McDermott, Derek	Contracted Seasonal Employee	10/2/2010	
Ausmus, Kim	Administrative Assistant	10/30/2010	
Mazzei, Benjamin	Planner	1/16/2011	Transfer to Perm. Position
Holt, Emily	Researcher	4/23/2011	

Promotions

Name	Title	Date of Hire	Comments
Critchlow, David	Wildlife Technician II	7/4/2010	From Wildlife Technician I
Ostrowski, Andrew	Wildlife Technician II	7/4/2010	From Wildlife Technician I
Coughlin, Mark	Wildlife Technician II	10/10/2010	From Wildlife Technician I
Sadler, Heather	Wildlife Technician II	10/10/2010	From Wildlife Technician I

Reallocations

Name	Title	Date of Hire	Comments
Plett, Kathleen	Program Coordinator II	7/17/2010	From Prog. Coordinator I
Cavaliere, Mary	Program Coordinator I	2/28/2011	From Accountant II

Transfers

Name	Title	Date of Hire	Comments
Manty, Debra L.	Clerk III	3/20/2011	From Hunter Safety to Central District

Work Hours Changes

Name	Title	Date of Hire	Comments
Sienczyk, Elizabeth	Admin Services Coordinator	8/1/2010	8.00 hrs to 3.75 hrs, left position 01/21/2011
Marold, Misty Anne	Conservation Biologist III	8/10/2010	40.00 hrs to 24.00 hrs
Huguenin, Tara	Conservation Biologist II	9/12/2010	30.00 hrs to 32.00 hrs
Marold, Misty-Anne	Conservation Biologist III	10/14/2010	24.00 hrs to 30.00 hrs
Black, Kristin	Conservation Biologist III	11/18/2010	24.00 hrs to 30.00 hrs
Haggerty, Sarah	Conservation Biologist III	11/18/2010	24.00 hrs to 28.00 hrs
Veinotte, Amanda	Program Coordinator I	1/2/2011	40.00 hrs to 24.00 hrs
Huguenin, Tara	Conservation Biologist II	2/14/2011	32.00 hrs to 35.00 hrs
Cavaliere, Mary	Accountant II	2/27/2011	28.50 hrs to 37.50 hrs
Haggerty, Sarah	Conservation Biologist III	3/13/2011	28.00 hrs to 32.00 hrs
Veinotte, Amanda	Program Coordinator I	2/27/2011	24.00 hrs to 27.00 hrs
Black, Kristin	Conservation Biologist III	4/10/2011	30.00 hrs to 34.00 hrs
Moruzzi, Trina	Game Biologist II	6/19/2011	32.00 hrs to 40.00 hrs
Connolly, Bryan	Conservation Biologist III	6/27/2011	40.00 hrs to 24.00 hrs

Paid Work Out of Grade

Name	Title	Date of Hire	Comments
Plett, Kathleen	Program Coordinator II	7/1/2010	Made perm. 07/17/2010

Leave of Absence

Name	Title	Date of Hire	Comments
Marold, Misty-Anne	Conservation Biologist III	12/3/2009	returned 08/15/2010 Maternity
Veinotte, Amanda	Program Coordinator I	7/7/2010	returned 10/11/2010 Maternity
McAlice, Bridget	Game Biologist II	6/5/2010	Maternity
Dewkett, Nancy	Wildlife Technician II	5/22/2011	Industrial Accident

Part-time Employees

Name	Title	Date of Hire	Comments
Connolly, Bryan	Conservation Biologist III	24.00 HRS	
Black, Kristin	Conservation Biologist III	30.00 HRS	
Durand, Jill	Clerk III	22.50 HRS	
Gabriel, Marea	Conservation Biologist III	32.00 HRS	
Haggerty, Sarah	Conservation Biologist III	32.00 HRS	
Hew, Lillian	Accountant I	6.25 HRS	
Huguenin, Tara	Conservation Biologist II	30.00 HRS	
Marold, Misty-Anne	Conservation Biologist III	30.00 HRS	
Schluter, Everose	Conservation Biologist III	30.00 HRS	
Veinotte, Amanda	Program Coordinator I	34.00 HRS	

FINANCIAL REPORT

Administrative Staff
Jessica Patalano, *Chief Financial Officer*

Procurement and Payables
Yunus Khalifa, *Purchasing Coordinator*
Kathleen Plett, *Contract Coordinator*
Gail Gibson
Lillian Hew
Betty Sienczyk (part-year)

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

Permits
Robert Arini

Information Technology
Rick Kennedy
Robert Morley
James Pollock
David Szczebak

How the Sportsmen's Dollar Was Spent

Inland Fish and Game Fund

July 1, 2010 to June 30, 2011

PROGRAMS/ASSESSMENTS	EXPENDITURES	PERCENTAGES
Administration:		
Administration	$1,376,994	
Information-Education	$859,773	19%
Total	**$2,236,767**	
Fisheries and Wildlife Programs:		
Hatcheries	$1,760,042	
Game Bird Program	$454,543	
Seasonals	$55,068	53%
Cooperative Units	$100,680	
Fisheries and Wildlife Management	$3,947,059	
Total	**$6,317,392**	
Other Programs:		
Land Acquisitions	$987,943	
Waterfowl Management Program	$45,000	12%
Hunter Safety Program	$364,958	
Total	**$1,397,900**	
Other Assessments:		
Payroll Taxes	$116,421	
Group Insurance and Other Fringe Benefits	$1,938,881	17%
Total	**$2,055,302**	
TOTAL EXPENDITURES	**$12,007,361**	

Summary
Revenues, Expenditures and Fund Equity
Natural Heritage & Endangered Species Fund
July 1, 2010 to June 30, 2011

REVENUES	
Natural Heritage and Endangered Species Tax Checkoff Donations	$220,575
Sales	$18,491
Federal Aid Reimbursements	$1,158,022
Massachusetts Endangered Species Act Fees	$445,015
Contracts	$382,324
Direct Donations	$57,888
Interest	$786
TOTAL REVENUES:	***$2,283,100***
*EXPENDITURES	
Natural Heritage and Endangered Species Program	$1,487,746
Tern Restoration	$134,141
Wildlife Habitat Incentive Program	$23,085
State Wildlife Grant Program	$20,892
Housatonic Natural Resource Damages	$27,772
TOTAL EXPENDITURES:	***$1,693,636***
TOTAL FUND EQUITY:	***$666,465***

**100% of total expenditures charged to Natural Heritage Fund for FY2011.*

Other Funds and Programs
Expenditures Division Wide
July 1, 2010 to June 30, 2011

CAPITAL OUTLAY FUNDS:	
Land Protection - Habitat Management	$33,037
BioMap II	$89,511
Staffing for Land and Infrastructure Programs	$367,309
Hatchery/District/Westborough Field Headquarters Repairs	$71,868
Conservation Restriction Stewardship	$59,980
Bird Island Reconstruction	$100,000
TOTAL CAPITAL EXPENDITURES	***$561,725***
INTERDEPARTMENTAL SERVICE AGREEMENTS:	
Department of Environmental Protection	
Charles George Land Trust	$123,160
Massachusetts Highway Department	
Accelerated Bridge Program	$55,891
Department of Conservation and Recreation	
Middlesex Fells Survey	$12,781
Division of Capital Asset Management	
Facilities Maintenance & Management	$17,800
TOTAL ISA EXPENDITURES	***$209,632***
Federal Grant Accounts:	
Landowner Incentive Program Tier 1	$16,025
Landowner Incentive Program Tier 2	$47,875
Chronic Wasting Disease	$68,143
New England Cottontail	$18,882
TOTAL FEDERAL EXPENDITURES	***$150,925***
OTHER TRUST ACCOUNTS:	
Upland Sandpiper	$9,088
TOTAL OTHER TRUST EXPENDITURES	***$9,088***

Summary
Revenue and Fund Equity
Inland Fish and Game Fund
July 1, 2010 to June 30, 2011

DEPARTMENTAL REVENUES:	
Fishing,Hunting, and Trapping Licenses	$4,826,611
Archery Stamps	$152,708
Primitive Firearm Stamps	$167,678
Waterfowl Stamps	$61,898
Wildlands Stamps	$926,180
Trap Registrations	$1,970
Antlerless Deer Permits	$170,885
Bear Permits	$36,340
Turkey Permits	$90,238
Special Licenses,Tags and Posters	$46,613
Magazine Subscriptions	$110,868
Sales,Other	$-
Fines and Penalties	$119,701
Rents	$469,879
Prior Year Refunds	$-
Donations	$15,938
Miscellaneous Income	$1,905
PAC	$23,776
NSF Charge/Debt. Collection	$380
Total	**$7,223,566**
FEDERAL AID REIMBURSEMENTS;	
Dingell-Johnson (Fisheries)	$1,176,143
Pittman-Robertson (Wildlife)	$3,060,237
Total	**$4,236,380**
TAXES;	
Gasoline Tax Apportionment	$871,353
OTHER FINANCIAL SOURCES;	
Reimbursement for Half-Price Licenses	$137,805
Investment Earnings	$3,176
Total	**$140,981**
TOTAL REVENUE	***$12,472,280***
FUND EQUITY AS OF JUNE 30, 2011	**$17,809,174**

License and Stamp Sales

July 1, 2010 to June 30, 2011

Code	Type of License	Unit Cost	Quantity	Amount
F1	Resident Citizen Fishing	22.50	104,198	$2,344,455
F2	Resident Citizen Minor Fishing	6.50	4,806	$31,239
F3	Resident Citizen Fishing (Age 65-69)	11.25	5,808	$65,340
F4	Resident Cit. Fishing (Over 70, etc.)	FREE	12,195	$-
F6	Non-Res. Citizen/Alien Fishing	32.50	8,011	$260,358
F7	Non-Res. Citizen/Alien Fishing (3 day)	18.50	2,190	$40,515
F8	Resident Fishing (3 day)	7.50	1,308	$9,810
F9	Non-Resident (Citizen) Minor Fishing	6.50	283	$1,840
DF	Duplicate Fishing	2.50	304	$760
	Quabbin 1-Day Fishing	5.00	3,430	$17,150
T1	Resident Citizen Trapping	30.50	375	$11,438
T2	Resident Citizen Minor Trapping	6.50	16	$104
T3	Resident Citizen Trapping (Age 65-69)	15.25	16	$244
DT	Duplicate Trapping	2.50	6	$15
H1	Resident Citizen Hunting	22.50	18,154	$408,465
H2	Resident Citizen Hunting (Age 65-69)	11.25	873	$9,821
H3	Resident Citizen Hunting (Paraplegics)	FREE	212	$-
H4	Resident Alien Hunting	22.50	51	$1,148
H5	Non-Res. Cit./Alien Hunting (Big Game)	94.50	2,459	$232,376
H6	Non-Res. Cit./Alien Hunting (Sm. Game)	60.50	915	$55,358
H8	Resident (Citizen) Minor Hunting	6.50	722	$4,693
DH	Duplicate Hunting	2.50	259	$648
S1	Resident Citizen Sporting	40.00	31,912	$1,276,480
S2	Resident Citizen Sporting (Age 65-69)	20.00	3,120	$62,400
S3	Resident Citizen Sporting (Over 70)	FREE	8,989	$-
S4	Resident Minor Sporting (Age 15-17)	8.00	754	$6,032
DS	Duplicate Sporting	2.50	634	$1,585
	TOTAL LICENSE SALES (GROSS)		***212,000***	***$4,842,271***
	Current Year Stamp Sales			
M1	Archery Stamps	5.10	30,017	$153,087
M2	Waterfowl Stamps	5.00	11,360	$56,800
M3	Primitive Firearm Stamps	5.10	32,981	$168,203
W1	Wildlands Stamps	5.00	171,378	$856,890
W2	Non-Resident Wildlands Stamps	5.00	13,858	$69,290
	Duplicate Stamps	2.50	11	$28
	TOTAL STAMP SALES (GROSS)		***259,605***	***$1,304,297***
	Previous Years Stamp Sales			
M1	Archery Stamps		40	$263
M2	Waterfowl Stamps		1,153	$5,765
M3	Primitive Firearm Stamps		44	$270
	TOTAL STAMP SALES (GROSS)		***1,237***	***$6,298***
	Fees Retained and Adjustments by Clerks			$(17,175)
	Refunds			$(617)
	TOTAL			**$(17,792)**
	TOTAL LICENSE/STAMP SALES (NET)			***$6,135,075***

Commonwealth of Massachusetts
Division of Fisheries and Wildlife Organizational Chart